ROUTLEDGE

UNDERSTANDING LOCAL ECONOMIC DEVELOPMENT

EMIL MALIZIA, EDWARD FESER,
HENRY RENSKI, AND JOSHUA DRUCKER

SECOND EDITION

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This book offers insights into the process and the practice of local economic development. Bridging the gap between theory and practice, it demonstrates the relevance of theory to inform local strategic planning in the context of widespread disparities in regional economic performance.

The book summarizes the core theories of economic development, applies each theory to professional practice, and provides detailed commentary on them. This updated second edition includes more recent contributions—regional innovation, agglomeration, and dynamic theories—and presents the major ideas that inform economic development strategic planning, particularly in the United States and Canada. The text offers theoretical insights that help explain why some regions thrive while others languish and why metropolitan economies often rise and fall over time. Without theory, economic developers can only do what is politically feasible. This book, however, provides them with a logical tool for thinking about development and establishing an independent basis on which the local consensus needed for evidence-based action undertaken in the public interest can be built.

Offering valuable perspectives on both the process and the practice of local and regional economic development, this book will be useful for both current and future economic developers to think more profoundly and confidently about their local economy.

Emil Malizia is Research Professor of City and Regional Planning at the University of North Carolina–Chapel Hill. His expertise includes regional economic development, real estate, and entrepreneurship. He is author or coauthor of five books and over 200 scholarly articles or other publications.

Edward Feser is Professor of Public Policy and Provost/Executive Vice President of Oregon State University. His research and writing focus on state and local development policy, regional innovation, industry clustering, spatial economic analysis, planning methods, and strategic planning.

Henry Renski is Professor of Regional Planning at the University of Massachusetts, Amherst. He teaches courses in regional development theory and policy, quantitative methods, and spatial analysis. His primary research interests are entrepreneurship and understanding the impact of technological change on regional economies.

Joshua Drucker is Associate Professor of Urban Planning and Policy at the University of Illinois at Chicago. He researches and teaches economic development planning, regional economic analysis, planning methods, technology and innovation policy, and policy analysis.

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Emil Malizia, Edward Feser, Henry Renski, and Joshua Drucker

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PREFACE TO THE SECOND EDITION

Understanding Local Economic Development, published in 1999, was written as a text for both university courses and in-service training. The book summarized the dominant theories of economic development, applied each of them to professional practice, and presented detailed commentary in the text and endnotes. References cited the most important work in each theoretical area. The book had four audiences: economic development professionals, undergraduate and graduate students of economic development, economic development educators and researchers, and community leaders involved in formulating economic development policies or funding economic development programs. It presented, in systematic fashion, theories, models, concepts, and perspectives needed to understand the essential features of local economic development in the United States and Canada, primarily with possible application to other regions in more developed countries. Designed to span the divide between theory and practice, the book aimed to demonstrate how useful theory could be to these economic development audiences.

Although the second edition still serves as a textbook, the book has two other objectives. The narrower one is to present the major ideas that inform economic development strategy formulation. This focus should make the book relevant to anyone engaged in strategic planning. The broader objective is to offer theoretical insights that help explain why some regions are thriving while others are languishing and relatedly why metro economies often rise and fall over time. These objectives guide the retention of relevant traditional theories and the selective addition of more recent theories of regional economic growth and development. As in the first edition, theories primarily draw from traditional micro- and macro-economics, regional science, and economic geography. Institutional, behavioral, and radical theories are not covered.

Admittedly, our objectives are ambitious. We write this book to give current and future economic developers and community leaders knowledge they can use to understand both the process and the practice of local economic development. With such knowledge, they should have the confidence to think more profoundly about their community. Collectively, the theories covered herein contain the basic concepts that developers need to know in order to analyze their local economies internally as well as relative to other regions, define economic development appropriately, design strategies with promise to be effective, evaluate the outcomes of different development activities, and communicate successfully with stakeholders whose support is needed for implementation. Without theory, economic developers can only do what is politically feasible. With theory, developers have a logical tool for thinking about development and an independent basis on which they can build the local consensus needed for effective action. The virtual world is cluttered with unqualified opinions, fake news, and other misinformation pretending to be factual. In this context, theory offers a safe harbor for reflection on economic development and, if the politics allow, a foundation for evidence-based action undertaken in the public interest.

Many theories of economic development exist within our defined scope. They differ in fundamental ways. They make different behavioral assumptions, use different concepts and categories, explain the development process differently, and suggest different policies. Although they often claim to have little use or patience for theory, economic developers always use some theory, explicitly or implicitly, to understand their regional economy, to ask questions about its past and possible future, to detail the information needed to analyze development, and to formulate the most promising development strategies. Ultimately, theoretical insights strongly influence how economic developers understand the factors affecting their region's relative attractiveness and local competitiveness. Due to the variety of regional economic realities and development paths, however, *there is no single correct theory of economic development*.

The organization of this book is designed to help economic developers grasp these theoretical differences and select the most powerful theories for addressing the economic realities they face. The book is divided into two parts. Part I, Fundamentals, presents an historical sketch of U.S. development practice (Chapter 1) and important definitions and concepts required to understand economic development theories (Chapter 2).

In Part II, Theories of Economic Growth and Development, Chapters 3–9 systematically present relatively self-contained and related theories of regional economic growth and development. Each of these chapters covers three topics: (1) the basic tenets of the theory, (2) the typical applications of the theory that answers the "so what" question, and (3) a more detailed discussion that elaborates on the theory and presents major critiques. The extensive endnotes offer greater depth and theoretical richness that researchers should find useful. The discussion questions in each chapter are primarily intended to help the reader apply the theory to their regional economy to test its relevance and explanatory power. The final chapter synthesizes

various theories in summarizing Wilbur Thompson's contributions and Enrico Moretti's analysis of regional inequality and offers ideas about how to use theory to frame strategies for local practice.

We have written this book assuming that most readers are pressed for time, have limited background in economics, and have little patience for jargon. We hope our book is compelling enough to motivate the readers to cull out and apply the most useful theories to understand and improve their unique regional economy.

PREFACE TO THE FIRST EDITION 1999 (EXCERPTS)

Economic development encompasses a wide range of concerns. To most economists, economic development is about economic growth. To many business leaders, economic development is the wise application of public policy that will increase U.S. competitiveness. To environmentalists, economic development should be sustainable development that harmonizes natural and social systems. To labor leaders, economic development is a vehicle for increasing wages, benefits, basic education, and worker training. To community-based leaders and professionals, economic development is a way to strengthen inner-city and rural areas to reduce poverty and inequality. To public officials at the state and local levels, economic development embodies the range of job-creation programs, incentives, and other forms of assistance.

Economic development as practiced at the local level is a technique-dominated field concerned with increasing jobs and tax base, primarily by marketing the location to prospective and existing employers. The political culture in which most developers operate emphasizes short-term, quick-fix solutions, as well as the emulation of development strategies and programs in successful communities. Thus, the practice of economic development is strikingly similar across the United States as economic developers try to keep up with the competition. Economic developers endeavor to show that their location is better than any others' on a prospect's short list and that their incentive package is as good as the competitions'. Yet, places are very different, as differences among their firms, labor forces, politics, natural resources, and geography aptly demonstrate.

This book presents one view of how a broad body of ideas fits together. Though the view is not beyond criticism, it has proved useful in over 25 years of teaching development concepts to future practitioners. It also supplements other contributions. Important early edited volumes include Friedmann and Alonso (1964) and Perloff and Wingo (1968). Contributing authors in Bingham and Mier (1993)

summarize economic development theories drawn from various social sciences and apply these ideas to local practice. Several books examine development theories and policy in the United Kingdom and Europe (Chisholm 1990; Armstrong and Taylor 1978, 1985). Gore (1984) provides an excellent critical review of Anglo-American regional theory. Blakely (1994) offers a brief summary of theory in his wide-ranging and elementary introduction to economic development planning. Among the books most comparable to this one are Richardson (1973, 1978), Blair (1991), and Higgins and Savoie (1995). Higgins and Savoie (1995) provide a comprehensive survey of regional development theories and an analysis of regional policy in Canada and the United States. Their analysis suggests that development activity in the United States and Canada holds many similarities. Thus, we hope this book will also prove useful to Canadian development practitioners.

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PART I
Fundamentals

1

THE PRACTICE OF ECONOMIC DEVELOPMENT

Local economic development in Paterson, New Jersey

The most prominent early intentional development project in the United States designed for economic improvement began when Alexander Hamilton visited Paterson, New Jersey, in 1778. The Great Falls of the Passaic River attracted his interest, the highest falls east of the Mississippi River after Niagara Falls whose elevation and volume of water could generate substantial waterpower. It was later calculated that the Great Falls and the Little Falls farther upstream could drive 325 undershot water wheels. (Undershot wheels were turned by water flowing from below.) With this water resource and energy technology, Hamilton saw that Paterson had the potential to become the young nation's first center of industry (Kenyon 1960, p. 27). In November of 1791, Hamilton helped found the Society for the establishment of Useful Manufactures (SUM). SUM purchased from the state almost 800 acres of land adjacent to the river and the rights to channel some of the river's water into raceways. Two years later, SUM started the first water-powered cotton spinning mill in New Jersey, one that failed after operating for three years (Scranton 1985).

Local economic development is an ongoing process, where problems are resolved, not solved, because current solutions give rise to new problems to tackle as competitive factors change. Industry in Paterson grew through a series of "boom followed by bust" cycles for more than a century. For some time period, the localization economies (Chapter 9) in the industrial district enabled the sequential success of cotton textiles, locomotive production and assembly, silk textiles, and aircraft manufacturing (Kenyon 1960, pp. 24–66). Since the cotton industry required machine shops to keep the mills running, skilled craftsmen increased in number as the industry grew. Machine-shop owners sought patents for ideas they developed. In 1840, the cotton sector peaked, and several cotton mill owners formed new

companies to build locomotives to support the westward expansion of the railroads. Kenyon (1960, p. 39) identifies that year as the beginning of the "century of silk" when the Paterson area became "a diversified urban industrial complex." Continuing through the 1920s, entrepreneurial companies were founded, grew, became well-established, and in many instances ultimately failed.

Paterson's local economic base evolved and diversified over time. By 1900, the silk textile industry, locomotive manufacturing, and other manufacturing were flourishing. The most important factors leading to success were: (1) proximity to New York City for finance and distribution, but most importantly for early detection of fashion and design changes; (2) reliable power, first from year-round water power and later from coal-produced steam; (3) tariff protection that eliminated duties on raw silk but imposed them on imported manufactured silk products; (4) the influx of unemployed skilled workers who immigrated to Paterson after the silk sector in England was decimated by producers in France; and (5) synergies between the silk and iron industries, including largely female workers in silk and primarily male workers in locomotive production.

From 1870 to 1910, Paterson experienced impressive economic growth due to innovation, agglomeration economies, and proximity to New York City—the fashion capital of the country. The population increased rapidly, primarily from immigrant labor that provided the "hands" that worked in the factories. From 1870 to 1900, the population tripled to over 105,000, reaching 125,600 by 1910. During this time, Paterson became one of the leading silk manufacturers in the world, vying with Lyon, France, for top billing.

During the next 30 years, Paterson's economic growth slowed dramatically. Silk manufacturing remained the dominant industry, accounting for 47 percent of manufacturing value-added projects in 1925. Over the next 15 years, the number of silk establishments decreased from 691 to 147 (Kenyon 1960, p. 62–65). The combination of new synthetic fabrics, the Great Depression, and labor strife took their toll (Scranton 1985).

In 1913, the Industrial Workers of the World (The Wobbles) and local socialists staged the "Paterson Silk Strikes" advocating an eight-hour day and better working conditions. Although unsuccessful, the strikes helped forge the American labor movement and were a precursor of New Deal reforms that brought the eight-hour work day, better wages, improved working conditions, restrictions on the use of child labor, better housing, and overall improvements in public health and living standards. Thus, the period of rapid economic *growth* from 1870 to 1910, when Paterson's industries got bigger and more numerous, was followed by the period from 1910 through World War II when the lives of the workers in Paterson got better, which could be called the period of economic *development* (Chapter 2).

For 20 years after World War II, modest growth continued in Paterson, but subsequently the manufacturing base declined precipitously as companies left for low-wage, non-union locations in the South and outside the United States. Economic decline continued in the central city for many years, while the suburbs

prospered, becoming bedroom communities of New York City. More recently, immigrants arriving from the Middle East, Mexico, Latin America, and other parts of the world have occupied cheap housing and have begun to revitalize Paterson. Over 200 years after Hamilton initiated "top-down" economic growth, Paterson's workers and entrepreneurs will determine whether "bottom-up" actions will have positive economic outcomes. Will Paterson's economy in the 21st century recover its past success or continue its flat trajectory?[1]

Inflection points in local economic development

In this section, we present four major trends that have shaped state and local economic development practice in the United States since 1930. We describe them as inflection points and identify the relevant underlying theories of economic growth and development for each one. This presentation has two purposes: to place current practice in its historical context and to demonstrate the value of theory so that economic developers can better understand and improve their practice.

Industrial recruitment

The *first inflection point* came with the formulation of state-level industrial recruitment as an intentional development strategy to encourage industrial development in the "New South."[2] Southern states initiated industrial recruitment, and their success was largely at the expense of places like Paterson and other cities in the Northeast and Midwest. It began in 1929, when Hugh White was elected mayor of Columbia, Mississippi. The lumber company he owned was in decline, and the local farming sector was weakening. As mayor, he formed the Marion County Chamber of Commerce and hired the Fantus Corporation based in Chicago to recruit companies. When Fantus found an interested prospect—Reliance Manufacturing—the mayor raised enough capital locally to provide the loan guarantee for the factory's construction, including conditions that would now be called "claw back" provisions. The most important one was that the company would own the factory as long as it hired 300 (primarily female) workers and paid one million dollars in wages over the next ten years. The town signed up over 1,400 women interested in working at the factory satisfying the company's questions about labor availability. Mayor White also created customized training for the women who were not paid until they became proficient. Reliance came to Columbia and hired these women at low wages, but the income of their families increased as a result. The new employer provided a buffer for the local economy as the Great Depression gained force.

Hugh White was elected governor on a platform that included "balancing agriculture with industry" (BAWI). From 1936 to 1940, he provided the leadership to pass legislation that allowed localities to finance land and capital for new industry to achieve the newly identified public purpose of providing employment, thus establishing the BAWI program state-wide (Cobb 1982). Thus, hiring workers was no

longer simply a *private* cost that businesses incurred to generate product and profits. "Job creation" had now become a *public* purpose.[3]

By the mid-1950s, almost all of the Southern states had policies favoring industrialization and had established agencies with the mission of industrial recruitment. They unleashed their "industry hunters" on corporate boardrooms to the north. Favorable financing, prepared industrial sites, and customized training programs were often part of the package designed to lure companies to the South. Equally compelling were access to growing product markets, relatively cheap labor, cheap land, low cost of living, low taxes, and virtually no labor unions ("right-to-work states").

Although state-sponsored industrial development for job creation began in the South, the idea spread throughout the country. State development corporations or departments of commerce took on this function partly in reaction to losing companies to Southern states. Counties and cities joined in, creating the infrastructure for industrial recruitment of jobs and tax base that exists to this day.

Industrial recruitment or what became called the "attraction strategy" focused on manufacturing because manufacturers were expected to have the greatest positive impact on local economic growth. Most economic developers know that economic base theory (Chapter 3) is the theory that rationalizes industrial recruitment.[4] Companies that source labor and other inputs locally and sell products outside the area (the export sector) bring money into a region that stimulates employment in local-serving sectors (such as retail and personal services) through successive rounds of buying and selling (the economic base multiplier). In addition to higher multiplier effects, recruited manufacturers offered better wages and benefits in most instances than existing employers. Thus, manufacturing usually contributed to local economic development.

Small business development

The *second inflection point* occurred when small business became viewed as an important source of employment. This focus quickly expanded to important locally-based industries as well as educational, scientific, health-oriented, and financial institutions that could promote economic growth. Interest in small business began in 1979, when David Birch (1979) published a report about job creation. Using Dun & Bradstreet data, he showed that small businesses had created almost all new jobs in the United States during the previous decade. The story reported in the *Wall Street Journal* hit the industrial development community like a bombshell. In one Southern state, the head of the state's industrial development program read the story at breakfast. He called his lieutenants to an emergency meeting as soon as he arrived at work. He asked the question—what are we doing to help small businesses create jobs? The silence was deafening. He instructed his team to come up with concrete ideas about policies and programs and scheduled a meeting to review all ideas later that week. After lunch, he received a call from the governor. The governor noted that he had read an interesting article in the paper that morning

and asked his appointee what their state was doing to help small businesses. The director assured the governor that his agency was on top of this and would brief the governor on their initiatives early in the following week.[5] Similar conversations undoubtedly occurred in economic development offices throughout the country that week. Reflecting this broader focus, the American Industrial Development Association's executive committee made numerous changes to its rules and governance structure in 1980. The most important one was changing its name to the American Economic Development Council.[6]

Today, every state has policies and programs designed to help small businesses and existing industry, usually called "creation and expansion strategies." Yet they continue to devote substantially more resources to industrial recruitment. One reason is that Birch's definitions and results were confusing. It was difficult to sort out exactly which small businesses were generating jobs (Malizia 1981). The lively debate involved assessing the potential of small firms, new firms (startups), young firms, and especially entrepreneurial firms to be important job generators. The evidence eventually became clear that the "small business" which created most new jobs was also responsible for most of the job destruction (what is called job churning).[7]

Regardless of the true sources of job creation, this second inflection point had meaningful effects on economic development practice. Whereas industrial recruitment sought growth from without, small business development and associated expansion strategies directed economic developers to seek growth from within the local economy and find ways to build on local assets. Product cycle, entrepreneurship, innovation, and agglomeration-related theories, covered in Part II, are associated with this broader internally-oriented view of economic development. The emphasis of local development practice shifts from the location's comparative costs to how the region's value can be enhanced to make its economy more viable.[8]

Industrial clusters

The *third inflection point* emerged about a decade later when national competitive advantage was framed in terms of "industrial clusters" (Porter 1990, 1998). Michael Porter was an established expert on business strategy when he was appointed to the President's Commission on Industrial Competitiveness in 1985. He became increasingly interested in applying his findings on competitiveness at the company level to help clarify ongoing debates in the 1980s about "industrial policy." He published *The Competitive Advantage of Nations* in 1990, which presented an industry-based theory of competitiveness and applied it to examine selected internationally competitive industries in ten countries. Porter's strategy is critically discussed in Chapters 8 and 9.

The aspect that had the greatest impact on economic development practice was the observation that most internationally competitive industries formed industrial clusters, which are groups of interrelated companies. Many of the connections in

an industrial cluster were geographic: linked industries often located in the same regions or cities (Porter 1990, pp. 157–159). Subsequently, Porter led case studies of industrial clusters in different regions of the United States and applied his ideas to promote central city revitalization.

Porter's impact on economic development practice was profound. During the 1990s, economic developers referred to "clusters" much more often than "industries" or "companies." Industrial recruitment was now targeted to industrial clusters more than individual industries or specific corporations. Internally focused strategies addressed ways to augment existing clusters. These considerations included buyer-supplier connections (supply chains), specialized pools of talent and skills, associated business and professional services, and local "anchor institutions," such as health facilities, universities, research labs and centers, and major facilities of the federal or state government. This cluster perspective certainly elevated the importance of strategic planning in economic development practice.

Porter observed that internationally competitive clusters were highly specialized in different parts of the world. Regions had experienced prosperity by using and upgrading their assets effectively in these industrial specializations. It follows that economic developers should use limited available resources to deepen the region's existing clusters. However, most state and local development entities have preferred to identify many clusters (ten or more), some existing, others aspirational. This approach may lead to greater industrial diversity, but it disperses limited resources in ways that reduce the chances of success.

The creative class

Urban and regional theory recognizes the mutual relationship between the location of population and the location of employment. One way to sort out this relationship is to assume that employers first decide to locate their company in a specific metropolitan region and households follow, moving there to pursue employment opportunities that these companies provide. The influx of households in turn stimulates business growth and additional employment within the region. The more important dynamic, then, is that workers are attracted to available employment opportunities (people follow jobs).

This logic was first articulated by political economist Sir James Steuart in 1767 (nine years before Adam Smith published *The Wealth of Nations*).

> I now proceed to the other class of inhabitants; the free hands who live upon the surplus of the farmers. These I must subdivide into two conditions.
>
> The first, those to whom this surplus directly belongs, or who . . . can purchase it.
>
> The second, those who purchase it with their daily labour or personal service.

> Those of the first condition may live where they please; those of the second must live where they can [find work].
>
> *(Steuart 1767)*

Most regional theorists would agree with Steuart that population generally follows employment opportunities. Thus, it made sense for economic developers to focus on businesses whether by growing or expanding them or by attracting external business investment. Richard Florida's theory of the creative class posed a different idea. Florida advocated focusing on occupations and places instead of industries or clusters. Places with talent, technology, and tolerance would outperform ones that lacked these attributes (Florida 2002). If places were able to attract and retain enough talented people, employers would follow. This hypothesis represents the *fourth inflection point* in economic development.

Florida's ideas are presented more completely in Chapter 9. Scholarship aside, Florida has had major impacts on economic development policy and practice. To his credit, he has helped broaden the perspective of state and local economic developers by making them more aware of the knowledge economy and the importance of workforce development and other local assets. Economic developers became concerned about the supply side of the labor market for the first time, in addition to their traditional focus on stimulating labor demand (job creation).

Florida's "super" creative class of artists, designers, musicians, writers, and so on prefers urban areas that are also attractive to bohemian subcultures and members of the LGBTQ community. Young professionals trained in engineering, computer science, research, and so on ("techies") seem to like places with "hip" people. The most typical strategies call for urban redevelopment, especially downtown revitalization, that involve compact, connected mixed-use projects with associated public transit. These redeveloped areas provide restaurants, cafes, bars, unique shops, music and performance venues, hip workspaces (coworking), small residential units (co-living and micro apartments), and so on.

Unfortunately, Florida did not carefully qualify many of his recommendations. For example, the creative class includes over 30 percent of the labor force, most of whom prefer to live in suburban residential areas. The "super" creative class is a small subset that seeks to do original work and prefers amenity-rich urban locations. This small subset is much more likely to gravitate to larger denser cities that offer features attractive to them, but Florida failed to discuss directly the influence of city size. In the absence of such qualifications, many local boosters overestimated the importance of the creative class and formulated creative-class strategies for places far too small ever to reach the critical mass needed to attract employers. Furthermore, from a practical standpoint, it takes far more resources to attract 50 individuals than one business with 50 employees.

Whereas Porter's cluster concept has had major direct effects on economic development practice, Florida's influence has been much more diffuse. In some areas, downtown redevelopment organizations are working closely with traditional

economic development entities, and regional and local economic developers have become more involved in urban/downtown redevelopment. In these areas, the strategy of "talent attraction and development" is as important as industrial recruitment and development.

State and local practice in the United States

The array of strategies currently employed by state and local economic developers reflects these four inflection points. Although each one took strategic thinking in a new direction, developers have not abandoned previously established ideas. Indeed, most state, regional, and local economic development organizations devote resources, in some combination, to traditional industrial recruitment, small business development including attention to startups and entrepreneurship, industrial clusters of existing industries, and workforce or talent development.[9]

State and local economic developers agree that the 21st-century economy has become far more complex. They need to understand better the workings of internal processes and external connections to the global economy. Theory helps developers grasp the evolving development process, provides insights about the relative attractiveness of one place compared to other places, currently and in the future, and guides the study of the historical process that generated its current status. The chapters in Part II present theories that economic developers can use to explain interregional and intraregional development and by implication how to promote economic growth and development. They are primarily intended to help state and local practitioners formulate better strategies by understanding their regional economy in more profound ways. Theory should give practitioners more confidence to fashion unique strategies designed for their specific locality instead of simply imitating their peers.

Although local economic development practice has matured, certain confusions and unanswered questions remain.[10] First, the definitions, goals, and strategies of economic development are usually discussed without explicitly recognizing the relevant theory of economic development on which they are based. Even the goal of job creation remains unclear without an explicit model of development (Malizia 1987). For example, should all permanent, full-time jobs be considered equivalent or should differences in job quality or average salaries be factored in? Should developers count all jobs or only net new jobs? Should jobs that reduce unemployment or accrue to existing local workers be valued more highly? Is the profile of jobs anticipated over time from a project important or just the initial number of jobs? Should developers focus exclusively on local benefits or also on benefits accruing to the larger economic system? As discussed in Chapter 2, each economic development theory provides both an explanation of the development process and a definition of development.

Second, economic development thinking often reveals weak economic principles. Modern economics notwithstanding, some developers still confuse "making money" in terms of a favorable balance of trade generated by manufacturing and export services with creating wealth from innovation or productivity improvements.

(This "mercantile bias" is explained in the Appendix on Economic Thought after Chapter 10.) The concepts presented in this book should help resolve confusions and strengthen economic thinking in the field generally.

Furthermore, because developers need to be concerned about the future, they often ignore the past. Yet ahistorical thinking has led to gross blunders in formulating development strategies for the future. Economic developers ignore the economic history of the region in which they work at their peril. For example, in the late 1960s, the Appalachian Regional Commission (ARC) neglected to examine the previous 100 years of Appalachian economic history in devising its development strategy. The new strategy was based on the assumption that Appalachia was poor because it was isolated and therefore needed to be linked to the rest of the United States. ARC used growth centers, development highways, and social service programs to integrate the region into the larger economy. Yet substantial evidence indicates that the historical linkages between the region and the rest of the country had impoverished Appalachia. In another example, Porter (1997) called for the private sector to assist new and existing inner-city businesses as a way to reverse central city decline. Yet he failed to explain how these areas became poor, dangerous, deteriorating places, or why private investors shunned them over the past 50 years. Answers informed by the region's economic history could help identify the strategies more likely to succeed. The importance of history and human agency is underscored in Chapter 2.

Finally, practitioners tend to emphasize economic growth more than economic development or fail to recognize that growth and development are neither synonymous concepts nor identical processes. Jeep (1993) contends that the inability to distinguish growth from development has led developers astray. Growth and development are carefully distinguished and contrasted in Chapter 2.

The theories included in this book pertain to labor market areas, which are functional economic regions best approximated by metropolitan areas. Since these labor markets function as local economies, it makes sense to analyze them as whole units. Yet most economic developers are employed by states, counties, or municipalities—political entities that constitute only a part of the labor market/metropolitan area. They should apply each theory to the region in which they are located and formulate relevant region-wide strategies. Then, they can figure out how to adapt these strategies to the jurisdiction for which they work.[11]

Economic developers need strong leadership, patience, persistence, and good planning to have a chance to succeed. They may decide to put their faith in good timing and luck to bring about regional economic development and accept the old a-theoretical adage: shoot anything that flies; claim anything that falls. As William Alonso (1990) once said, somewhat in jest: we believe that a "silver bird" (manufacturing facility) will land on our island (local industrial park) and bring us development or that, through "spontaneous combustion" (local creativity and innovation), new local businesses will transform poverty into plenty. This book encourages developers to promote economic development by using their wits rather than depending on luck.[12]

Discussion questions

The questions that follow are for economic development professionals. The questions are designed to address the orientation of local practice that bears on the definitions of economic development and the theories meaningful to developers. Other readers may use these questions to interview a practicing economic developer. Please refer to these answers as you read subsequent chapters.

1 Briefly describe the activities that take most of your work time over a calendar year. Who are the clients and major beneficiaries of these activities?
2 Identify the major strategies or policies that justify these activities. Who are the primary beneficiaries of each of these strategies or policies?
3 Is job creation or investment for tax base expansion the primary goal of these strategies or policies? Do you have other primary or secondary economic development goals?
4 If job creation is an important goal, are you simply trying to stimulate the local demand for labor or are you also trying to provide jobs for local residents or unemployed residents?
5 Economic developers have been criticized for engaging in constant-sum activity by increasing local growth but not overall national growth. Do you think this criticism applies to your activities? What is your view on this issue?
6 The four outcomes listed below could occur hypothetically as the result of your activities. Assume that each outcome generates the same number of jobs or amount of economic growth. Figure out the alternative for each outcome that you would view as the best improvement to the local economy.

    a New branch facility/expansion of existing business/new locally based business.
    b Manufacturing company/retail company/business or professional service company.
    c More small businesses/more self-employment.
    d Larger export base/cheaper products for local consumers.

7 Do you address environmental quality, community development, or other broader topics in your practice? How are these topics dealt with?

Notes

1 In addition to the references cited, this brief history of Paterson draws from Wikipedia, the New Jersey Community Development website: www.njcdc.org, and Malizia's knowledge of his home town.
2 Advocacy for the "New South" often references journalist Henry Grady, an effective early proponent of industry replacing sharecropping, which became the post-bellum version of plantation agriculture. During the 1880s, he gave many speeches on this topic, including an oft-quoted one about a funeral he attended in his home county of Pickens, Georgia, where only the body and the hole in the ground were locally produced. The most accessible source of Grady's famous speech is Wikipedia under Henry W. Grady.

3 "Job creators" are now respected as public benefactors, although they are rarely demonized as "job destroyers" when they eliminate jobs or move them to more profitable locations.
4 Economic base theory also provides the rationale for the economic growth coalition that supports industrial development in most localities. Coalition representatives are in declining-cost industries such as railroads, trucking, utilities, banking, construction, and real estate that serve the local market and benefit from its growth.
5 The economic development director told this story to Malizia, who believes it is factual and accurate but prefers not to disclose specific identifying information.
6 In 2001, AEDC merged with the Council for Urban Economic Development, which became the International Economic Development Council.
7 Subsequent research helped resolve the debate. See Freear and Sohl (2013), pp. 224–225 and Kane 2010. Chapter 7 explores entrepreneurship theories and strategies in detail.
8 The Corporation for Enterprise Development began publishing a state-level "report card" designed to balance the state rankings of site selection consultants like Fantus Corporation, which were accused of measuring the "cost of everything but the value of nothing." The report card assessed both quality and cost factors.
9 The American Economic Development Council (AEDC) described practice as pursuing "ACRE" in order to achieve more local jobs, investment, and tax base: attraction of new investment or facilities, creation of new businesses, retention of existing businesses, and expansion of existing businesses. Detailed descriptions of these activities are in Smith and Ferguson (1995). Note that workforce or talent development was not included.
10 Jeep (1993) and Rubin (1988) offer critical assessments of economic development practice, while Sternberg (1987) presents a detailed classification scheme for organizing economic development policy instruments. Smith and Fox (1991) describe the major tools used in industrial recruitment, namely infrastructure provision, preferred financing of capital facilities, customized training, and tax breaks or financial incentives. They call for additional strategies to promote business development, including small business development centers, research and development (R&D) partnerships, technology transfer through the manufacturing extension service, and new venture financing through venture funds. Now, these strategies are often included in state and local practice.
11 Each jurisdiction within the labor market area can identify its economic development strategies compared to others based on within-region differences in factor costs, accessibility, amenity levels, business climate, economic base, and other structural attributes. Many jurisdictions in the region may specialize in residential development or may want to limit growth. We discuss appropriate within-region strategies in Chapter 10.
12 These comments ignore the reality that confronts many local economic developers who spend much of their time on two tactical activities. First, developers must continually improve and update their locality's website. Without a strong presence in the virtual world, a locality's existence in the real world is hardly relevant. Second, they must be responsive to demands for financial incentives whether from prospects and their consultants or existing companies threatening to leave. Economic developers who want to transcend this practice are encouraged to read further.

2

DEFINITIONS AND CONCEPTS OF DEVELOPMENT

Definitions

Ideally, the review of various theories of local economic development would be informed by a clear definition of the economic development and the regional processes we seek to understand. Yet an appropriate *a priori* definition of economic development is not possible. Definitions do not precede theory. Each definition contains its own implicit theory, just as each theory supports a unique definition.

Development practice in the United States accepts economic growth as a positive force and attempts to facilitate the growth process.[1] In 1990, the American Economic Development Council (one of two major professional associations representing U.S. economic developers at that time) commissioned a report from the profession titled *Economic Development Tomorrow* (AEDC 1991). A Delphi process involving the profession's leadership as well as other experts accepted the definition presented in a similar 1984 report:

> Economic Development is the process of creating wealth through the mobilization of human, financial, capital, physical and natural resources to generate marketable goods and services. The economic developer's role is to influence the process for the benefit of the community through expanding job opportunities and the tax base.
>
> *(AEDC 1984, p. 18)*

The definition offered by the International Economic Development Council in 2006 was weaker in that it only focused on practice and outcomes:

> Economic development can be defined as a program, group of policies, or activity that seeks to improve the economic well-being and quality of life

> for a community by creating and/or retaining jobs that facilitate growth and provide a stable tax base.
>
> *(IEDC 2006, p. 4)*

The older AEDC definition captures the two aspects of the term "economic development": it refers to both a process and a practice. As a growth process, economic development is the mobilization of resources to produce marketable products. However, the definition itself is static. It fails to indicate that economic development, as a process and a practice, is a long-term, ongoing enterprise. As illustrated in Chapter 1, new development problems continue to emerge as former ones are resolved. Although flawed, the definition is nonetheless powerful because it justifies much of what practitioners presently do in the name of economic development in the United States and Canada.

Development organizations have referenced the AEDC definition for many years without addressing the fact that it is inconsistent. The second sentence contradicts the first one. The first sentence is a politically astute description of the market system, with which we are all familiar. Resources are mobilized and used to produce commodities for which market demand exists. Such a development process increases wealth because aggregate consumption increases. The second sentence instructs the economic developer to facilitate the development process through the creation of additional jobs and the expansion of the tax base. Yet while wealth and jobs/tax bases may grow in tandem, they are fundamentally different. Wealth creation results from the production and sale of commodities that benefit consumers. Job and tax base creation make available the human and physical resources needed to produce commodities; labor and government services are means to the end of more production and consumption. The critical omission in the definition is the notion of scarcity, the existence of which suggests that jobs/tax base creation may be inefficient and erode, rather than generate, wealth. Wealth creation and jobs/tax base expansion do not necessarily go hand in hand.

The existence of scarcity is a fundamental part of the economic process; scarce resources are used to satisfy competing ends. The economical use of resources is valued because it achieves efficient, least cost production. Therefore, more consumption produced by less labor and fewer government services benefits the community, whereas more employment or tax revenues without more consumption imposes costs.

Furthermore, while being clear and easy to understand, AEDC's definition obscures important questions about contemporary economic development practice. It does not address the serious criticism that developers frequently use scarce public resources to move jobs from one place to another without contributing to national competitiveness (the constant-sum recruitment game). In addition, it does not address whether developers should attempt to retain companies that want to close or relocate.

Moreover, wealth creation benefits corporate shareholders and other owners of capital, whereas job creation benefits local workers and community residents. While both are legitimate political objectives, they are also potentially conflicting.

Conflicts often arise between shareholder value and the interests of consumers and employees. These conflicts relate to the long-standing debate between equity (stable and plentiful employment in many communities) and efficiency (national productivity growth). The American Economic Development Council's consensus definition is politically acceptable in part because it ignores these trade-offs. It optimistically implies that the engine of economic growth will create jobs and wealth where developers want them. The dual realities of significant social inequality and regional inequality make this optimism seem opportunistically ignorant. Many would agree that social and regional inequalities are serious problems that economic developers need to address.

In most jurisdictions, economic developers have been more comfortable facilitating the economic growth process and working to improve the local business climate. They have been less comfortable trying to increase per capita income or wage rates. Nor have the problems of low wealth residents been a priority. The idea of *inclusive prosperity* responds to the challenge of growing income and wealth inequality in the United States, but mainstream economic development practice has not yet embraced the concept.

A more logical definition of economic development, consistent with mainstream (neoclassical) economics, would consider wealth creation as more important than job creation or, alternatively, job growth as a means to creating wealth. Local economic developers would only facilitate jobs and tax base expansion locally when productivity was not reduced in the larger economic system. If taken seriously, this revised definition could significantly influence the practice of economic development.[2] Yet, the more fundamental point is that each theory provides the basis for posing a defensible definition of economic development.

Concepts

Economic developers need to grasp four fundamental concepts to learn how to use theory effectively in economic development practice. Developers face an apparent contradiction given the conventional views of theory and practice, as follows: theory is considered abstract thinking that simplifies reality, whereas practice involves human action that changes reality in particular ways. Economics and other social sciences generally ignore individual action to explain reality. Theories are essentially deterministic in that posited causes should lead to expected outcomes. Economic developers, as well as other individual actors, exercise free will when they try to influence the development process. The four concepts of power, theory, interests, and mediation can resolve the apparent contradiction between deterministic theory and voluntary practice, as explained in Appendix 2.1.

Basic assumptions

The assumptions described in this section provide the conceptual basis for the economic development theories presented in this book. We assume that the local

economy is best understood in the context of the larger economic system. The evolution of the local economy can be grasped by understanding its relative attractiveness compared to other local economies. The relative attractiveness of each area depends on its *economic location*—the economic role it plays in the larger system.

To create and build linkages between the local economy and the external economic system is one viable path to economic development. To do so, it must find a useful role to play in the global economy. Successful local economies will specialize, trade, grow, diversify, and develop over time. The other path calls for strengthening internal linkages and minimizing external trade, what is called autarky. In this case, the local economy must develop through local self-reliance.[3] For many developing regions and countries, both paths deserve consideration. For most localities in the United States and Canada, however, building linkages to the global economy is more feasible and desirable (if not unavoidable) than separation and autarky. This book's audiences and its U.S. and Canadian regional focus suggest an emphasis on *competitiveness* as the primary objective by which to evaluate the relative success of linkages to the global economy and the relative attractiveness of the locality to firms and households.

We view the global economy as the system that consists of mutually exclusive metropolitan areas or local labor market areas that are functionally linked through the economic exchange of goods, services, money, credit, information, and people. Metropolitan areas are the most appropriate units of analysis with which to study relative attractiveness, because they represent the closest approximation to meaningful economic entities and functional economic units for which data are available. In this book, the terms "locality," "area," "region," "location," "place," or "community" generally refer to local labor market areas. Importantly, metropolitan areas contain multiple political jurisdictions that greatly complicate effective local economic development practice.

Because the United States and Canada are rather mature economies, our coverage of regional development theory selectively includes macro-oriented theories that emphasize the diffusion of development. The focus of Part II of this book is on the continued diffusion of development across local economies rather than on the initiation or early stages of development.[4] Furthermore, micro-oriented theories of spatial development, such as migration theory and location theory, which pertain to individual location decisions, are generally ignored.

Growth-development distinctions

Understanding local economic development can be sharpened considerably by examining the distinctions between economic growth and economic development. Robert Flammang (1979) does an impressive job identifying nine different implicit or explicit conceptions of economic growth and development adopted by researchers and practitioners. They are summarized as follows:

1 No definitions are offered. Economic growth and development are reduced to other concepts such as urbanization and industrialization.

2 Growth is the same as development. Growth or development is measured as increases in aggregate or per capita income.
3 The distinctions depend on geography. Growth occurs in rich countries, while development occurs in poor ones.
4 The distinctions depend on the origin of development. Change that comes from internal sources is identified as development; change that is externally imposed is considered growth. Yet sometimes the argument is reversed.
5 Growth and development are complements because one makes the other possible.
6 Growth and development are alternating processes that occur in sequential time periods.
7 Growth is an increase in output; development is structural change—technical, behavioral, attitudinal, or legal.
8 Growth expands the economy; development must lead to more equal distributions of income and wealth.
9 Growth and development both lead to a greater range of economic choices.

Flammang presents an ecological model to synthesize and describe long-term change. Populations organize into societies in order to adapt to their environments more successfully. Development is instigated when a population begins to crowd its environment. Out of necessity, the society attempts to increase the means of sustenance from the environment. Adaption involves seeking a new ecological niche. From the ecological perspective, development involves niche finding; growth is niche filling. Organized populations (communities) introduce adaptive technology to solve economic problems.[5] This adaption may or may not become adopted by the ecological system. With adoption, the population will increase. Otherwise, the population will stagnate or decline or out-migration will occur.

Using this context, Flammang argues that growth is best defined as simple, quantitative increase, while development is qualitative and involves structural change.[6] Growth and development may be competitors in the near term but are usually complements in the long term. Over the long term, growth provides the resources needed for development. In response, development generates new technical, organizational, behavioral, or legal structures that facilitate growth. Growth increases output by mobilizing more resources and utilizing them more productively; development changes the output mix by devoting local resources to doing different kinds of work. In the near term, however, growth or development may proceed without the other. Growth may retard development, or development may engender decline. Moreover, development can occur in one place by draining resources from another location, thereby limiting growth and development elsewhere. Regional disparities in growth rates and development levels are common features of the growth-development process.[7]

The growth-development distinction also suggests contrasting economic growth to *sustainable* development. Indeed, sustainability is a widely discussed principle in the economic development and city planning fields. The concept is

attractive because of its generality; it would appear to encompass issues of competitiveness, social inequality, and environmental quality. Some of the literature presents normative statements outlining sustainability principles particularly for developing countries. The basic idea of this viewpoint is to evaluate economic growth in terms of its impacts on people and nature with a bias to conserve resources and to prefer economic growth with the following features: (1) limited utilization of natural resources and, in general, respect for eco-systems, (2) efficient utilization of material resources through energy conservation, recycling, and so on (3) full use of existing capital stock and reuse of sites and buildings, (4) less pollution from production and consumption activities, and (5) reasonable levels of living with less income and wealth inequality.[8] Blakely and Green Leigh (2010) have brought together these ideas in the definition they offer to local economic developers:

> Local economic development is achieved when a community's standard of living can be preserved and increased through a process of human and physical development that is based on principles of equity and sustainability. . . . Economic development establishes a minimum standard of living for all and increases the standard over time. . . . reduces inequality . . . [and] promotes and encourages sustainable resource use and production.
>
> *(p. 75)*

A related viewpoint based on the work of Karl Polanyi deserves attention. Polanyi (1944) developed a unique perspective on economic development that was drawn from careful historical and anthropological analysis. He argues that traditional (pre-capitalist) societies subordinate the economy to their politics and culture. Capitalist development represents a historical anomaly. Under capitalism, the economy becomes the dominant societal force. In essence, the competitive market, which is a highly effective mechanism for allocating produced commodities, becomes an ultimately destructive mechanism because human beings and the natural world are reduced to the "fictional commodities" of labor and land.[9]

From the outset of capitalist development in the 19th century, people have tried to avoid the wrath of the free market. Businessmen continually try to circumvent the market through price fixing and other forms of collusion in seeking monopolistic harbors that would protect their sources of income and wealth. Workers have formed labor unions "in restraint of trade." Environmentalists fight against the treatment of nature as a resource that provides material production inputs. Government intervention attempts to balance the needs of the market economy that treats people and nature as commodities with the political reaction voters have against such treatment.

Polanyi would ask economic developers to find the balance. Developers can be decidedly "pro-business" and advocate measures to improve the local business climate because private investment is needed to sustain the local economy. Yet developers should also recognize the need for interventions that reasonably protect

workers and the natural environment from market forces. Although much more difficult than one-sided advocacy, developers should address the costs of growth as well as its benefits.

Feldman et al. (2016) present a definition of economic development that builds on Polanyi's institutional perspective. Feldman and Storper (2018) argue that economic development is "the development of capacities that expand economic actors' capabilities". This apparently simple definition actually represents a significant departure from traditional thinking about economic growth and development. Their "innovative place-based development policy approach" focuses on building the basic capacities of people, expanding the "sources of creativity and satisfaction that are good . . . on human grounds," and developing innovative practices of all kinds to increase capacities in the regional economy on a continual basis. Feldman and Storper elaborate on ways to foster widely distributed place-based innovation capacities, which are associated with more numerous agglomerations, industry-building entrepreneurship, economic and social networks, coordination, and responsiveness to demand. This institutional and policy-based definition is not a way to improve economic development practice. This definition represents a radical departure from current practice.

Overview of theories

The economic developer must understand the language of theories in order to apply them skillfully. This section summarizes each theory in terms of five fundamental elements (see Table 2.1):

1 Basic categories—the fundamental classification or distinctions used to lay out the theory.
2 Definition of development—what economic development is or should be according to the theory.
3 Essential dynamic—the key variable or relationship that drives the logic of the theory.
4 Strengths and weaknesses—how well the theory enables one to understand economic development.
5 Applications—the ways in which the theory can be used in economic development practice.

Economic base theory

The basic categories of economic base theory are the industrial sectors of the regional economy that are assigned either to the basic or export sector or to the non-basic or local sector. The definition of local economic development is equivalent to the rate of local economic growth, measured in terms of changes in the local levels of output, income, or employment. The essential dynamic of the theory is the response of the basic sector to external demand for local exports, which, in

TABLE 2.1 Summary of economic development theories

Theory	*Basic Categories*	*Definition of development*	*Essential dynamic*	*Strengths and weaknesses*	*Applications*
Economic Base Theory	Export/basic sectors and non-basic, local (or residentiary) sectors	Increasing the rate of growth in output, income, or employment	Responses to external changes in demand Subsequent economic base multiplier effects	Most popular understanding of economic development in the United States and a simple tool for short-term prediction or forecasting Inadequate theory for understanding long-term development	Industrial recruitment and promotion for export expansion and diversification, expansion of existing basic industries, import substitution by strengthening connections between basic and non-basic industries, and infrastructure development for export expansion
Staple Theory	Exporting industries	Export-led economic growth	Successful production and marketing of the export staple in global markets External investment in and continued demand for the export staple	Historical perspective on economic development Descriptive theory difficult to apply	Build on export specializations State does everything possible to increase competitive advantage Character of economic base shapes political and cultural superstructure
Sector Theory	Primary, secondary, and tertiary sectors	Greater sectoral diversity and higher productivity per worker	Income elasticity of demand Labor productivity in primary and secondary sectors	Empirical analysis possible Categories are too aggregated	Attract and retain producers of income elastic products Facilitate adjustments to sectoral change

Theory	*Basic Categories*	*Definition of development*	*Essential dynamic*	*Strengths and weaknesses*	*Applications*
Interregional Trade Theory	Prices and quantities of commodities and factors	Economic growth that leads to greater consumer welfare	Price-quantity effects that result in equilibrium terms of trade Price-quantity-effects	Unique emphasis on consumer welfare and price effects Ignores many economic realities	Government intervention should promote free trade, infrastructure development, and efficient local government
Neoclassical Growth Theory	Aggregate macro model or two-sector regional model	Increasing rate of economic growth per capita	Rate of saving that supports investment and capital formation	Supply-side model	Government should promote free trade and economic integration and allow market forces to resolve social and spatial inequality
Growth Pole Theory	Industries	Propulsive industry growth leads to positive structural change	Propulsive industries are the growth poles Diffuse growth via the domination effect	General theory of initiation and diffusion of development Difficult to apply	Government pursues strategies to promote growth centers
Regional Concentration and Diffusion Theories	Commodities and factors (Myrdal) Industries (Hirschman)	Higher income per capita	Spread and backwash effects (Myrdal) Trickle-down and polarization effects (Hirschman)	Theories address the dynamics of development	Coordinated investments and active government to mitigate backwash effects and reduce inequalities, growth through balanced investments (Myrdal) Strategic public investments to spur development, growth through unbalanced investments (Hirschman)

(*Continued*)

TABLE 2.1 (Continued)

Theory	*Basic Categories*	*Definition of development*	*Essential dynamic*	*Strengths and weaknesses*	*Applications*
Product Cycle Theory	Products: new, maturing, or standardized	Continual creation and diffusion of new products	New product development	Most applicable in large metro areas	Development strategies to promote new product creation and subsequent diffusion
Entrepreneurship Theories	Entrepreneurs The entrepreneurial function	Resilience and adaptability	Innovation process New combinations	Mediated theory	Support entrepreneurial ecosystem and innovation districts
Regional Innovation Theories	Actors, networks, institutions Knowledge bases	Continuous innovation Path development Evolutionary economic change	Interactive learning among actors within networks Changes in the nature of demand	Focus on rich and complex production dynamics among actors Innovation can underpin any industry, not just technology-intensive Reliance on typologies and taxonomies of regions and systems	Redress system failures limiting innovation, strengthen networks and institutions, modernize manufacturing, facilitate new development paths, develop clusters
Theories of Agglomeration	Regionally co-located firms, workers, and other economic actors	Import replacement leads to new types of work (Jacobs) Linked firms and industries enhance regional competitiveness (industrial clusters)	Geographic proximity generates benefits that improve economic performance	Broad framework underpinning other theories Direct empirical observation difficult Implications vary widely across definitions	Support and advertise agglomeration benefits Facilitate agglomeration benefits to support clusters, creative class, etc
Marxist Theory	Relations of production	Reduction of alienation	Human action through social classes	Thought-provoking but easily misapplied	Assess business influence in local governance

turn, stimulates local growth. The economic base multiplier transmits changes in output, income, and employment from the basic sector to the entire regional economy. The theory's major strengths are its popularity as a basis for understanding economic development in North America and its simplicity as a theory or tool for prediction. Its major weakness is its inadequacy for understanding economic development as a long-term process. Economic base theory strongly supports attracting industry through recruitment and place marketing.[10]

Staple theory

Staple theory begins with the category of exporting industrial sectors. It defines economic development as sustained growth over the long term. The essential dynamic is the external investment in and demand for the export staple that leads to the successful production and marketing of the export staple in world markets. The theory's major strengths are its historical relevance to North American economic development experience and its emphasis on understanding the region's economic history. Its major weakness is that it describes, more than explains, the development process. Staple theory provides a general strategy of development by recognizing the connections of the economic base to the political superstructure. Economic developers should continue to build on and improve the export staple as long as it remains competitive in the global economic system. Strengthening the existing specialization may be more sensible than attempting to diversify the economic base. Eventually, footloose economic activities will be attracted to the area if its market achieves sufficient size and offers agglomeration economies that can be exploited by other exporters.

Sector theory

Sector theory uses three aggregate sectors as its basic categories. The level of development depends on sectoral diversity, which emphasized a prominent tertiary sector, and labor productivity. The essential dynamic involves the income elasticity of demand and labor productivity in primary and secondary sectors: as incomes rise, the demand for income-elastic products grows and output increases, as labor released from primary and secondary sectors is employed in tertiary sectors. Although sector theory is attractive because it can be empirically applied and tested, the primary, secondary, and tertiary categories are far too aggregated to be very useful in practice. The overriding application is the need to attend to industries producing income-elastic commodities in order to achieve sustained growth as incomes rise.

Interregional trade theory

The basic categories of interregional trade theory are prices and quantities of commodities and factors of production, just as in microeconomics. Its implicit definition

of development is economic growth that leads to greater consumer welfare. The essential dynamic is the price mechanism (price-quantity effects) operating to eliminate price differentials and establish equilibrium prices (the terms of trade). The theory has two unique strengths. First, increased consumer welfare (aggregate consumption benefits), not job creation, is the goal of development. Second, the price/cost-based theory is very precise. Yet its precision is achieved with numerous restrictive assumptions that largely ignore realities such as transportation and technology diffusion costs.

Neoclassical growth theory

The basic categories of neoclassical growth theory are sectors or regions that comprise the macro economy. It identifies economic development as an increase in the rate of economic growth measured in terms of changes in output or income per capita. The theory has two essential dynamics: (1) in aggregate models, the rate of saving which supports investment and capital formation drives the growth process; (2) in regional models, factor prices, specifically the relative returns on investment and relative wage rates, stimulate factor flows that result in regional growth. Neoclassical growth theory suggests that economic developers respect the free market and do what is necessary to support the efficient allocation of resources and the operation of the price mechanism. The simplest growth models imply that economic developers are unnecessary, but formulations with greater complexity would support growth-enhancing development activities.

Economists use growth theory and trade theory to advocate less government intervention and freer international trade, more open regions and, generally, more competitive markets. The theories give strong support for local infrastructure development, improvement in government efficiency, and other measures that could increase local productivity and lower input costs for all producers. Local developers, on the other hand, often ignore the implications of growth and trade theory and support protectionist measures and growth strategies that impose costs on local consumers.

Growth pole theory

Growth pole theory treats industries as the basic units of analysis, which exist in an abstract economic space. Economic development is the structural change caused by the growth of new propulsive industries. Propulsive industries are the poles of growth, which represent the essential dynamic of the theory. These industries first initiate then diffuse development becoming the dominant economic actors. Growth pole theory attempts to be a general theory of the initiation and diffusion of development. Although insights drawn from the theory are useful, it has failed as a general theory of development. Growth center strategies are based on this theory. Also summarized in Table 2.1 are regional concentration and diffusion theories, which are broadly similar to growth pole theory.

Product cycle theory

Product cycle theory treats the developmental stage of the product as its basic category. Products are classified as new, mature, or standardized. At any point in time, the space economy can be divided into regions where new products tend to arise and regions devoted to the production of already established, standardized commodities. The essential dynamic of product cycle theory is new product development. From locations where new product innovation takes place, the product is eventually standardized and diffused to other locations in the space economy, stimulating economic growth and development in both types of location. However, the character of development is different in each. These differences help explain why levels of development vary from place to place and why differences can persist. The economic developer who wants to apply product cycle theory in its most literal form must try to identify and work with companies that can create new products. Alternatively, the developer may be able to mobilize the resources needed to improve the local business infrastructure in ways that would support new product development.

Entrepreneurship theories

Entrepreneurship theories identify entrepreneurs or, more precisely, the entrepreneurial function as the basic category of economic development. With this theory, development proceeds as changes in firms and industries result in more resilient and diverse local economies. The essential dynamic driving this development process is innovation. Innovation is conceptualized in different theories as new combinations, improvisation, or creative risk taking. To its credit, entrepreneurship theory is mediated theory, which means that people make development happen. This strength leads to the weakness that entrepreneurship theory is not easy to apply consistently. The most general application is to support an industrial environment favorable to entrepreneurs, which is called an entrepreneurial ecosystem.

Regional innovation theories

Regional innovation theories consider networks of firms and other actors influenced by institutions as their basic categories. These local-to-global networks and institutions shape the flow of codified and tacit knowledge among all actors. Development is a process of long-term evolutionary change realized along emergent paths achieved through innovation, resulting in qualitative changes in firm structures, regional industrial mix, clusters, the organization of local and global value chains, and sources of competitiveness (e.g., from least-cost or price-focused competition to that based on innovation, product differentiation, and niche marketing). The essential dynamics are interactive learning that occurs among actors functioning within networks and changes in the nature of demand that influence the adoption of more flexible production modes and forms of industrial organization.

Among the principal strengths of regional innovation theories are a focus on rich and complex production dynamics within firms, among firms, and among firms and other organizations and actors (universities, government labs, producer services, and labor), and the characterization of innovation as a general process that can underpin any industry, not just technology-intensive ones. A weakness shared by most regional innovation theories is a reliance on descriptive typologies and taxonomies of regions that make research implications difficult to apply. The applications are clear: reduce factors limiting innovation, strengthen interfirm networks and basic institutions, modernize manufacturing by encouraging the adoption of new technologies and practices, and support cluster-based development.

Theories of agglomeration

Agglomeration theories underscore the importance of spatial relationships, especially the co-location of firms, workers, and other economic actors. The definition of development varies. Jacobs emphasized the process of import replacement that leads to new products and new types of work. Cluster theory points to linkages among firms and industries that enhance regional competitiveness. Florida argued that the attraction of creative workers would subsequently attract new businesses. The essential dynamic that connect these different ideas is geographic proximity that generates benefits for households and firms and improves economic performance. The major strength is the broad framework that underpins other theories. The weaknesses pertain to difficulties in direct empirical observation of effects. In addition, the implications vary widely across different definitions and formulations. One obvious application is that economic developers should help specific groups enjoy the benefits of agglomeration. Relatedly, developers should support and advertise agglomeration benefits.

Other theories

Marxist theory discussed in the Appendix at the end of the book is included for comparative purposes.[11]

Summary

The theories discussed in this book describe the economic development process quite differently. Some are primarily concerned with the near-term expansion of the local economy. These are theories of economic growth. Economic base theory, neoclassical growth theory, and interregional trade theory are essentially economic growth theories. Other theories deal with evolutionary and structural change occurring over longer time horizons. These attempts to explain development as a long-term process may be treated as economic development theories. Staple theory, sector theory, growth pole theory, entrepreneurship, agglomeration, and innovation theories consider economic structure in detail, rather than focus on

one or two regional sectors, and focus on structural change occurring over the long term. Product cycle theory has one foot in each camp. As an extension of trade and location theory, it represents a contribution to growth theory. When used to examine new product development, organizational structure, and the technology of firms, product cycle theory becomes more like a development theory.[12]

Not surprisingly, no single theory explains the economic development process adequately. Theories draw different paradigms or schools of economic thought: classical, neoclassical, Keynesian, institutional, and Austrian. Each paradigm uses a different language; the rules of grammar as well as vocabulary are different. Because of these differences, we present each body of theory in its own terms rather than defining and criticizing concepts from a single point of view. This approach is consistent with the notion that no one theory or paradigm can be expected to help the practitioner understand every development situation or solve every development problem. Several theories taken together will usually offer more useful insights. This book, then, is written to help economic developers with two vital tasks: first, to understand the reality of local economic development more clearly in order to achieve greater material well-being in their community; and second, to understand the consciousness and interests of other actors thinking about economic development in order to win powerful supporters of the developer's program as well as communicate strategies effectively to other stakeholders. In the first instance, the developer gains insights about *what* to do; in the second, he or she begins to figure out *how* and *with whom* to do it. Embedded in every theory is a specific definition of economic development, implicit goals and strategies, and implications for the wealth and income of various actors.

APPENDIX 2.1

Key concepts explained

Power

Power is the ability to do work that enables you to get something accomplished. Power is exercised by using (1) money, (2) force, (3) persuasion, or (4) information. With money, people can buy what they want or hire other people to get what they want done. Force can be used legally by the state or illegally by individuals to further their ambitions. Obviously, people do certain things because they are threatened with the use of force. Persuasion is a gift some people have that gets others to help them accomplish their objectives. Historically, some individuals with great charisma have mobilized many people to work in their service for noble or evil ends.

These forms of power clearly have little to offer economic developers. Developers' access to money and the government's police power will depend on the organization and jurisdiction where they work. Charisma varies with personality. However, developers can use *information* in the form of sound ideas, facts, and knowledge, to accomplish development objectives. Although the weakest form of power, information can be used by practitioners to counter its misuse and distortion that has become prevalent.

Theory is the most powerful form of information, and developers can use it to increase their power. With theory, they will not only be better able to convince others to help them carry out their strategies but also have the ability to think independently and creatively about the local economy in the face of political pressures favoring particular development strategies. Of course, these advantages assume that the developer has an audience that is interested and able to listen. The greatest challenge developers now face is finding effective ways to reach their constituents who are overwhelmed with information, much of which has limited factual basis.

Theory

Contemplation and speculation are mental activities that help prepare us to get something done. Theory is a systematic form of thinking that sets forth propositions positing cause-effect relationships that can be placed on a continuum from hypothesis to law. Theory is usually distinguished from practice, which is action oriented, not reflective. Yet the more basic idea is that theory offers the underlying principles that explain the relationships we observe and thereby motivates and informs our actions.

The concepts of theory and power can be brought together by picturing people taking action, thereby exercising their power. They can use theory to guide their actions in two ways. First, theory as an abstract, static system of causes and effects can be treated as data or information that is given. Second, theory that people put to use in practice results in facts. The Latin roots of the words "data" and fact" make this distinction. Facts are made, usually the result of human action. In other words, facts are mediated by human agency and informed by theory.

Developers, like other professionals and businesspeople concerned with practical affairs, often scoff at theory as useless abstraction. Yet, to paraphrase Lord Keynes, such practical minds are usually preoccupied with the ideas espoused by some dead and largely discredited economist. Everyone operates with a theory or model of reality whether they recognize it or not (Boulding 1956).

Interests

Theory uses information to generate questions that lead to learning. Yet no theory or model of reality is politically neutral. People tend to accept theories that support their economic and political interests and ignore conflicting evidence. In other words, they are opportunistically informed and opportunistically ignorant. Will Rogers was said to have observed that the problem of ignorance is not caused by people who don't know anything. The problem is caused by "people who know things that just ain't so." Effective communication with ideologues is difficult because ideology provides all relevant answers and therefore raises no questions.

In a democratic, market-oriented society, economic developers have neither the authority nor the funding to dictate development strategies; they must rely on persuasion to accomplish their strategic objectives. As a result, development practitioners must listen to and understand the actors who have the responsibility to formulate and implement development strategies in order to communicate with them effectively and motivate them to support their program. Therefore, developers need to understand the theories and models used by these participants in the development process. To attain this understanding is one primary justification for studying theory.[13]

One convenient way to identify economic interests in development more broadly is to recognize the four general impacts that the development process has on different actors: price, quantity, income, and wealth effects. Theories that refer

to the economic growth process focus on income effects and quantity effects (such as changes in employment or output). Yet local actors often feel price and wealth effects more immediately and acutely. For example, consider the large discount retailer coming into an area that provides employment and earnings opportunities (quantity and income effects). Several local businesses are forced to lower their prices (price effects) and become less profitable. Landowners near the new retailer may realize capital gains on their property, whereas retail property owners in other parts of the community may experience capital losses (wealth effects). All such effects deserve attention if the costs and benefits of growth are to be understood in a comprehensive manner. In considering the applications of each theory, the developer should explicitly consider the relationship of the theory to local political and economic interests by outlining the likely price, quantity, income, and wealth effects.[14]

Mediation

We expect that the sun will rise in the east tomorrow morning. This predicted outcome is unmediated because it will happen without the involvement of people (without human agency). On the other hand, economic development outcomes are mediated because they cannot occur without human action; the activities of people are required to give life to these relationships. Unfortunately, economic development theories ignore human agency. They are deterministic, that is, cause-effect explanations of human behavior; otherwise, they would not be simple, concise, logical explanations of reality. In such abstract causal models, inanimate objects often appear to have human traits and abilities. For example, economists speak of "the market" as if it has a life of its own and the ability to do things. They ignore the human agency required for markets to function.[15] Therefore, the development practitioner must remember that all theoretical propositions are mediated by human agency, but this mediation is usually ignored in the interest of conciseness.[16] The full picture will remain somewhat obscure without "reading between the lines." Developers should use theory to understand reality in order to avoid the trap identified by Keynes. Developers, like other men and women of action, believe in their power to change future reality. They know that economic development does not just happen; people make development happen. To "develop," then, is a transitive, not an intransitive, verb (Arndt 1981). To overcome the apparent contradiction between trying to understand the world deterministically and exercising free will when trying to change it, developers must remember that earlier human activity has led to the facts they observe.

We turn to history to find accounts of human agency. Historical studies describe who did what, when, where, why, under which circumstances, and to what results. For example, historical accounts reveal the tremendous impact Robert Moses had on the growth and development of New York and its environs. Yet development theory when applied to New York effectively ignores his role for the sake of simplification and conciseness. Thus, historians are the researchers who document human agency with all of its messiness in their scholarly work. Historical analysis

is not theory, but it provides the indispensable background and context that leads to the wise and informed application of theory. Our understanding of economic development, then, is incomplete without both theoretical explanation and historical analysis. Local economic developers who have this perspective should be able to grasp the relationships between theory and practice in historical context.

Although we focus on theory and its application to practice, developers should remember the other three concepts when considering each theory presented in Part II. Power raises questions about how practical the theory is and how easily and usefully it can be applied. We expect developers to be drawn to theories that are both insightful and appropriate given the local context. Interests motivate the developer to gauge the benefits and costs of development and to identify the winners and losers from the perspective of each theory. Mediation requires careful study of the place's economic and political history as necessary preparation for any serious attempt to use theory to influence future development.

Discussion questions

1 Do you agree that everyone operates with a theory of reality?
2 Do you think it is important to understand interests in economic development?
3 Why is it necessary to supplement economic development theory with historical analysis?
4 At this point, how would you define economic development? What does your definition imply for both the process and practice of economic development?
5 Compare and contrast the definition of "economic development" you favor to the IEDC's definition.
6 How does the definition of "economic development" you favor address the following trade-offs?

   a Attracting or growing successful companies versus providing infrastructure useful to all companies.
   b Wealth creation for corporate shareholders/business owners versus benefits for local workers and community residents.
   c Stable and plentiful local employment versus increasing national productivity growth.

Notes

1 More formally, information on alternative locations for production facilities is imperfect. Developers help perfect the market by improving the quality of information used in investment decision making. They provide this information by marketing the locality and its sites. Economic development practice as a form of place marketing is well described by Kotler et al. (1993).
2 A more detailed version of this section is in Malizia (1994), whose revised definition of economic development states:

> [T]he on-going process of creating wealth in which producers deploy scarce human, financial, capital, physical and natural resources to produce goods and services that

> consumers want and are willing to pay for. The economic developer's role is to participate in the process of national wealth creation for the benefit of local consumers and producers by facilitating either the expansion of job opportunities and tax base or the efficient redeployment of local resources.
>
> *(p. 84)*

This critique and revised definition apply neoclassical economics. As noted, other definitions of development are drawn from other theories and paradigms. The definitions from theories covered in subsequent chapters are summarized in Table 2.1.

3 Agropolitan development, parallel economy, and basic needs approaches have been proposed to build self-reliance and are discussed more fully in Friedmann and Weaver (1979). This path requires that political and legal institutions regulate economic forces in order to protect people and the natural environment.

4 An excellent comparative treatment of the origins of capitalist development in various nation-states is in Moore (1993).

5 Flammang's ideas about development have much in common with Thorstein Veblen's. Both view technological progress as a common property resource that is used to increase the society's survival potential. This idea may be counterposed to Schumpeter's individualistic conception of the entrepreneur who leads the development process (Chapter 7). Veblen advanced a critique of capitalist development rooted in cultural and historical analysis of modern societies. He viewed economic progress as driven by "instincts" that were conditioned by culture: a desire to be productive (workmanship), responsibility for friends and family, and a concern for the next generation (parental bent), which respectively lead to regard for quality, community, and the future. With the rise of corporate enterprise, however, business (or commercial/finance) principles come to dominate industry (production) principles. Corporate financiers, absentee-owners and top managers gain power at the expense of engineers, technicians and lower managers. Salesmanship becomes more important than workmanship. As a result, productive capacity is not fully used, and prices and profits are increased at the expense of greater production at lower cost. Veblen's contributions as well as Myrdal's (Chapter 6) are used in an argument that challenges the convergence assumption in neoclassical theory. See Hall and Ludwig 2010.

6 The analogy of human growth and development is appropriate. We all grow, and eventually shrink, as we age. We also develop as we mature from infant to toddler, to youngster, to teenager, to adult, and to elder. These terms refer to qualitatively different developmental stages.

7 In a later article, Flammang (1990) skillfully contrasts growth to development with the idea of static efficiency (growth) versus dynamic efficiency (development). He argues that development "softens" economic and social structures, which leads to more flexibility, while growth "hardens" structures in order to realize efficiencies. For any local economy, growth involves decreasing internal differences, increasing structure, accumulating rewards, and expanding to fill existing opportunities. Development involves increasing internal differences, increasing flexibility, increasing adaptive capacity, and searching to find new opportunities, which respond to external change. These distinctions can also be applied to local companies that exemplify the following differences. A growing company concentrates resources on several promising product lines or services, organizes production to increase margins, and gains a greater share of existing markets. A developing company establishes new profit centers, decentralizes control, experiments with new business approaches, and pursues new markets or different marketing channels.

8 A long tradition of posing strong critiques of capitalist development exists in response to its deleterious environmental and social impacts (e.g., Kropotkin, Geddes, and Mumford). Economic theory has been reformulated in biological terms. For example, see Daly (1991). Concern for development that is "sustainable" has become more widely embraced and has prompted calls for a "post carbon" economy with growing recognition of climate change.

9 The two questions that concerned Polanyi are: (1) how did the free market become so dominant? and (2) how have people and governments responded to its dominance? The short-hand answer to both questions is presented in the epigraph of an article about Polanyi: laissez faire was planned; planning was not (Sternberg 1993). The self-regulating market remained dominant for about 100 years, rising to prominence from 1832, with repeal of the England's Elizabethan poor laws and passage of laws supporting the market, until 1870, and then declining until the repeal of the gold standard and the trade wars of the 1930s. In the early 19th century, national governments created the institutional framework to support laissez faire. The framework included the legal system to defend property rights and enforce contracts, the production of money and regulation of the money supply, the provision of necessary public goods, and so on.

Polanyi reviews the series of social reform movements that arose spontaneously to protest laissez faire and call for the protection of labor and land from the self-regulating market. His interpretation of capitalist development and the need for social intervention represents a middle ground, less extreme than Marxists who want to replace the market system yet much more interventionist than the defenders of laissez faire would tolerate.

10 Dynamic economic base theory, discussed in Chapter 3, is not treated as a distinct theory. Rather it can be considered as an extension of economic base theory that addresses structural change over time. In this sense, it combines the logic of economic base theory, stages theory, and sector theory.

11 Pike et al. (2017) devote Chapter 3 to the presentation of concepts and theories relevant to local and regional economic development. In laying out these divergent theories, they draw out their policy applications and limitations. They cover a much broader range of theories than those in Table 2.1. Their additions include the following: long-wave theory, regulation theory, institutionalism, sustainable development, and a set of critiques they call "post-developmentism."

12 Although the industry, occupation, enterprise, and product dimensions of regional economies are all relevant, development theories tend to introduce or emphasize just one or two of these categories. Growth theories emphasize industry mix, especially the leading export industries. Product cycle theory focuses on the product dimension, while entrepreneurship theories introduce the enterprise and company dimension. In general, growth theories tend to be more macro level and deterministic, while development theories are more micro level and mediated. Theories of innovation focus attention on the locality's economic ecosystem: its diversity and connectivity, as well as its business climate and quality of life.

13 Joan Robinson and John Eatwell relate theory to interests in an interesting way, which previews the discussion in Appendix at the end of this book:

> As we have seen, the Mercantilists were the champions of the overseas trader; the Physiocrats supported the landlords' interest; Adam Smith and Ricardo put their faith in the capitalist who makes profits in order to reinvest them and expand production. Marx turned their argument round to defend the workers. Now, Marshall came forward as the champion of the rentier—the owner of wealth who lends to the businessman and draws his income from interest on loans.
>
> *(1973, p. 39)*

By extension, John Maynard Keynes appreciated the consumer and government as major forces influencing the business cycle, while Joseph Schumpeter emphasized the power of the entrepreneur as producer. All theories have their champions, as we will demonstrate in Part II.

14 The connections between theory and the interests of various actors in the development process are discussed in Malizia (1985, pp. 35–36). The reader should make these connections with every theory presented in Part II. Each theory would impose different benefits and costs on local interests. Price, quantity, income, and wealth effects are likely to impact local interest groups differentially.

15 How many people do economists think are needed to change a light bulb? None; they expect that the market will do it.
16 It may be useful to practice the application of this admonishment here by analyzing the unmediated statement—costs increased, thereby causing prices to rise—and writing down the actions of workers, unions, suppliers, business executives, and influential groups (such as OPEC) that would be required to realize this simple causal statement. After sufficient practice, one will better understand that all of the causal relationships postulated by any particular theory are mediated. One can also see why the specific activities of economics actors are too cumbersome to be fully described in behavioral models.

PART II

Theories of economic growth and development

3

ECONOMIC BASE THEORY AND RELATED EXTENSIONS

Economic base (or export base) theory is widely used to understand local economic development in the United States and Canada. Its underlying premise, that the external demand for a region's products is the primary determinant of regional prosperity, is widely accepted. Learning economic base theory thoroughly should be a top priority for economic developers because this knowledge will facilitate better communication with economic development colleagues, political leaders, and others interested in promoting the regional economy. As a basis for understanding the regional economy, economic base theory offers useful insights. In the form of a quantitative comparative static model, it is the basis for economic impact analysis, which is used to make near-term predictions of economic growth or decline. For long-term analysis of economic development, economic base theory needs to be modified, because key export sectors and local economic structure change over time, often significantly. Dynamic economic base theory addresses this limitation to some extent (see section "Extension" of the chapter).

When applying economic base theory, the economic activities of a labor market or metropolitan area are divided into those that produce for the export market (termed *basic industries*) and those that produce for the local market (termed *non-basic, service or residentiary industries*). The two sectors are linked in two important ways. First, the basic sector directly purchases goods and services from the non-basic sector. Second, workers employed in the basic sector purchase food, clothing, shelter, public services, and other commodities from the non-basic sector. These two linkages give rise to *the multiplier effect*.

How does the economic base multiplier work? Demand for the region's exports generates sales that return income to the basic sector. Basic sector purchases provide income to the non-basic sector. Spending by basic sector workers also generates income to the non-basic sector. With this income, non-basic firms and non-basic workers engage in additional rounds of spending. These rounds of spending

generate the multiplier effect such that an initial increase in basic-industry income generates an even greater amount of total income for the area. In parallel fashion, a decrease in basic-industry income leads to a greater decrease in total area income.

Given multiplier effects, the economic developer's most important tasks are to recruit any promising export-oriented company (industrial recruitment) and to try to foster a suitable proportion of industries whose products are in heavy demand outside of the region. Thus, industrial recruitment which remains the most popular economic development strategy finds its rationale squarely in economic base theory because the attraction of promising manufacturing or service-export industries generates growth in non-basic or local-serving industries that naturally follows.

Economic base theory

Economic base theory was originally developed as a practical technique to evaluate the local economy for mortgage underwriting and was subsequently used by urban planners to predict metropolitan population growth.[1] Urban land use planners still use the economic base model to forecast growth that will require additional land and building space.

Economic base theory represents the simplest formulation of what may be called a Keynesian theory of regional income determination. It is a demand-driven model used to estimate metropolitan growth. As noted previously, the economic base model divides the regional economy into two sectors. The export sector includes all economic activities that produce commodities that are sold to nonlocal households, businesses, or governments. The non-basic sector includes all remaining economic activities that are assumed to produce for the local market.

In relation to North American Industrial Classification System (NAICS) codes, primary sectors (11 agriculture, forestry, fishing and hunting) and secondary sectors (21 mining, quarrying, and oil and gas extraction, and 31–33 manufacturing) are often assumed to be in the basic sector, while construction (23), utilities (22), and tertiary sectors (distribution, trade, and business and personal services—codes from 42 to 92) are non-basic. Making assignments to the proper sector can be refined by using more disaggregated industries or by relying on local expertise. (Appendix 3.1 describes various ways to define basic and non-basic industries and calibrate the economic base multiplier.)

The economic base multiplier model is measured in terms of employment, earnings, or output and may be written as follows:

$$b + r = n \tag{3.1}$$

where b, r, and n denote basic, non-basic (residentiary or local), and total regional economic activity, respectively. Non-basic economic activity is a function of total activity, where a is a parameter that must be estimated.

$$r = \mathrm{f}(n) = an \tag{3.2}$$

The multiplier is derived by substituting *an* for *r* in (3.1) and rearranging terms to get the following equation[2]:

$$\left(\frac{1}{1-a}\right)b = n \tag{3.3}$$

The term pre-multiplying *b* is the economic or export base multiplier; *a* denotes the average (and, in this case, also the marginal) propensity to spend locally. The model can be used to estimate the change in total regional employment, earnings, or output when demand for regional exports stimulates or depresses basic sector activity.

Thus, the economic base model provides a means of estimating the employment, earnings, or output multiplier effects of external changes in demand for the region's exports. The linkage between the basic and non-basic sectors is represented by the multiplier $(1-a)^{-1}$, which transmits changes in external demand for basic sector products or services to the entire regional economy. If we assume that the multiplier remains constant over time, estimated changes in the export sector alone generate projections of employment, earnings, or output. The IMPLAN (IMpact analysis for PLANning) model is a regional input-output model that extends economic base analysis from two sectors to many sectors. It is widely used to analyze the economic impacts of growth or decline. Appendix 3.2 shows the derivation of input-output multipliers used in the IMPLAN model.

Exclusive focus on external demand as the determinant of regional growth while ignoring internal demand is a weakness of economic base theory. The theory does not consider supply-side features of the regional economy, including its endowment of natural resources, the rate of capital investment, or the quality and quantity of the labor force. The theory also assumes that there are no significant production capacity constraints, and, therefore, local factor prices will not increase when demand increases. Excess capacity means that there are unemployed resources (capital, labor, and land) in the region or that these resources may easily be acquired from outside the region via labor migration or capital inflows.[3]

Due to its simplicity, economic base theory has been subjected to significant criticism, the most important of which is summarized in section "Elaboration and criticisms" of the chapter. Yet simplicity gives economic base theory its continued appeal. Its intuitive appeal is strong because it is difficult to imagine that output or employment in a region could grow over time if regional industries only traded with each other. The postulate that metropolitan growth in employment and output is determined by external demand for the region's exports yields clear implications for economic development practice.[4]

Applications

Industrial recruitment and promotional efforts by Chambers of Commerce and public utility allies are clearly aimed at expanding the region's basic sector. These economic development organizations have websites that contain great quantities of statistical and marketing information. They contact prospects regularly, host visits

of site-selection consultants and corporate officers, and facilitate the location of companies they attract. Thus, the recruitment strategy, which is supported by economic base theory, stands as one pillar of local practice. Economic base theory also provides a common language for local advocates of economic growth.

Industrial recruiters do not focus only on companies that would generate strong linkages and high multiplier effects. They have interest in any company that wants to make a sizable investment or locate many jobs. But they would not want to promote aggressive expansion of the non-basic sector. The size of the local market limits demand for the non-basic sector. Thus, attempts to grow the non-basic sector would probably result in business failures.

Although local economic developers cannot influence external demand for basic sector goods directly, they can try to expand the existing economic base in three ways. First, they can facilitate the expansion of export industries that are already part of the basic sector. Providing adequate space and infrastructure is especially important in this regard. Second, they can engage in industrial recruitment and promotion to diversify the export base. This requires careful assessment of the region's competitive position vis-á-vis other areas to target growth industries. Attractive industries would be those that offer forward or backward linkages (i.e., interindustry connections) and, therefore, generate high multipliers. Third, they can reduce the cost of doing business locally if they can convince local politicians to fund public facility and service improvements. Development practitioners can draw on economic base theory to support three other strategies.[5] First, developers can anticipate potential capacity constraints that would retard or delay growth. They could work to ensure adequate supplies of trained labor, industrial land and facilities, public infrastructure, affordable housing, and so forth. Second, developers should recognize that, due to interindustry linkages, all connected industries influence multiplier effects. Therefore, the most rapid rate of growth is not necessarily achieved by concentrating development efforts solely on the obvious exporters. Careful study of export companies and their linkages within the regional economy could open up other paths for stimulating growth. Third, strengthened linkages between industries in the basic sector and the non-basic sector would increase the multiplier by reducing leakages. This strategy is essentially one of import substitution.[6]

What impact do imports have on the multiplier? To the extent that local workers or suppliers purchase from non-local sources, the multiplier will decrease. Furthermore, some local exporters may not purchase inputs locally but rather import them in the first place. This situation is common in the wholesale/distribution sector engaged in transshipments. In these sectors, the only local input is labor. Other local firms, especially retailers, hire locally but otherwise import the goods they sell. These situations would lower multiplier effects.

Elaboration and criticisms

The economic base model can be used as a tool for near-term predictions of economic growth and for impact analysis as long as (1) the industrial composition of

the basic sector does not experience substantial change, (2) non-basic industries retain their competitive position in the local economy, and (3) the demand for export products is an important factor causing local change. The model has limited applications for long-term analysis of regional economic development precisely because these conditions are not likely to remain constant for very long.

Is the objective of economic development employment growth or increased consumer welfare? The economic base model clearly focuses on growth and assumes that increased consumer welfare will follow. Companies in the basic sector compete for market share. Therefore, they must remain competitive to survive. The situation in the non-basic sector is more complex. Since local consumers prefer inexpensive commodities regardless of source, local monopolies could burden them with higher cost or inferior products. Yet local monopolies may not be easily replaced. Although more competition in the non-basic sector should increase consumer welfare, excessive competition and business failures impose costs on the public due to the inefficient use of expensive infrastructure.[7]

Economic base theory can be used to anticipate the local interests that would favor growth or oppose it since growth benefits some members of the community and imposes costs on others. Firms in the local sector that enjoyed economies of scale (i.e., lower unit cost as production increased) would benefit. Owners and managers of these firms would tend to be growth boosters because bigger would be better for their returns. Such firms may well include local internet providers, other communications firms, electric/gas/water utilities, banks and other financial institutions, and possibly construction contractors and companies providing local business services. Furthermore, the value of urban land should increase as growth occurs. Thus, landowners, including farmers with property on the urban fringe, real estate firms, and other transaction-oriented firms whose commissions are tied to asset values, should expect to realize capital gains as values increase. On the other hand, growth could generate congestion, crime, higher tax rates, higher rents, or higher prices for local commodities. Local residents who experience these outcomes may well oppose continued growth. However, residents who got better jobs or earned more income would be less likely to oppose growth. Since economic base theory helps identify the expected costs and benefits of growth, it helps developers understand the pro- and anti-growth forces found in most U.S. localities.

Three more profound problems with economic base theory exist. First, economic developers should clearly understand the region's balance-of-trade position and its competitive position. But economic base theory tends to confuse two objectives: maintaining a favorable regional balance of trade (commodity exports being worth more than commodity imports) and supporting "critical" industries (those industries that are vulnerable to outside competition) that impact the region's competitive position.[8] Trade deals with all current flows entering or leaving the region. Competitive position reflects the ability of firms in the region to export their commodities. With regard to balance of trade, regions must export in order to bring in money to pay for needed imports; export base theory advises practitioners to focus on basic industries in order to ensure an adequate level of

export earnings. However, an emphasis on balance of trade should necessarily treat the import side of the ledger as well as the export side to be most effective. Developers may also focus on reducing imports, which requires attention to the fortunes of local-serving (non-basic) industries. Suddenly the priorities of economic base theory are not so clear: the developer must ensure the healthy growth of both the basic and the non-basic sectors, which together include every firm in the region!

Application of economic base theory should not be carried to this extreme, however, because of the critical-industries objective. Economic base theory puts proper emphasis on those industries, which, if lost, would constitute the greatest loss to the region. Moreover, through industrial recruitment, it identifies those industries, which, if gained, would constitute the greatest benefit to the region. However, this focus is too narrow because not every critical industry is in the basic sector.[9]

A second problem with economic base theory is the somewhat arbitrary division of the regional economy into basic and non-basic sectors. Although the issue is ultimately conceptual rather than empirical, clearly basic sectors often sell to the local market and non-basic sectors at times export. There are many related problems, including the lack of explicit regional export data, the use of employment or earnings instead of output information, and the financial and operational infeasibility of census surveys.[10] Ultimately, the difference between basic and non-basic activity is a function of the organization of industry and not the criteria identified in the theory. If a local exporting firm, for example, buys $200 worth of intermediate inputs from local suppliers, and then exports the product at a price of $500, only the value added to the product by the firm ($300) is considered an export. If the firm were fully vertically integrated, thus supplying its own inputs, the entire value added ($500) would be considered an export. In the first case, the input suppliers sold their product to a local industry. In the second case, they sold directly to the exporting industry, and no intermediate sales of any part of the product would be considered non-basic; here the basic-nonbasic distinction begins to lose its meaning.[11] The distinction becomes more problematic as the local economy under consideration becomes larger because the specialization and differentiation of the regional economy are likely to increase as the metropolitan area grows. In other words, the multiplier is sensitive to the size of the region. Moreover, by reducing the economy to two sectors, the two-sector model suppresses both interindustry relations and the multiplier effects of different export industries. Input-output analysis can overcome most of the difficulties. Indeed, given the greater availability of IMPLAN data at the county level, there is very little justification for using the simple economic base multiplier. See Appendix 3.2.

The third and related fundamental problem with economic base theory is that, by focusing on exports and the basic sector, the theory neglects the reality of the regional economy as an "integrated whole of mutually interdependent activities" (Blumenfeld 1955, p. 121). It ignores autonomous investment and the role of the non-basic sector in stimulating economic growth.[12] Since all export firms require local services to produce, all local services are basic, in this sense, and constitute

the foundation upon which further regional growth can take place. According to Blumenfeld:

> It is thus the secondary, non-basic industries, both business and personal services, as well as ancillary manufacturing, which constitute the real and lasting strength of the metropolitan economy. As long as they continue to function efficiently, the metropolis will always be able to substitute new export industries for any which may be destroyed by the vicissitudes of economic life.
>
> *(1955, p. 131)*

The true economic base of the region over the long term is comprised by the large size of the local market, the availability of skilled and talented labor, and the array of business services, including public infrastructure. It is business services and other "secondary" industries which, together with the availability of labor of all kinds, enable the metropolis to sustain, expand, and replace its "primary" industries. Local industries may be more permanent and stable than export industries. While the existence of a sufficient number of export industries is indispensable for the continued existence of the metropolis, each individual "export" industry is expendable and replaceable. Blumenfeld's arguments, which constitute a reversal of the causal direction of the original model, were picked up later by Wilbur Thompson (Chapter 10).[13]

The criticisms related to size of region and reversal of sectoral importance raise the relationship between specialization and size. The economic base model would appear to work best in smaller regions or "one horse" towns, where the division of labor is indeed severely restricted by small market size. External demand would surely enhance the prospects of local economic growth. At the other extreme, large metropolitan areas are inherently more diverse because of their ability to support multiple specializations. Export industries may well be less important than "secondary" industries. Although still smaller than the external market, the large local market offers a generous source of demand for local production.

Extensions

These criticisms and theoretical limitations can be partly addressed by introducing related theories that offer local economic developers additional insights. These theories present different ways to overcome the most limiting aspects of economic base theory, namely its near-term orientation, its exclusive emphasis on external demand, and its context of one open region interacting with an undifferentiated rest-of-the-world. First, *staple theory* extends economic base logic to address the historical evolution of an undeveloped region over the long term. Second, *sector theory* assumes a mature region that has attained sufficient size to make internal demand more important than external demand as a source of growth. Third, *dynamic economic base theory* focuses on the evolution of economic structure over the long term.

Staple theory

In his 1955 book, Douglas North uses export staple theory to examine the evolution of regions over time. His concern is to explain the causes and consequences of long-term secular change, as measured by regional product or per capita income, more than cyclical change.[14] He emphasizes the need to understand a region in terms of its evolving export specialization. According to North, although other sources of growth may exist, the export staple is usually the predominant source. Therefore, long-term growth is a function of the quantity and quality of productive factors, which are shaped by the export staple and, in turn, generate competitive staple exports.

North makes a twofold contribution in writing about economic development in the 1950s. He first explains and applies staple theory, which was originally formulated by Harold Innis (1920, 1933, 1940) as a model of the Canadian economy, and he cogently criticizes Hoover and Fisher's (1949) stages theory of development.[15] His application is most appropriate to the economic history of the United States or Canada, which contained undeveloped regions that never experienced feudalism.[16]

Staple theory addresses economic growth and structural change in the long term. The staple is an internationally marketable commodity generated by agriculture, forestry, fishing, or mining activities and processed in varying degrees by local manufacturing. North attempts to extend the staple concept to apply to a region's entire export base, but the theory works best when applied to export staples only rather than to the entire economic base. As Innis observed, the status of the export staple will determine and dominate the development of a region newly integrated into the larger market system.

To exploit an undeveloped region, capitalists determine what is exportable by gauging comparative advantage and transfer costs. Since demand is exogenous while costs are endogenous, government intervention is focused on reducing transfer costs and driving down production costs to help expand the market for the export staple. With the development of infrastructure and needed services, firms begin to benefit from external spatial economies (Chapter 9). Infrastructure investment, especially in transportation, is needed to improve the competitive position of developing regions. Research and development (R&D) is designed to improve the export staple's technology, thereby reducing costs and deferring diminishing returns. External economies grow up around the export base, specifically through trained labor, complementary industries, and business services, including credit and transport services that are oriented to the export sector. Capital coming to the region is invested in the established competitive advantage which reinforces the region's specialization. Therefore, the export staple shapes the entire character of the regional economy.[17]

North describes both the urbanization and the transportation effects of staple-led growth. Unlike the central place pattern that emerges in densely settled regions, where numerous market towns serve local markets, large cities arise in the newly developed region. For example, most major U.S. port cities have grown as physical

and commercial interruptions or breaks in transportation. Extensive transactions occur in these locations, spurring the growth of both financial services and legal services.

North posits that growth of the successful export staple will lead to related manufacturing growth. First, material-oriented industries (e.g., sugar refining) result in vertical integration (e.g., sugar canes or beets are processed crudely at first into sugar and molasses and subsequently into more sophisticated sugar products). Second, non-basic industries serve the growing local market. Third, industries arise to supply the staple-related manufacturing and primary sectors. Finally, footloose industries, although not directly tied to the export staple, are attracted to the region because of the growing size of its market. They can serve as an outlet for locally accumulated capital. Thus, industrialization occurs naturally, and government intervention is not necessary to spur local private investment. In the long term, growth gradually reduces differences among regions specialized in different staples. Over time, regional economic structures should become more similar.

Applications

Staple theory provides a general strategy of development by recognizing the connections between the economic base and the political superstructure. Economic developers should continue to build on and improve the export staple as long as it remains competitive in the larger economic system. Strengthening the existing specialization should be more sensible than attempting to diversify the economic base. Footloose economic activities will be attracted to the area when its market achieves sufficient size and offers urbanization economies that can be exploited by these new exporters.

Government intervention is rationalized as a means to improve the competitiveness of the export staple. Public investments in R&D, infrastructure, training, and so on are justified as long as they lead to lower staple production costs. The concern about greater diversity should be deferred until a strong industrial complex and the related infrastructure are created to support the staple export. Instead of engaging in generic business development strategies, economic developers should help government fulfill its traditional roles designed to support capitalist development. To sustain the export-staple industrial complex, government should provide public infrastructure, education and training, new scientific information, and other public goods that should increase the efficiency of local firms.

The theory is quite helpful in understanding the economic history of many port cities and other major cities in North America that grew by serving as physical and commercial interruptions in transportation for an expanding inland economy. Although this application is limited, staple theory is important and compelling in that it orients economic developers to the economic history of their regional economy. Developers should study and comprehend local economic history for three basic reasons. First, knowledge of economic history provides the grounding needed to apply appropriately and skillfully more abstract, ahistorical models of

economic growth. Second, this understanding will help them work more successfully within the constraints imposed by established local values, politics, and wealth. Third, this perspective raises the useful concept of path dependence. Each region's unique history limits to some extent its future possibilities. Economic developers may be able to learn from the experiences of regions that have similar pasts. On the other hand, they should avoid trying to imitate successful regions with different industrial legacies. Your regional economy is not likely to become the next version of Silicon Valley. Path dependence is further discussed in the following and in Chapter 10.

Sector theory

Sector theory argues that the relative share of production in each major sector will change in the region over time. Thus, sector theory presents a relatively simple and testable way to understand regional economic development. The economy is divided into three highly aggregated sectors: primary (agriculture, forestry, fisheries), secondary (manufacturing and mining), and tertiary (trade and services). The region becomes specialized sequentially in primary, then secondary, and then tertiary products due to two forces: differences in the income elasticity of demand for primary, secondary, and tertiary products and technological change that leads to productivity improvements in primary and secondary sectors more than in the tertiary sector. Economic base theory and staple theory emphasize external economic relationships. Their logic would argue that funds earned from trade are fundamental and necessary to bring about internal development. On the other hand, sector theory focuses on the internal structure of the economy. Internal development through specialization and division of labor paves the way for favorable external trading relationships. The structural relationships between the three sectors evolve as income per capita increases in the economy over time.[18]

Sector theory is attributed to Clark and Fisher, whose writings were published in the mid- 1930s and early 1940s. In *The Conditions of Economic Progress*, Clark (1940) observes that high levels of real income per capita are associated with high proportions of the labor force in tertiary industries. Fisher (1933), examining national economic structure, makes the same observation. They formulated sector theory to explain this empirical phenomenon. The economy is supposed to shift from "lower order" to "higher order" economic activities as economic growth proceeds. Based on their empirical research, Clark and Fisher expect shifts to occur from primary sectors through secondary sectors and on to tertiary sectors.

The income elasticity of demand for the products of different sectors drives the sectoral shifts in production. Increases in labor productivity support the changing sectoral allocation of the labor force. As per capita income increases, the demand for manufactured goods will exceed the demand for agricultural and other primary products. Subsequently, the demand for services continues to grow, and the service sector becomes the largest regional sector.

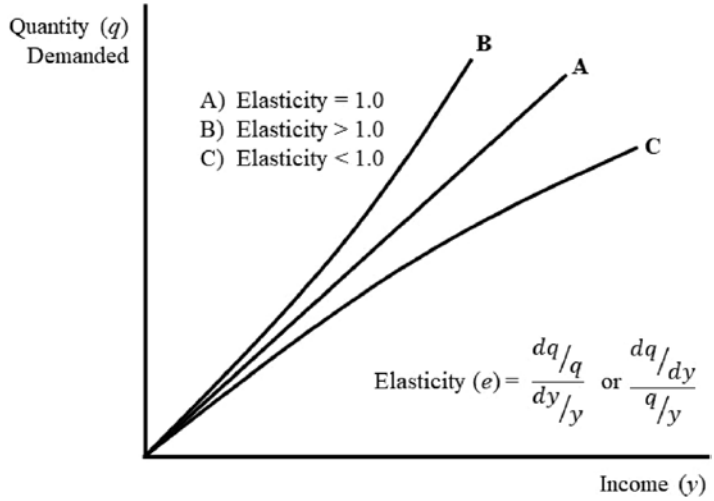


FIGURE 3.1 Income elasticity of demand: constant, increasing, decreasing

At the same time, growth-creating investment introduces better technology, which allows factor substitution. Generally, technological progress will be labor saving in the primary and secondary sectors. Primary sectors and mining industries are expected to experience diminishing returns, while manufacturing is expected to experience constant or increasing returns to scale. Production relationships encourage expansion of manufacturing relative to producers of primary products. Producers continue to introduce labor-saving technology in order to respond to shifts in demand. These productivity improvements are more likely to displace labor from primary and secondary sectors, making labor available to the tertiary sector. As a result, the share of total employment becomes lowest in primary sectors and highest in tertiary sectors.

Income elasticity of demand (compared to price elasticity, where change in quantity demanded results in change in price) relates the demand for a commodity to income, as shown in Figure 3.1. Except for inferior goods, the quantity demanded should increase with aggregate income. If the rate at which demand increases with income is constant, income elasticity equals one. Increasing and decreasing rates of change in demand refer to elasticities of greater than or less than one, respectively.[19] Figure 3.2 shows how income elasticity may affect the demand for commodities of each sector. Starting at the origin, the demand for agricultural goods peaks quickly then levels out; manufacturing goods increase in level but at a declining rate; services show an increasing level at a constant or increasing rate.

Although sector theory was sharply criticized by economists in the 1950s who were using developmental models that stressed external growth, it remains credible as an explanation of economic progress for several reasons.[20] First, it focuses the

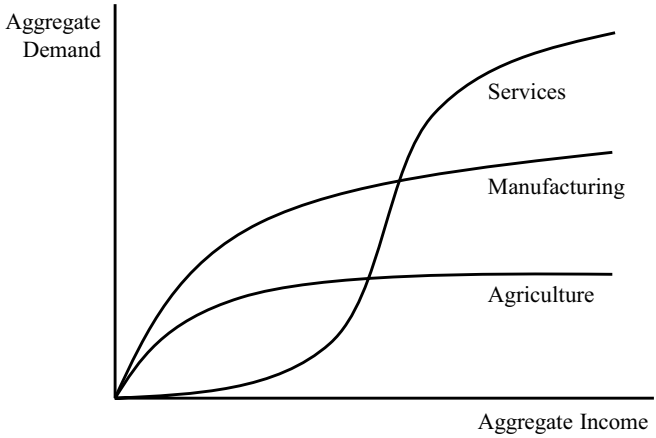


FIGURE 3.2 The effect of income elasticity on commodity demand

analysis on economic structure and structural change, not simply the income or production flows of an existing economic structure. Second, the theory deals with both demand and supply.

On the demand side, the sectoral hierarchy reflects the evolution of the regional economy. The primary sector is initially dominant because its products are necessities like food and shelter. As an economy becomes more efficient in the production of the basic goods needed to sustain life, surplus labor becomes available for other pursuits and is put to work in the secondary sector manufacturing goods. With innovation and productivity increases in the secondary sector, surplus labor again becomes available and moves to provide services for those employed in the primary and secondary sectors. As an economy evolves, employment is increasingly provided by the higher-order services. As a result, the service sector enhances the range of economic opportunities in the region. A large service sector can support more diverse economic activities and attract, retain, or improve manufacturing.

On the supply side, both Clark and Fisher see productivity gains to be the direct result of increased specialization. These gains are qualitative as well as quantitative. With increased specialization comes greater expertise, higher rates of innovation, and more creative uses of labor and capital. Internal structural development that occurs with greater specialization increases the number of activities that the economy can simultaneously support. The diversity of economic opportunities gives all members of society more choice to pursue the work for which they are most capable. The internal development of economic structure is a mark of the economy's growing sophistication (Fisher 1933). Sector theory, then, may be used for predictive and prescriptive purposes, if one is willing to assume that less developed economies will follow the path of more developed economies. The size of the tertiary sector is a crude indicator of the level of development, and the growth rate of the tertiary sector may be a dynamic indicator of development.[21]

Applications

Economic developers tend to consider export sector expansion and import substitution as attractive strategies to encourage economic growth. Sector theory reminds us that furthering the internal evolution of the local economy is an equally sound path to economic development. Internally focused development strategies can lead to progress over the long term; external development strategies may promise more rapid economic growth but also higher risk of failure and instability.

In today's economy, sector theory is too crude in its original three-sector form to be useful as a basis for understanding and encouraging economic development. The secondary and tertiary sectors are far too diverse to be treated as single categories. In particular, many new service industries have been created, and services are now consumed on a mass scale. New service industries range from information services to internet-based apps to new ways to sell and deliver products (e-commerce). The motivating forces behind service sector growth are as diverse as the new services themselves, such as productivity enhancements, outsourcing, esoteric consumer services for the wealthy, and so on. Because the spectrum of today's service sector is very broad, its specific role in shaping the internal structure of an economy varies from region to region.

One way to apply sector theory currently is to focus on its "essential dynamic" elements, namely the income elasticity of demand and productivity improvements (see Table 2.1). The local economic developers could conduct detailed analysis of the productivity trends in the major industries and the income elasticity of major products. Sectors with relatively high income elasticity should have more promising growth prospects, and thus assistance to these sectors may have better results. Sectors experiencing productivity improvements are likely to displace labor. The growing importance of artificial intelligence makes this analysis especially important. Anticipating the displacement of workers who have specific skills may help generate better retraining options for them.

Another application is to consider the importance of service-sector industries in the regional economy. Certainly, many metropolitan areas in the United States now count services as constituting the region's economic base. The most important are usually in business-oriented sectors. Based on NAICS codes, these sectors include information (51), finance and insurance (52), professional, scientific, and technical services (54), and higher-level services within the education (61) and health care (62) sectors.

These business services can be important, especially for newer businesses, because they can reduce overhead costs and allow greater flexibility. These services have grown rapidly, partly the result of information technology and outsourcing. Education, health, and state governmental services serve as anchor institutions and shape the essential character of university districts, medical centers, and state capitals.

The third and final application of sector theory is to examine all sectors in order to anticipate growth and decline of local industries and plan for ways to respond to expected change. Comprehensive scope requires detailed structural analysis of

the metropolitan economy. Input-output analysis is one vehicle for conducting this structural analysis.[22] For U.S. metropolitan areas with different industry mixes, aggregate income growth will have differential effects on local production since income elasticity stimulates some sectors more than others. Productivity gains will also depend on industry mix. The local labor freed for new activities may find new employment locally or may migrate to other areas.

The perspective of sector theory would support providing services to existing businesses and industries. These efforts typically include visits to important employers, assistance in dealing with government agencies, advocacy for public improvements that benefit existing companies, business appreciation days and awards, and many other services supportive of existing businesses. These activities are often justified on recruitment grounds; the existing industries in one locality are the recruitment targets of other areas. Thus, it makes sense to care for important local companies for fear of losing them.

In conclusion, sectoral analysis offers powerful insights about the relative prospects of existing industries. These insights would help local economic developers ration scarce resources in order to assist the most strategically important sectors. However, such applications are not very common; the productivity of local industries and the well-being of local consumers take a back seat in economic development practice to industrial recruitment and the expansion of exports.

Dynamic economic base theory

Economic base theory is an example of comparative static theory; we examine a local economy before and after the export sector generates more or fewer exports to assess the economic impacts. Like staple and sector theory, *dynamic* economic base theory considers the evolution of the economic base over the long term. It builds on the proposition that the dynamic, competitive global economy demands adaption and adoption to achieve successful economic outcomes at the regional level. The central proposition is that regional economies able to deepen their existing economic base or spawn new specializations will perform better than the ones that remain relatively stagnant.

Dynamic economic base theory calls attention to factors that generate local economic change. The most fundamental is human agency (people taking action). Entrepreneurs are important change agents, and their role is examined in Chapter 7. Also important are actions of existing company leaders, especially leaders of companies in the export sector. They may instigate forms of "intrapreneurship" that enable their company to evolve successfully through innovation. Such change may be based on opportunities afforded by new technology, new sources of demand, new communication channels, and so on. Localities may be blessed with nimble forward-looking business leaders or burdened by ones concerned only with earnings per share in the next quarter.

Another factor previously mentioned is path dependence. Often, economic success can be traced to an event at one point in time that initiated economic growth

and subsequent development. The dynamic becomes established and continues over time, leading to more and more successful economic outcomes (Moretti 2012; Storper 2013).

Dynamic economic base theory pertains to periods of 30 to 50 years. Over such time periods, change in the regional economy can be measured absolutely, relatively, or directly. Greater absolute change indicates more dynamism. Relative change introduces a reference region as the comparative standard. More relative change occurs when the locality's economic base deviates more from the overall average represented by the reference region's economic base. Although absolute and relative differentiation are useful indicators of dynamism, direct measures of structural change over time are even more informative. Direct, relative, and absolute measures of economic base are presented and applied in Appendix 3.3.

Applications

Industrial targeting is a very popular aspect of industrial recruitment. Industries become targeted typically because they pay relatively high wages, have minimal negative impacts on the environment, and are expected to grow nationally. Determinations of growth prospects are made at the national level, for example, by economists in the U.S. Department of Commerce who provide forecasts of industries and occupations. Local economic developers who understand the dynamics of their region's economic base should be able to use this information more effectively to anticipate and facilitate structural change.

A useful way to target critical regional sectors is to use location quotients to examine changes in export/traded sectors over time. Again, the analysis at the metropolitan level should use at least 30 years as the time frame. Conducting this analysis successfully requires solving two problems. First, Census Bureau definitions of metro areas change over time. Second, the change from the SIC (Standard Industrial Classification) system to NAICS (North American Industry Classification System) occurred around the year 2000, making it difficult to have consistent data from 1970 or 1980 to the year 2000 and beyond. The United States Bureau of Labor Statistics (BLS) provides information that shows how SICs were converted to NAICS. Woods & Poole is a good source that maintains consistent metropolitan-area definitions and consistent sectoral definitions. Their data for two-digit NAICS sectors are sufficiently detailed for the initial analysis.

To conduct the analysis, the first step is to calculate location quotients in order to identify export sectors. Ones with values over 1.20 for a recent year are very likely to be exporting. The next step is to repeat the calculations for an earlier year, say 1970 or 1980. Intervening years may also be examined. Earnings data are preferable to employment data since they reflect the quality of labor, not just the quantity.

Two criteria are relevant for evaluating changes in economic base: deepening and broadening. Deepening may arise from improvements in productivity, whereas broadening may reflect successful innovation. Deepening occurs when *individual* location quotients over 1.20 increase in value over time. The economic

base becomes shallower when the opposite occurs. Broadening is examined by considering *all* export sectors. When the number of sectors with high location quotients increases over time, the region's economic base has become broader. A decrease in the number of high location quotients over time reveals a narrowing of the economic base.

Local economic developers can use these results to guide practice. In regions where the economic base has deepened and/or broadened, the task is to find ways to sustain this positive momentum. In regions where the economic base has become shallower and/or narrower, the task is more formidable. The most feasible option may be to focus various forms of assistance to the remaining export sectors.

In conclusion, economic developers should not limit their theoretical insights about the local economy to those provided by economic base theory. Developers can gain much ground by mastering extensions of that theory. Staple theory demands attention to the historical evolution of local economic structure. Sector theory emphasizes internal economic relationships and potential development paths. Dynamic economic base analysis suggests that examining change in economic structure over many years can yield valuable insights about long-term change. Familiarization with all of these theories offers developers more tools to better understand their regional economy.

Discussion questions

Economic base theory

1 How would you gauge your local economy's competitive advantage from the perspective of economic base theory? From Blumenfeld's perspective?
2 Do you think your local economy has a favorable balance of trade (exports greater than imports)? Does its balance-of-trade position matter? How has it changed over time?
3 In which direction do regional (input-output or economic base) multipliers change when:

   a The region grows larger?
   b The regional economy becomes more interdependent?

4 Why is the economic base model potentially more accurate for understanding contractions rather than expansions?
5 Why is economic base theory more useful for analyzing economic growth than for understanding economic development?

Extensions of Economic Base Theory

1 Why would popular strategies to increase investment and employment attraction, creation, retention, and expansion (ACRE) not find support from the perspective of staple theory?

2 In general, which economic development strategies are recommended from the staple theory perspective?
3 List important insights that can be gained about your area from an understanding of its economic history.
4 Is the service sector diverse and sophisticated in your area? Will its development lead to increases in local economic growth and development?
5 Is your area dominated by one functional specialization or by many? How do you define and measure functional specialization?
6 Are important industries relatively independent or are they part of one or two industrial complexes?
7 How should you treat your metropolitan area's functional specialization? Is it a given such that the basic strategy is to compete successfully with comparable areas? Is the basic strategy to change/improve the existing functional specialization? If so, how?
8 How has the economic base of your economy changed over the past 30–50 years? What have been the major consequences of this evolution?
9 Is achieving more economic diversity an important economic development objective in your area? How can you pursue that goal given the existing functional specializations and industry mix?

APPENDIX 3.1

Calibration of economic base multipliers

In order to calculate the economic base multiplier, the regional economy must be divided into basic activity that serves the export market and non-basic activity that serves the local market. The fundamental problem facing the practitioner interested in conducting an economic base analysis, however, is the lack of available data on regional imports and exports. As a result, several relatively simple and inexpensive methods have been developed to estimate the multiplier. The most commonly used approaches are the assignment method, the use of location quotients, and the minimum requirements technique.[23]

The assumption or assignment method

The simplest way to subdivide the regional economy is to determine, simply on the basis of expert judgment, which sectors are basic and which ones are non-basic. In fact, few regional industries produce entirely for export (or to satisfy local demand). This difficulty either is assumed away with the hope that overestimates of export activity in some industries will be canceled out by underestimates of export activity in other industries, or with supplementary information from surveys used to determine the proportion of export activity in any industry. Although a survey of area employers would provide the best information, surveys are usually prohibitively expensive.[24]

The use of location quotients

One of the simplest and most commonly used methods of determining regional export activity involves the use of location quotients. A location quotient measures the proportion of employment, earnings, or output in one regional sector compared to that sector's proportion in a reference region, usually the nation.

Although any relevant measure of economic activity may be used to calculate location quotients, regional data constraints frequently make employment the variable of choice. The use of employment as a proxy for output requires acceptance of strict, and not particularly realistic, assumptions.[25] Earnings data are available and a better proxy for output since productivity is better reflected in earnings than employment.

With employment or earnings data, location quotients for each regional industry are calculated. If regional employment in one industry as a proportion of total regional employment is 0.2 and national employment in the same industry as a proportion of total national employment is 0.1, the location quotient for that industry will be 2 (0.2/0.1). When the proportion of regional employment in a given industry exceeds the proportion of employment in the same industry nationwide, the location quotient will exceed one. When this is the case, the regional economy is said to be more specialized in that industry than the nation as a whole. Likewise, when the location quotient is less than one, the regional economy is considered less specialized in the given industry than the nation. A location quotient equal to one indicates that the region and the nation are equally specialized in the study sector.

The basic premise underlying the use of the location quotient to calculate regional export activity by industry is that exports equal the amount by which any regional industry's share in total regional production exceeds that national industry's share in total national production. Similarly, it is assumed that the regional industry's proportion of regional production used to satisfy local demand is equivalent to that national industry's proportion for the nation. Any production level below this amount must be satisfied by imports. See Isserman (1980).

Consider a two-region, two-industry national economy as indicated in Table 3.1. Employment in industry *i* in region A represents 50 percent of total national employment in industry *i*. Total employment in the region represents only 37.5 percent of total national employment. Given these figures, what can be said about export employment in industry *i* in region A?

The location quotient approach to the determination of regional export employment rests on two critical assumptions (Isserman 1980, pp. 157–158). First, productivity per employee in industry *i* is equal in the region and the nation, and thus the region's share of national industry *i* employment indicates its share of output in industry *i*. Using this assumption in the above example, we conclude that region A produces one half of the nation's output of industry *i* (100/200 = .5).

TABLE 3.1 Two-region, two-industry national economy

	Region A Employment	*Region B Employment*	*National Employment*
Industry *i*	100	100	200
Industry *j*	500	900	1,400
Total	600	1,000	1,600

Second, if per-employee consumption of industry *i* output is the same in the region and the nation, then the region's share of total national employment represents its share of consumption (600/1,600 = 0.375). Given these assumptions, since region A produces exactly one half of national industry *i* output but consumes less than half of total national output, it cannot be consuming all of its industry *i* output. Carrying out the calculations, we find that 25 out of 100 industry *i* employees in region A produce for export, and the other 75 produce for local consumption, which is the same as the national proportion (75/600 = 200/1,600 = 0.125).

Two additional theoretical implications follow from the two primary assumptions. First, there is no *cross-hauling*: the region cannot import, for its own consumption, the same product that it exports. If cross-hauling does in fact occur, the method estimates net, rather than gross, exports. Although the underestimation of exports can be reduced by using highly disaggregated industrial data, the problem can never be eliminated completely.[26] Second, there are no net national exports or imports for either industry. Following the example in Table 3.1, region A satisfies its own demand for *i* while also exporting part of its output of *i* to region B. Likewise, region B is able to fully satisfy its internal demand for *j* while also exporting to region A.

The minimum requirements technique

The minimum requirements technique is also a popular method of estimating regional export activity (Ullman and Dacey 1960). The method is nearly identical with the location quotient approach except that the regional economy is compared to other similar sized regions rather than to the nation. Application of the technique involves three steps: (1) assembly of a sample of regions of comparable size; (2) for each industry *i*, identification of the region that has the minimum share of total regional employment in industry *i*; (3) estimation of regional export activity for each industry.

The minimum requirements approach assumes that all production of *i* in the minimum region is used entirely for local consumption. Then, consumption per employee in the study region from *local production* of *i* is assumed to be equivalent to consumption per employee in the minimum region (which we assume neither imports nor exports the products of industry *i*). The consumption term indicates that the study region is assumed to consume a regional output share identical to the minimum region's share of national *i* output, scaled by the relative size of the study and minimum regions.[27]

Other bifurcation techniques

The three methods of dividing the regional economy discussed earlier are the simplest and most common of a wide variety of alternative approaches. Isserman, for example, proposes using regional/national labor productivity and consumption ratios by industry, as well as the ratio of net national exports of industry *i* to national

output of *i*, in order to relax three of the assumptions underlying the location quotient approach (Isserman 1977). Richardson (1985) briefly reviews this method, as well as Norcliffe's (1983) consumption-based location quotient method, Moore's (1975) simple regression application of the minimum requirements technique, and the Mathur and Rosen's (1972, 1974, 1975) regression method. Finally, Stabler and St. Louis (1990) describe a means of using input-output analysis to classify regional economic activity. Their method also attempts to distinguish between direct and embodied exports.[28]

APPENDIX 3.2

Input-output multipliers

The rather arbitrary splitting of the economy into two sectors can be avoided by using an input-output model. With the availability of input-output multipliers through the widely used IMPLAN model, developers now have sectoral information and industry-specific multiplier estimates for states and metro areas. In addition, many empirical problems with economic base models can be overcome by substituting input-output models and using the latter for multiplier analysis and prediction. Billings (1969) and Garnick (1970) demonstrate the mathematical identity between the economic base multiplier and an aggregate (weighted) input-output multiplier when the final demand sectors of the input-output model are identical to the exogenous sectors of the economic base model.

Input-output equations are shown in the following in matrix form and are comparable to the economic base formulation shown in equations 3.1–3.3 in the text:

$$\mathbf{AX} + \mathbf{Y} = \mathbf{X} \quad (3.4)$$

$$\mathbf{Y} = \mathbf{X} - \mathbf{AX} \quad (3.5)$$

$$\mathbf{Y} = (\mathbf{I} - \mathbf{A})\,\mathbf{X} \quad (3.6)$$

$$(\mathbf{I} - \mathbf{A})^{-1}\,\mathbf{Y} = \mathbf{X} \quad (3.7)$$

where **I** is an identity matrix, **X** is a vector of total output, **Y** denotes a vector of final demand, **A** is a matrix of national technological coefficients or more usually trade coefficients in regional tables, **AX** is a matrix of intermediate demand, $(\mathbf{I} - \mathbf{A})$ is called the Leontief matrix, and $(\mathbf{I} - \mathbf{A})^{-1}$ is the matrix of interindustry multipliers and is called the Leontief inverse.

Equation (3.4) is an accounting identity which says that output used by industries to produce commodities in the current period (**AX**) plus output used by households, governments, and businesses as capital investment (**Y**) equals total output (**X**). Final demand (**Y**) includes sales to local entities as well as exports to

entities located outside of the region. The table of coefficients (**A**) shows the value of inputs from any industry needed to produce one dollar's worth of output from each industry. In national input-output tables, these interindustry coefficients are estimated to reflect the average technology in each industry. In other words, certain amounts of inputs from other industries, plus certain amounts of labor, are needed to produce industry outputs. In regional input-output tables, interindustry coefficients are usually estimated as trade coefficients. In other words, inputs from local industries per dollar of output are shown in the **A** matrix; imports, which are supplied by any nonlocal source, and labor are treated as separate inputs.

Equation (3.7) connects final demand (**Y**), premultiplied by the Leontief inverse matrix, to total output (**X**). The equation says that to satisfy final demand by industry (**Y**), the economy must produce a larger amount of total output (**X**). The interindustry multiplier effects contained in the Leontief inverse matrix determine the industry-specific ratios of total output to final demand.

The fact that the Leontief inverse contains multipliers can be grasped by recognizing that one can invert a matrix by solving a power series. In this case, the power series contains the unit amount of final demand (**I**) plus the first round of inputs needed to produce one unit of output for all industries (**A**), plus the second-round effects inputs needed to produce the first-round inputs (**A*****A**), plus the third-round inputs needed to satisfy second-round inputs (**A*****A*****A**), and so on. The consecutive rounds of inputs and outputs are represented by the sum of the power series and equal the multipliers for each industry.

In most input-output applications, the impact of changes in final demand is analyzed. Therefore, one can modify equation (3.7) to relate a change in **Y** to a change in **X**. The Leontief inverse matrix is not changed; as with the economic base multiplier, the interindustry multipliers are assumed to remain the same. With this input-output model, the economic developer can see changes in each industry that stem from a change in the final demand of one particular industry or ascertain the overall effects on output of projected changes in final demand. Thus, the input-output model can be used for both near-term forecasting and impact analysis.

APPENDIX 3.3

Measures of economic structure

Hirschman-Herfindahl Index (HHI)

$$\text{HHI} = \sum x_i^a$$

Where: $\sum$ = sum over all sectors
x = share of earnings for the region
i = one of 18 two-digit sectors
a = coefficient (usually 2—squared)

Note: the higher the coefficient value, the more weight given to sectors with a higher share of earnings.

Krugman Specialization Index (KSI)

$$\text{KSI} = \sum |x_i - X_i|$$

Where: $\sum$, x, and i are the same as above
X = average share of earnings in a sector for all metropolitan areas

Modified Lilien Index (MLI)

$$\text{MLI} = \sqrt{\left\{\sum W_i * \left[\ln\left(x_{i,t} / x_{i,\,t-1}\right) - \ln\left(X_{i,t} / X_{i,\,t-1}\right)\right]^2\right\}}$$

Where: $\sum$, x, and i are same as above
t = time period (e.g., 2020)
$t - 1$ = previous time period (e.g., 2010)
W = average share of total earnings for sector i in t and $t - 1$

To calculate the MLI: (1) compute the ratio of metro earnings in sector, *i*, in time, *t*, by earnings in that sector in time period, $t - 1$, and the ratio of total earnings for those two time periods; (2) take the natural log of each ratio; (3) for all i sectors, subtract the sector-specific log from the log for all sectors; (4) square this difference to eliminate negative values; (5) weight each difference by the average share of sector earnings for the two time periods; (6) sum over all sectors; and (7) take the square root of this sum.

These three indexes were examined in an empirical analysis of 102 metro areas in the continental United States. Almost all metropolitan areas with more than 500,000 population in 2010 were included as well as smaller ones to achieve better geographic representation. Dynamic economic base theory calls for examining changes in these indexes over time. In this illustrative analysis, HHI, KSI, and MLI were measured using sectoral earnings in ten-year intervals from 1970 to 2010. Earnings (in 2005 dollars) were considered superior to sectoral employment because using earnings mitigates sectoral differences in productivity to some extent. Changes in the indexes were associated with economic outcomes after 2010, namely household income levels and employment growth.

As the formula shows, the Hirschman-Herfindahl Index (HHI) is an *absolute* measure in that it calculates how unequal the distribution of earnings is in each metropolitan area without reference to any other place (Hirschman 1964). With 18 potentially tradable sectors, the HHI would have a value of 5.55 percent if all sectors generated the same level of earnings. In this context, more evenly distributed earnings indicate less organized economic activities; an economic structure with less organization has higher entropy. As earnings become more concentrated and the HHI increases, economic structure becomes more organized and deeper sectoral specializations evolve. Thus, metropolitan economies with higher ratios are considered more dynamic over time and are expected to experience better economic outcomes. HHI values for 2010 ranged from 7.60 to 31.18 for the 102 metropolitan areas.

The Krugman Specialization Index (KSI) is a *relative* index (Krugman 1991b), where the economic structure of each of the 102 metropolitan areas was compared to the economic structure of all 366 MSAs according to the 2009 Census Bureau definitions. The KSI is the sum of the absolute differences between the earnings share in each sector compared to the average share in that sector for all metropolitan areas. KSI values increase as the metropolitan area's economic structure diverges from the average of all metro areas, reflecting either more or less sectoral concentration of earnings. When KSI values in 2000 and in 1970 were similar, the differences between them indicate less divergence from the all-MSA norms. As the KSI values became more different, the divergence compared to all metropolitan areas had increased. Larger differences in two time periods indicate more dynamic economic structures compared to the average. Therefore, greater *absolute* differences between the KSIs indicated more relative structural change regardless of the direction of change. The KSI values for 2010 in the 102 metropolitan areas ranged from 15.21 to 88.22.

The third structural measure is the Lilien Index applied in its modified form (Ansari et al. 2013). For each metropolitan area, the Modified Lilien Index (MLI)

computes the absolute difference between change in earnings in one sector and earnings change in all sectors for some time-period. Unlike the HHI or KSI, the MLI *directly* measures structural change over time. Higher MLI values mean greater structural change for the time period and therefore more potential dynamism in the metropolitan economy.

Simple regression models were run associating these three indexes with change in employment from 2010 to 2016 and average household income in 2016 as dependent variables. The change measures for HHI, KSI, and MLI were the independent variables adding total employment in 2010 as a control for area size. The analysis indicated that the MLI was best able to "back-cast" outcomes beyond 2010. The HHI ratio performed somewhat better than the KSI. Although suggestive rather than definitive, these results illustrate that having a regional economy with a more dynamic economic base that continues to evolve over decades appears to result in better economic outcomes.

These empirical results have practical implications. In general, long-term strategies designed to facilitate change in a metropolitan area's economic base over many years are expected to have positive results and may turn out to be superior to near-term strategies. Furthermore, development strategies designed to deepen or broaden economic specializations should be more effective when applied consistently over time and coordinated across jurisdictions within the region.

Notes

1 Hoyt and Weimer (1939) developed the economic base model as a means of estimating the prospects of local economies. Their work was used to gauge the economic risk of purchasing residential mortgage loans from various markets in the period when secondary markets were being established in the United States.

In "Homer Hoyt on the Concept of the Economic Base" (1954), Hoyt outlines the microeconomic foundations of the theory. Since industries are subject to price competition, production costs in one metropolitan area compared to others will determine the future trends in basic employment. Furthermore, exports are needed in order to pay for imports. He notes that the base-service ratio will vary in one city over time as well as by city size and level of income. Later, in "Utility of the Economic Base Method in Calculating Urban Growth" (1961), Hoyt takes issue with Blumenfeld's (1955) critique. Regardless of other influences on growth, Hoyt argues that his empirical analysis suggests a "causal" relationship between growth of the economic base and overall growth. Therefore, urban planners can use the model to forecast employment and population growth:

> In short, it has not yet been demonstrated that an urban region can grow substantially in population by an increase in its non-basic industries only. It may reduce its reliance on imports by greater diversification, but a new impetus to growth must come primarily from basic employment.
>
> *(Hoyt 1961, p. 56)*

2 The derivation of (3.3) follows:

$$b = n - an = (1-a)n, \left(\frac{1}{1-a}\right)b = n.$$

The model can also be estimated using *changes* in employment, income, or output. In this instance, the multiplier estimates the marginal impacts and marginal propensity to spend locally rather than the average values.

3 Another way to state this is that supply is assumed perfectly elastic at fixed prices. Elasticity of supply describes the degree to which the quantity supplied of a given commodity increases or decreases with changes in its price. Perfect or near-perfect elasticity implies that producers are extremely responsive to small price changes; capacity constraints do not limit production and therefore do not lead to price increases.

4 Researchers have also examined economic base theory. See, for example, LeSage and Reed (1989, 1990) on the short- and long-run utility of the theory; an application of LeSage and Reed's methodology by Kraybill and Dorfman (1992); research on the derivation of multipliers in the presence of local income leakages (Frey 1989; Farness 1989); and work on an input-output-based methodology for classifying regional economic activity into basic and non-basic sectors (Stabler and St. Louis 1990).

5 The three strategies for export expansion described in this paragraph are illustrated in two issues of *Economic Development Review: The Journal for the Economic Development Practitioner*. The Winter 1991 and Summer 1996 issues focus on existing industry development; the Spring 1991 issue addresses the recruitment of investment. One article in the latter issue explicitly relates economic base theory to the targeting and recruitment of economic activity. See Miller et al. (1991) "Location Quotient: A Basic Tool for Economic Development." New business development in a rural context is considered in the Fall 1992 issue.

6 Import substitution can be developmental provided that the city is large enough to support enterprises at an efficient scale of operation. Import enhancement through product improvements is even more important as growth proceeds and the division of labor deepens (Jacobs 1984 and Chapter 9).

7 Because the theory focuses on one open region rather than on the larger system, the issue of constant-sum or zero-sum growth is ignored. Industrial recruitment efforts in a given community may increase basic employment at the expense of employment in other regions and cities. When plants relocate, there is the very real possibility that one community's gain is simply another's loss. The nation receives no aggregate benefit; hence the term "zero-sum" growth. Blumenfeld's (1955) concern for welfare as the focus of economic development deserves emphasis in this respect. The narrow pursuit of jobs puts developers squarely in the business camp concerned about sales. The welfare orientation keeps the focus on the well-being of local consumers.

8 See Blumenfeld (1955). Blumenfeld presents a readable description of the model and the most trenchant critique of its many weaknesses. The tenacity of economic base theory should be admired when one considers that his criticisms were published in 1955. He argues that the model works best when considering a small city with a clearly defined export sector and a totally dependent service sector.

Blumenfeld also notes the theory's physiocratic and the mercantile overtones. The former relate to the primacy of agriculture, mining, and manufacturing over other sectors and to the idea that all wealth originates in the basic sector. The mercantile overtones are more significant. Since economic base theory reduces wealth creation to the growth of export earnings, the important service-provision role of the city is trivialized. But, money is not the wealth of nations, as Adam Smith pointed out. Rather, the expansion of productive capacity that leads to greater competitiveness results in real national wealth. Mercantile thinking as reflected in the economic base model may be attractive to economic developers because it describes how a place can make money. The pro-business bias of the model becomes clear when considering its implications for consumer welfare.

9 Blumenfeld, in a somewhat apocalyptic example, illustrates the rationale: if General Motors closes shop at Flint, no efforts to promote the development of department stores will save the town. On the other hand, if a Flint department store closes down, but the General

Motors plant continues to operate as before, it will soon be replaced by other stores. Therefore, the thing to worry about, the "base" of the Flint economy, is the automobile industry; once that works, the "services" will take care of themselves (1955, p. 121).

The difference between the department store and the automobile plant is that the latter must compete with firms outside of the region and country, while the former competes only with those within the community. The definition of a "critical" industry, then, is not whether or not it exports but whether or not its area of potential competition extends beyond the region. Even if available bifurcation methods can accurately measure basic activities (see Appendix 3.1), a "criticality" approach to economic base theory suggests that efforts to refine these methods to measure export activity ever more precisely will result in little useful information regarding which industries may require assistance to ensure the continued presence in the community.

In a similar vein, Hoover and Giarratani argue that a region's export activities are not exclusively in the basic (export) sector as it is typically measured.

> It would be more appropriate to identify as basic activities those that are *interregionally footloose* (in the sense of not being tightly oriented to the local market). This definition would admit all activities engaging in any substantial amount of interregional trade, regardless of whether the region we are considering happens to be a net exporter or a net importer. Truly basic industries would be those for which regional location quotients are either much greater than 1 or much less than 1.
>
> *(1984, p. 319)*

10 The use of censuses is extremely rare. In 1937, *Fortune* magazine conducted an economic base analysis of Oskaloosa, Iowa (*Oskaloosa vs. the United States*, *Fortune*, April, pp. 54–62). The study involved a complete census of the city's population to determine the origin and destination of income flows and thus remains one of the most complete applications of the economic base concept to date.

11 This issue raises a simple practical difficulty: should some intermediate inputs, called indirect primary inputs by Blumenfeld (1955) and embodied exports by Tiebout (1962), be considered basic even though the exporting firm purchased them locally? Exporting firms purchase a variety of inputs, including water, police, fire protection, and labor. Indirect primary inputs could, logically, include the entire non-basic sector.

Tiebout provided important insights by forging connections between economic base theory and Keynesian theory. *The Community Economic Base Study*, published in 1962, remains one of the most theoretically complete and practically useful references in the field. In his critique, Tiebout notes weaknesses of the economic base concept: the multiplier is not constant, exports are not the sole source of growth, their importance declines with the region's size, and regions are poorly defined. Tiebout also argues that the comparative cost of region's production will depend partly on the efficiency of local industries. As a result, the rate of growth is neither strictly exogenous nor solely dependent on export base growth.

12 Hoover has also criticized economic base theory from the perspective of linkages—the connections between industries. Vertical linkages, which exist when one industry uses another's output, can be summarized with the help of the table of interindustry coefficients (see Appendix 3.2). Growth can be stimulated by backward linkages, connections that move from demand to supply back to suppliers of that supply, or by forward linkages, from resources that are turned into products that are then sold in the market. These linkages tend to become complementary. A new basic firm, therefore, can attract not only those businesses which supply it but also those which it supplies. Since local services offer important inputs to basic industries, the efficiency of the local sector is critical to export firms. As a result, the primary industry often becomes as dependent on the suppliers, as a group, as the suppliers are dependent on their primary customer.

Such linkages among firms located in close proximity result in cost savings, generating *external economies* or more precisely (external) *agglomeration economies*. Hoover argues that

the big city is the natural habitat of the small plant because it is most strongly dependent on the services of other plants. These service firms enable small firms to be narrowly specialized and presumably more efficient. Small plants concentrate in cities to experience external economies, which often depend on the availability of increasingly specialized auxiliary and service firms that, in turn, received their impetus from supplying some main (export) industry. Large metropolitan areas exist, survive, and grow because their business and consumer services enable them to substitute new "export" industries for any that decline or disappear.

13 Five less serious weaknesses beset economic base theory. First, the model ignores specific linkages to other areas by treating all areas outside the region as one undifferentiated rest-of-the-world sector. Second, since price effects are absent, the microeconomic forces influencing comparative costs are not addressed. Third, the model does not accord with the reality of regional development in the sense that fast growing regions would be expected to import rather than export capital (Richardson 1973). Fourth, the theory neglects the role of payments received for reasons other than the performance of work (e.g., transfer payments). Finally, while the basic-nonbasic ratio will not necessarily remain stable over time, the model has no means of explaining either the length of the period over which a given external change in demand is expected to influence local economic activity or the internal structural changes that occur as regions grow.

14 Tiebout (1956a, 1956b) criticizes North's argument. His criticisms reiterate the general criticisms of economic base theory, rather than directly address export staple theory. Therefore, Tiebout misses North's essential point, which is to explain growth as a long-term historical process. Tiebout is primarily concerned with near-term cyclical stability.

15 Hoover and Fisher (1949) present an idealized version of capitalist development based on the economic history of Western Europe. In their theory, sectors and stages interact. This growth model describes an economy moving through specializations from agriculture to manufacturing to services. Industrialization overcomes diminishing returns in agriculture and propels the economy forward.

Hoover and Fisher (1949) segment the development process into five distinct, sequential stages: (1) the self-sufficient subsistence economy based on agriculture, (2) local specialization based on trade and facilitated by transport improvements, (3) cash-crop farming, mining, and manufacturing to exploit opportunities in interregional trade, (4) 'forced' industrialization as regional population increases and agriculture reaches diminishing returns, and (5) development of exporting tertiary sectors which involves outflows of capital and skilled personnel. As population increases and transportation and communications improve, division of labor based on comparative advantage leads to increasing specialization and trade. One unique feature of this model is its attention to the space economy. Hoover and Fisher are regional economists who think through the spatial structure implications of various economic stages.

North (1955) begins his article with a broadly based critique of the Hoover-Fisher model of development, which he portrays as a descriptive theory that lacks explicit causal mechanisms. First, the Hoover-Fisher theory is not general; it applies only to parts of Western Europe. Undeveloped regions with low population and no feudal institutions are fundamentally different than populated, feudal economies. In the United States and in Canada, long-distance trade in world markets was the sustained stimulus for growth, much more than opportunities for local trade. Second, regions need not industrialize to progress. Progress depends on the export staple and on capital flows that seek their highest reward. Hoover and Fisher incorrectly suggest the need to force industrialization or to balance economic growth.

16 Before 1800, regions in the United States and Canada were undeveloped where land and natural resources were available for capitalist development. No established economies existed at high densities. Underdeveloped regions, such as colonial territories, contained well-established societies before capitalist development was initiated. Neoclassical

economists argue that underdevelopment results from the imperfect and partial introduction of capitalism in such areas. Neo-Marxists argue that underdevelopment is the direct result of capitalist development.

17 North notes that high income elasticity of demand for the staple can lead to rather violent cyclical fluctuations. In contrast, sector theory advocates pursuing sectors with high income elasticity in order to maximize growth. North stresses the risk side, while sector theory, presented next, emphasizes the reward.

18 Development occurs when internal changes in the economy lead to increased specialization. Perloff states that "sector theory focuses on internal rather than external development; economic growth is seen as primarily an internal evolution of specialization and division of labor, although external shifts in demand are not ruled out as of no importance" (1960, p. 59).

19 We express these elasticities as derivatives in Figure 3.1 because we include only two variables: quantity demanded and income. If we introduce prices, which also influence the quantity demanded, we would express the income elasticities as partial derivatives.

20 On the negative side, one could make four points. First, both Clark's (1940) and Fisher's (1933) explanation is based on the apparent relationship between service sector size and the wealth of more developed countries. This relationship may be one effect of development rather than its cause. Second, the division of economic activity into three highly aggregated sectors begs the question of what is going on within these sectors. Bauer and Yamey (1951), for example, referring to less developed economies, question the hierarchical organization of the three sectors. They note that many impoverished nations have a large percentage of the labor force involved in service sector distribution activities. This employment is largely a result of the failure of secondary sector growth. Service sector growth may occur when women enter the labor force at higher participation rates. Services formerly provided within households—child care, cooking, and cleaning, for example—may now have to be provided in the informal sector. More paid employment may not result in higher levels of well-being. Third, sectoral classification is difficult. Classifications based on returns to scale may be reasonable, but income elasticities for any sector are not constant over time or space. Elasticities can vary from region to region and from year to year. Finally, sector theory takes nation-states as units of analysis. The theory must be modified to explain the evolution of metropolitan areas. It becomes more applicable as the area becomes more self-sufficient and closed.

21 Miernyk's (1977) empirical study suggests the limited utility of the three-sector model. He tests the relationship between economic structure and the growth of per capita income with data for Southern states in 1940 and 1975. He finds no correlation between relative income level and manufacturing employment.

Miernyk's study is limited for two reasons. The theory refers to longitudinal changes in nodal regions; Miernyk looks at states in cross-section. He uses employment data, which measures the quantity of one input, rather than the value of sectoral output. Productivity gains within sectors may increase the aggregate value of labor, although the number employed may decrease or remain the same. Employment growth may reflect the substitution of cheap labor for another input rather than aggregate growth.

22 Structural input-output analysis can suggest ways to encourage interindustry linkages based on technology or spatial proximity and support the strategy of building industrial complexes. Input-output has also been used by large corporations and national governments as a powerful economic planning tool.

23 Interested readers should consult Isserman (1980), who provides an excellent and more detailed discussion of the theoretical foundation of each technique than we provide here.

24 Of course, the utility of surveys depends on their level of accuracy as well as their ability to obtain all of the information necessary to calculate the economic base. The economic base of many regions will consist partially of output consumed within the region by nonresidents; surveys of firms cannot measure this element of the base since retailers do not generally know the place of residence of their customers. Farness (1989) also

discusses the reliability of indirect bifurcation techniques when local output is consumed by residents spending externally derived funds.

25 Note that the use of employment data poses a number of conceptual problems. Employment data place equal weight on part-time and full-time employment, cannot distinguish between productivity and wage differences across workers in different industries, and do not account for the role of unearned income, including transfer payments, rents, interest payments, and profits (Krikelas 1992).

26 Isserman (1980) shows the greatest improvements in estimates of export activity from using disaggregated data come from the shift from division to two-digit level SIC data. More modest improvements occur as more detailed three- and four-digit data are used.

27 In Ullman and Dacey's (1960) original discussion of the method, their intended treatment of the regional consumption term was sufficiently ambiguous to generate what in retrospect appears to have been unwarranted criticism. In particular, Pratt (1968) showed that if the consumption term represented a region's total consumption of good *i*, then every region except the minimum must export, while the minimum is assumed to fully satisfy its own internal demand. Therefore, the nation must have net exports. In a subsequent publication, however, Ullman et al. (1969) made clear that the consumption term is an estimate of regional consumption from its own production; there can be regional imports, exports, and cross hauling. See Isserman (1980) for a more complete discussion of this debate.

28 As noted in section "Elaboration and criticisms" of this chapter, embodied exports are intermediate products embodied in direct exports.

4

TRADE THEORY

Understanding trade and its benefits and ramifications for market economies is imperative for local developers and development officials. Major trends in the international economic environment since World War II, including falling transportation and communication costs and reduced tariff and non-tariff barriers, have led to continued increases in the volume of trade between nation-states. Trade among developing nations, for example, more than tripled in the period 1980–2011.[1] Between 1970 and 2015, the average annual real rate of growth in world exports significantly exceeded the rate of growth in world output at 5.1 percent versus 3.1 percent.[2] In 1970, world exports stood at $2.4 trillion compared with over $23 trillion in 2016 (both figures in constant 2010 dollars). The United States typically exports a relatively modest 13 percent of its GDP, a share considerably below that of other industrialized countries. However, the sheer size of the U.S. economy means that it still accounts for roughly 9.1 percent of total world exports and 13.9 percent of total world imports, according to the World Trade Organization.[3]

Globalization and international trade are clearly important aspects of the national and regional economic picture in the United States and Canada.[4] Moreover, the emphasis on export promotion in the pantheon of state and local economic development strategies demonstrates the importance of trade to local economic developers (Erickson 1992). It is not surprising that trade has captured the attention of city and state officials. The reduction of trade barriers through bilateral and multilateral agreements, advances in information technology, and the subsequent steady increase in international economic linkages have led some analysts to assert that cities and regions—not nation-states—are the relevant geographical economic units on the world stage (e.g., Porter 1990; Hayward 1995).

In his book *The End of the Nation State*, Kenichi Ohmae (1995) presents the following argument. The global economy has undergone a transition from an industrial age to an information age such that the need for, and effectiveness of,

mechanisms of centralized government control are being reduced. Through the new systems of communication and information transfer, multinational companies already regularly (and legally) subvert attempts to regulate and channel their activities to the benefit of their home countries. In the information age, the major players will not and should not be nations but instead dynamic regional economies, many of which span national borders (e.g., San Diego-Tijuana and Seattle-Vancouver). National governments should abandon traditional redistributive programs and industrial policies that favor specific industries and prop up declining rural areas. In the process, they should

> cede meaningful operational autonomy to the wealth-generating region states that lie within or across their borders, to catalyze the efforts of those region states to seek out global solutions, and to harness their distinctive ability to put global logic first and to function as ports of entry to the global economy.
>
> *(p. 142)*

While not beyond dispute, Ohmae's ideas highlight the global-local dynamic that characterizes important work on international trade and its geographic implications (Moss Kanter 1995).

Trade theory constitutes a diverse body of work that attempts to provide answers to four fundamental questions regarding cross-border economic transactions (Krugman 1990). Why do countries or regions engage in trade? What determines the international (and interregional) pattern of specialization? What are the effects of protectionist measures? What is the optimal trade policy? Neoclassical theories of comparative advantage and factor proportions still constitute the fundamental core of trade theory. However, other work examines trade in the context of increasing returns and imperfect competition. Unlike traditional theory, which makes a strong case in favor of free trade and minimal government interference, the "new trade theory" suggests that a degree of managed trade can generate gains in some cases. Indeed, models of trade in a world of increasing returns can yield results strikingly consistent with those of the cumulative causation theorists. (Endogenous growth ideas are discussed in chapters 5 and 6.) They suggest that some nations or regions may be left permanently behind without some intervention to stem their decline. Even so, most neoclassical economists remain pessimistic about the likely effectiveness of government attempts to influence trade given the complexity of the international economic environment. Paul Krugman (1996) describes new trade theorists as "cautious non-activists" willing to do research on strategic trade policy but reluctant to propose action (p. 110).

In this chapter, we outline the basic principles of trade, including comparative advantage, factor proportions theory, and trade with increasing returns first in the international case and then in the regional case. The interregional and international cases are quite different because key assumptions underlying international trade theory do not hold in the regional case. For example, the degree of mobility of labor and capital is typically much stronger between regions of the same country

than across national borders. Moreover, state and local governments do not have at their disposal many of the policy levers used to manage international trade, including tariffs, quantity restrictions, and currency revaluations.

Trade theory, like economic base and other theories covered in subsequent chapters, provides a means of understanding regional specialization as well as the equilibrating (or non-equilibrating) tendencies of factor migration. Since trade takes place between subnational units (states, counties, metropolitan areas) as well as between those units and other countries, local developers and development officials must understand trade theory in different contexts to form a more complete picture of their economy's position vis-á-vis both the national and the global economy.

Overview

The first question trade theory attempts to answer is why countries engage in trade. What do they gain from trade that they would lose if they simply attempted to produce all of the commodities they require internally? Perhaps this question presupposes too much. If countries engage in trade, can we necessarily assume that they benefit from it? Such an assumption ignores the fact that countries are comprised of consumers and producers that make economic decisions based on their own individual preferences. It is not necessarily true that the nation as a whole will be better off just because some individual firms and consumers benefit from the import of some products and the export of others. Greater aggregate welfare might be achieved without trade (autarky), or at least with some restrictions on free trade. Arguments in favor of tariffs and other barriers to trade often take this position.

Given a set of reasonably plausible assumptions, it is the principle of comparative advantage that firmly establishes the benefits associated with international trade. In the early 19th century, David Ricardo was the first political economist to outline comparative advantage in a rigorous manner. Factor proportions theory, which emerged in the 1930s, explains both the causes and consequences of comparative advantage. Together these concepts remain the central tenets of international trade theory.

Ricardian trade theory

Prior to Ricardo, the basis for trade was unclear. Adam Smith had argued that countries engage in trade only when each of the partners has an *absolute advantage* in the production of at least one good. A country has an absolute cost advantage in a particular commodity when it can produce it at lower cost than any other country. It is this conception of trade based on absolute advantage that is invoked by many critics of open trade policies that pit U.S. companies against competitors overseas that enjoy, say, dramatically lower labor costs.[5]

Smith argued that international trade may provide a nation's industries with sufficient demand to fully exploit the efficiencies associated with larger size of plant and equipment. For a firm to grow and reap internal economies of scale, consumers

must purchase large quantities of goods. International markets can provide these consumers when national markets are limited. By leading countries to specialize in those goods they make at lowest cost, trade promotes an efficient international division of labor. Actually, new trade theorists have taken up this line of reasoning using more modern analytical tools.

Ricardo's analysis overcame confusion about the question of whether nations would engage in trade even if one country has an absolute cost advantage in the production of *all* tradable goods and services. When outlining his theory, he made a number of assumptions: (1) transporting goods between countries is costless; (2) no artificial barriers to trade exist (e.g., government quotas or tariffs); (3) labor is homogenous of comparable skill per unit; (4) the market is characterized by perfect competition (e.g., there are no increasing returns); (5) production technologies are identical in each country; and (6) labor, the only factor of production he considered, is immobile between countries. The labor mobility assumption is critical. If workers (and, in multifactor models, other factors of production) can freely move wherever they choose, all production would take place in the lowest cost country. Ricardo assumed labor is mobile within countries but not between them.

Employing the classical labor theory of value, where all production costs (or the value of goods) can ultimately be reduced to units of homogenous labor, Ricardo showed that even if one country has an absolute cost advantage in the production of all goods, it may still engage in trade with other nations due to differences in relative internal economic capabilities. This is a powerful and arguably non-intuitive finding because it suggests that a firm in a given country may still find an international market for its goods even if it produces at a higher absolute cost than similar firms overseas. A country has a comparative advantage for the purposes of trade in those commodities that its industry produces most cost-effectively relative to other commodities (see the example in Appendix 4.1, which also discusses prices and currency exchange rates).

Nations and the regions within them have limited resources (natural resources, workers, capital stock), at least in the short run. In an economy operating at its highest potential rate of output, each good that is produced means some other good cannot be produced. Otherwise, where could the necessary workers be found? There is an opportunity cost associated with specializing in particular goods and industries. For example, if you choose to produce *more* automobiles, it means you have chosen to produce *less* of something else. Given two countries (say, the United States and Mexico) and two goods (computers and apparel), assume the United States is able to produce one computer by reducing its production of apparel by two dozen units, while Mexico must reduce apparel output by three dozen to produce one computer. The United States, in this hypothetical case, produces computers at a lower relative cost. However, there is a flip-side. Mexico is more efficient in the production of apparel since by making one less computer, it can make three dozen apparel units as compared to two dozen in the United States. The comparative advantage in the United States is computers and is apparel in Mexico. Both countries benefit if the United States ships computers to Mexico in return for apparel,

that is, if they engage in trade.[6] In fact, in this simple model, the maximum benefits are achieved if the United States specializes entirely in computer production, while Mexico produces only apparel.[7]

Factor proportions theory

Why would one country be able to produce a given good at a lower relative cost than another country? Ricardo's explanation is simply that labor is less productive in some countries than others. (Remember that labor is the only factor of production in the Ricardian theory.) But, then, what determines differences in labor productivity? *Factor proportions theory*, developed initially by Eli Heckscher (1919) and Bertil Ohlin (1933) and further refined by Paul Samuelson (1948), postulates a more sophisticated framework for understanding the causes of comparative advantage. Factor proportions theory essentially states that countries trade because they "are different," in terms of their endowments of the equipment, materials, personnel, and expertise that go in to producing goods (Krugman 1990). Countries like Canada that have more land relative to workers will find their comparative advantage in land-intensive goods, such as wheat. Countries like Mexico that have more low-skilled workers relative to high-skilled workers will export lower-technology products such as apparel. Countries well-endowed in capital and skilled workers like the United States or Germany will find their comparative advantage in goods like electronics, computers, and laboratory instruments.

Given a set of restrictive assumptions, factor proportions theory also demonstrates that international trade will tend to equalize factor and commodity prices between regions even in the absence of factor migration. Samuelson (1948) provided the seminal exposition of this result, termed the *factor price equalization theorem*, which states that under factor proportions theory, differences in the relative costs of production of goods across countries are due to differences in the relative scarcity (and therefore price) of factors. We can imagine, however, that once trade ensues (on the basis of those differences), factor prices across trading partners will eventually converge. In other words, although factor prices in the absence of trade first establish the basis for trade, they are not likely to remain stable once trade ensues.

Consider the United States and Mexico again, which, in our hypothetical example, engage in the trade of capital-intensive computers from the United States and labor-intensive Mexican apparel consistent with the comparative advantage each enjoys. In order to satisfy the U.S. demand for imported apparel, Mexico gradually transfers resources from its own home computer industry to specialize in apparel. Since computer production is capital-intensive, relatively more capital than labor is released for use in apparel production, which makes capital relatively easier to secure. At the same time, it becomes harder to find workers in Mexico as the apparel industry grows, so each worker can command a higher wage. The limited quantity of capital needed by apparel manufacturers stimulates a decrease in the price of the scarce factor, capital, and an increase in the price of the labor.

The opposite process occurs in the United States. Resources are shifted from the apparel to the computers industry as the United States specializes in its export good. Then, the price of the relatively scarce factor, labor, decreases because labor is being released from apparel production. The subsequent increase in the labor supply brings down the wage in the computer industry (former apparel workers are now seeking jobs making computers). Note that these processes change the distribution of income between labor and capital. The introduction of trade creates both winners and losers. Factor proportions theory holds that free trade leads to an *overall* increase in welfare, where the gains to the winners outweigh the losses to the losers.[8] Eventually, if we assume that industries produce with constant returns to scale, the price of capital and the wage rate will converge to equality between the United States and Mexico.

New trade theory

The assumptions made by Heckscher, Ohlin, and Samuelson are highly restrictive, and, therefore, the theory's predictions are open to question. The assumptions follow. First, two factors of production, capital and labor, exist, both of which are mobile between industries but immobile between regions. This important interregional immobility assumption means that while the price of each factor must be identical in each industry within a region, they may differ between regions. Second, factor and commodity markets are characterized by perfect competition, where no trade barriers exist and transport costs are negligible. Third, the technological methods of production (production functions) for each industry are identical across regions so that, when faced with the same factor prices, industries in each region will select the same combination of capital and labor (or identical capital-labor ratios). Production functions are also assumed to exhibit constant returns to scale, which rules out possible agglomeration economies (Chapter 9). Finally, computer production is capital-intensive (relative to apparel), while apparel production is labor-intensive (relative to computers), at all possible sets of factor prices. This assumption of *strong factor intensity* is critical to the unambiguous results generated from the model. Capital-intensive commodities could become labor-intensive once the ratio capital to labor prices becomes very high. This means that some commodities could be produced using a labor-intensive process in labor-rich regions and capital-intensive process in capital-rich regions. Given this situation, the Heckscher-Ohlin theorem would predict no distinct pattern of trade (Armstrong and Taylor 1985).

The new trade theory introduces another explanation for why countries (and regions) trade: because there are economies of scale in specialization. For some goods, say satellite-launching rockets, large passenger aircraft, ocean liners, deep-sea oil drilling equipment, and so on, economies of scale are so significant that the world market can only bear a few centers of production (Krugman 1990). Regions producing and consuming such goods would tend to be at similar levels of development. The theory thus helps explain why trade is most common between countries that are arguably the most similar in their factor endowments.

The theory also places much emphasis on the role of chance in determining the pattern of specialization. Some countries and regions get lucky; by virtual serendipity, they start producing a particular good at first. Then, by virtue of economies of scale (internal to the plants plus external economies of agglomeration), the region extends its advantage vis-á-vis other competitors. Production of certain goods may become "locked-in" in particular regions.[9] Although new trade theorists recognize that it is theoretically possible that trade with external economies may be detrimental to some regions and countries, they argue that very few regions would fall behind permanently. As noted by Krugman and Obstfeld (1997):

> Canada might be better off if Silicon Valley were near Toronto instead of San Francisco; Germany might be better off if the City (London's financial district, which, along with Wall Street, dominates world financial markets) could be moved to Frankfurt. The world as a whole is, however, more efficient and thus richer because international trade allows nations to specialize in different industries and thus reap the gains from external economies as well as the gains from comparative advantage.
>
> *(p. 152)*

Applications

In many countries of the world, especially those where multilateral aid organizations are active, neoclassical trade and growth theories are the mainstays of development planning. Benefit-cost analysis, which is widely used to evaluate investment projects in developing countries, is based squarely upon neoclassical trade theory.[10] In the United States, economists use trade theory to advocate less government intervention in order to promote freer international (and interregional) trade. Local economic developers, on the other hand, often ignore the implications of trade theory and end up supporting protectionist measures and growth strategies in the name of job creation, which may sacrifice the economic well-being of the community.

Trade theory narrows the economic developer's attention to tradable commodities, both goods and services; the larger group of commodities that neither are exchanged nor minimally traded may be ignored. For traded commodities, the developer may try to determine whether absolute advantage or comparative advantage exists by comparing the relative prices of traded commodities to world prices or to prices in those places with which the region trades.[11] Typically, however, the number of traded commodities will be too numerous to examine individually. For simplicity, the developer may want to assume that local comparative advantage exists for internationally traded goods and that absolute advantage exists for interregionally traded goods.[12] Given these assumptions, local developers should challenge policies that threaten regional specializations because they may reduce the region's comparative or absolute advantage.

In general, developers would work toward greater efficiency and productivity in the local economy if they opposed trade barriers. They should advocate

export diversification only after carefully assessing the competitive exports of other regions.[13] Similarly, they should compare import substitution carefully when wanting to further export sector specialization. More productivity gains may result when export earnings are used to purchase imports than when the imports are produced locally. Trade theory gives strong support for local infrastructure development, improvement in government efficiency, and other measures that could increase the productivity and lower input costs for all local producers. For example, improvements in intraregional transportation can reduce costs to local companies, while interregional transportation improvements (or lower freight rates) can expand trade (market) areas for basic sector companies.

Many metropolitan economies, with thousands of traded commodities to consider, are far too large and complex to examine each traded commodity. Working at the NAICS two- or three-digit industry level is more practical. The applications of trade theory at this level lead to the recommended strategies similar to those supported by neoclassical growth theory (see Chapter 5): opposing barriers to trade; promoting greater efficiency and productivity in the economy, including efficient government, which would benefit all local producers; and supporting local infrastructure development, especially improvements in intraregional and interregional transportation. This consistency is not surprising since both theories are drawn from the same set of basic assumptions.

Trade theory would encourage local economic developers to analyze closely an export promotion strategy. Local developers interested in growing existing specializations in manufacturing or in financial, business, and professional services would only be able to support these specializations by helping exporting companies produce more efficiently. Export expansion led by these efficient local companies would probably generate greater benefits than an import substitution strategy. As previously noted, local consumers are better off buying relatively cheap imports than buying more expensive local products that were substituted for imports.

Developers face an important strategic decision when applying trade theory: is it better to specialize or diversify? Much research supports the virtues of each, and local politicians usually seek the benefits of both. The basic tenet of trade theory is that a region (or an individual or a firm for that matter) can best achieve welfare gains if it specializes and trades. Yet economically diverse regions tend to experience greater stability and at times more sustained growth. The diversity-specialization dichotomy is actually a false one. Diversity is not the absence of specialization but rather the presence of *multiple* specializations.

Elaboration

Trade between regions may be described as a sequence of trade-based regional growth: (1) closed economy or self-sufficiency without trade; (2) open economy without factor mobility—the international case; (3) open economy with factor mobility—the interregional case; and (4) regional autarky. Given two self-sufficient regions at pre-trade equilibria, the potential for trade between them exists if

equilibrium prices in the two regions are unequal. The different equilibria may reflect unequal factor endowments, unequal tastes, or both. In the short run, commodities are traded until a new equilibrium price is reached. This price represents the terms of trade, and, at this price, a balance of trade exists; that is, exports equal imports for both regions. In the long run, specialization towards the commodity in which the region has a comparative advantage further changes the mix of commodities produced compared to the mix that is consumed in each region. Specialization will continue until all increases in welfare are realized through trade. Thus, both regions gain by engaging in trade based on comparative advantage.

As described in the "Overview" section earlier, under very restrictive assumptions, free trade can lead to factor price equalization between the two regions. Wages and profit rates may tend toward equality even without factor mobility between the regions (the international case). As a result of commodity-based trade, workers with similar jobs would earn about the same real income in both regions. But in the interregional case, the two economies are open to the migration of labor and capital. Factor mobility can equalize factor prices more directly than commodity trade. With labor migration and capital flows, wage and profit rate differentials should disappear eventually.[14] Ultimately, equal factor prices eliminate the potential for trade. The regions cease trading because further welfare gains are not possible. Therefore, the regions end where they began—in a state of regional autarky. After trade, the level of development in the regions should be much more similar.

Interregional trade theory, then, offers a strong rationale for open economies. Although the assumptions are restrictive, the regional economy that experiences labor and capital mobility, specializes in its comparative advantage, and engages in trade not only increases consumer well-being but also impacts factor costs such that returns become more equal compared to other areas. Although trade theory suggests that per capita income levels in trading regions should converge over time, growing inequality among metropolitan areas in the United States contradicts this speculation.

Heckscher and Ohlin argue that comparative advantage is determined by factor endowments, but exactly what constitutes them is not very clear. Ohlin implies that factor endowments consist of land (and other natural resources), labor, and capital; that these factors are homogeneous across regions; and that relative quantities of each determines comparative advantage. However, since factors are clearly not homogeneous across regions and therefore not strictly comparable, it may not be possible to ascertain whether a country is able to compete on the basis of comparative or absolute advantage. In spite of trade theory assumptions, actual regions have deep cultural, historical, and political differences. At any point in time, regions may experience very different levels of development and offer very different, immobile types of infrastructure.

The ambiguous nature of the notion of endowments is evident when one tries to determine when a particular combination of inputs that is unique to a country should determine an absolute rather than comparative advantage.[15] It may be clearer to argue that cultural, historical, and institutional factors shape a region's

factor endowment. However, if a certain region is the only one with a particular factor, then trade based on that factor can only be due to absolute rather than comparative advantage. Moreover, regions are often defined in terms of some unique factor endowment, making it nearly impossible to ever find a case in which trade will be based solely on comparative rather than absolute advantage.

Even if a distinction between comparative and absolute advantage makes sense, nations trade on the basis of comparative advantage if and only if exchange rates can be adjusted to ensure balance-of-payments equilibrium.[16] (See Appendix 4.1.) But regions possess no mechanisms that can achieve exchange rate adjustments. Furthermore, demand or institutional factors may generate prices that do not reflect regional productivity differentials (McCrone 1969). Do regions experience significant balance-of-payments problems? With data shortages, empirical work on this issue is limited, while theorists remain divided (Armstrong and Taylor 1978).[17]

According to neoclassical theory, because factors are perfectly mobile between regions, wage and profit rates should be approximately equal and no unemployment should exist. In this situation trade should be based only on absolute advantage. However, if one region is more productive than another across all industries, the inefficient region will be unable to establish competitive prices. As a result, production in this region must contract, and surplus labor and capital will tend to out-migrate rather than become unemployed:

> Thus, there is a contrast between international trade where differences in productivity can be matched by differences in factor earnings, where exchange rates can be adjusted to ensure trade can take place on the basis of comparative advantage, and where all participants in trade no matter what their level of efficiency or their endowments may enjoy economic growth. And, on the other hand, inter-regional trade with complete factor mobility which implies equality of factor earnings, trade only on the basis of absolute advantage, no regional unemployment, but a tendency for regions with below average efficiency to decline while others expand.
>
> *(McCrone 1969, p. 79)*

Declining demand for local products may further the unproductive region's decline via the economic base multiplier, while a negative balance of trade can also encourage a downward spiral. If labor fails to migrate, surplus resident labor may force down wage rates, or unemployment may persist.[18] There may be too much factor mobility for comparative advantage-based trade but too little mobility to avoid unemployment.

In short, if a region tends to trade on the basis of absolute advantage and it has no such advantage in any commodity, its economy will contract. This raises the hypothetical question of whether a less developed region would be better off as a less developed country (LDC). With the status of a nation-state, the region could pursue an independent economic policy more suitable to its needs by setting exchange rates given the balance-of-payments situation, establishing protective

tariffs, and implementing monetary and fiscal policy. At the same time, national boundaries would limit the factor movements that act as an automatic economic adjustment mechanism. On the other hand, the new nation would forfeit the benefits of cross-subsidization from other regions although it may gain transfers from international aid organizations. Moreover, as a nation, the region would have to face world prices, which would require a painful readjustment for any industries accustomed to price subsidies. The point of analyzing the differences between a sovereign region and one within a country is not to advocate secession. Rather, it is to illuminate export-oriented growth policies for declining regions, such as assisting regions to gain greater economic sovereignty and comparative advantage, perhaps through regionally specific taxes or subsidies.

Ultimately, McCrone's (1969) argument concerning the benefit of exchange rates in assuring balance-of payments equilibrium is not particularly compelling, since income transfers enable a region to have a continually deteriorating balance-of-payments position. For example, if income were not being sent into the region, then there would be no "foreign exchange" to purchase commodities from outside the region.[19]

One of the most powerful conclusions in trade theory—that gains from trade are mutually beneficial—is also questionable. Certainly, specialization caused by trade increases aggregate production, but the distribution of these gains may not benefit both trading partners. To illustrate, consider once again two countries, the United States and Mexico, which produce two commodities: computers and apparel. Assume that computers and similar advanced electronic products are income elastic, while essential, basic apparel is income inelastic. Relative price differences lead to trade, with the United States buying basic apparel from Mexico and the latter importing U.S. computers and sophisticated electronics. In the short run, trade continues until an equilibrium price level is reached and both countries are better off. In the long run, the two countries specialize, expanding aggregate output as described in the "Overview" section of the chapter.

As output expands, the prices of the two commodities fall, causing real incomes to rise. However, as incomes rise, a greater proportion of income is being spent on computers and sophisticated electronics than on basic apparel. Although consumers may still consume a greater quantity of basic apparel, the amount that they spend on this lower-priced commodity may actually fall. Moreover, any further increases in basic apparel production by Mexico may lower apparel prices further. Thirlwall (1980) identified this problem related to the export of income inelastic goods. At this point, it might be very difficult for Mexico to shift back into the production of computers if the United States successfully developed its resources to become even more efficient in computer production. Thus, the net gains from trade in the long run may be more beneficial to the United States than to Mexico.

That trade may not be mutually beneficial represents a fundamental challenge to the notion of equilibrium and regional convergence that underlies neoclassical theory. Labor, capital, and trade tend to favor rich regions to the detriment of poor regions so that market forces reinforce the concentration of growth in

prosperous metropolitan centers and regions. Skilled labor migrates from poor areas; capital seeks locations where demand is highest. Although wealthy regions needing goods from other regions for expansion may diffuse benefits to poorer areas, such trade will generally be more beneficial to the more prosperous regions, because they are likely to be experiencing higher productivity that reduces poorer regions' gains from trade. Lagging regions experience price inelastic demand for their exports, capital inflows to industries that function as economic enclaves, and the suppression of their industrial bases, which are unable to compete with imported products. With surplus labor, productivity improvements tend to lower prices, while inelastic demand restricts the expansion of markets. As a result, interregional trade can negatively affect poor regions.[20] This argument is consistent with cumulative causation theory (Chapter 6): economic systems are inherently unstable due to forces that tend to reinforce regional income differences rather than mitigate them.

One could argue that the diseconomies of excessive growth in prosperous regions, such as congestion, environmental problems, strains on public services, and housing shortages at some point, should outweigh the economies of scale and agglomeration economies that often accompany growth and lead to slower growth rates (Chapter 9). However, since individual producers do not internalize these social costs, they are not reflected in prices. Thus growth may well continue where social costs are greater than the private benefits of increased production yet bypass lagging regions where underutilized labor and infrastructure are available.[21] Thus although the state has often functioned to introduce and support free trade, a legitimate state role may be to modify and mitigate the negative results of interregional exchange by developing programs to reduce growing regional inequality that has become a serious problem in the United States.

These criticisms yield two important implications for economic developers seeking to apply trade theory in order to develop an export base that can help a region benefit from trade. First, comparative advantage is appealing in theory, but it is difficult to determine in practice and thus may not be particularly useful for guiding regional policy. A region may be better off focusing on the development of industries in which it possesses an absolute advantage. Second, to the degree they can be identified, there may be reasons to discriminate between industries in which a region has a comparative advantage, as opposed to simply promoting all sectors. In particular, the production of income-elastic commodities for export should probably be encouraged more than those that are income inelastic.

Discussion questions

1 What is the difference between comparative and absolute advantage?
2 Are possible sources of externalities in your region that has led to specialization in particular goods?
3 In what ways might trade theory help you explain the observed spatial distribution of industries in your area?

4 How have free trade agreements such as the North American Free Trade Agreement (NAFTA) impacted your region?
5 A number of cities and states have set up programs designed to promote international exports. Based on the theory of comparative advantage, what role should state or local officials take in encouraging export activity by local producers? What types of assistance (from information provision to financial aid) would be most effective in sustaining or growing regional employment and income?
6 In spite of factor proportions theory, some countries and regions are still able export goods which utilize factors in which they are comparatively less well-endowed. How are some U.S. apparel producers able to compete with manufacturers in countries with much lower capital-to-labor ratios? (Apparel production is traditionally a labor-intensive process relative to the production of other goods.)

APPENDIX 4.1

Excerpts from "Basics of Comparative Advantage Aren't So Hard To Learn"

Manuel F. Ayau, Wall Street Journal, *October 20, 1983*

As a former member of the protectionist lobby in my country who had the opportunity to learn the error of his ways, I am annoyed with myself for having failed for so long to understand why countries are misled into paying the high cost of restricting trade. Many people, including professional economists who should know better, seem oblivious to the implication of the difference between competitive advantage and comparative advantage, despite the fact that David Ricardo explained it about 200 years ago.

Competitive advantage means, of course, that one party can do something at lower cost than another, and it typically is the basis for protectionist arguments. Comparative advantage is the relationship of one competitive advantage to another, or a comparison among competitive advantages. The uneconomic diversion of resources abetted by failure to comprehend this seemingly elusive distinction is enormous. . . .

What is rare in economic discussion is a simple example that demonstrates quantitatively the benefits derived from free trade. If the reader wants to do a little arithmetic, I offer the following exercise, based first on barter, and then on the use of money. This is a worst-case example; Japonia has a clear competitive advantage over Latinia in producing both radio and television receivers, as follows:

Man-Hours Required for One Unit

	Japonia	Latinia
Radio	1	4
TV	4	8

It follows that 48 man-hours of production results in 24 radios and six televisions in Japonia. The same number of man-hours produces six radios and three

TVs in Latinia. Adding, we find 30 radios and nine TVs being produced with 96 man-hours of effort.

Suddenly, Japonia and Latinia choose free trade and tear down the barriers they had erected against each other's products. And miraculously, with the same man-hour requirement per unit and the same number of man-hours devoted to production, their combined output can rise to 32 radios and 10 TVs.

This is not really a miracle. It simply is division of labor based on comparative advantage. Under free trade, Latinia is induced to withdraw resources it had devoted to radio production and concentrate entirely on TVs. Now, with 48 man-hours' input, Latinia produces six TVs and zero radios. Japonia is induced to reallocate some resources. It devotes 32 man-hours to radios, where its competitive advantage is greatest, and the remaining 16 hours to TVs, enabling it to turn out 32 radios and four TVs with every 48 man-hours of effort. The world has more product, but are Japonia and Latinia better off individually? To find out, we have to introduce the price system. In doing that, one thing needs emphasis: It isn't prices *per se* that count, but price relationships. Differences in price relationships are what people act on.

Here is the lineup of prices (we'll use the same prices both before and after free trade):

	Japonia	Latinia
Radio	24,000 yen	600 pesos
TV	96,000 yen	1,200 pesos

After free trade, the Japonian retailer can choose a TV at 96,000 yen or 1,200 pesos, corresponding to an exchange ratio of 80:1. He will want to buy pesos whenever he can get them for less than 80 yen apiece. The Latinian retailer can choose a radio at 24,000 yen or 600 pesos, corresponding to a ratio of 40:1. He will be in the market for yen whenever he can get more than 40 for a peso. . . . But the Japonian and Latinian radio and TV marketers should be satisfied if the yen/peso rate falls somewhere between 40:1 and 80:1.

We could choose any number, but let us say that the exchange rate becomes 60:1 right in the middle. Before free trade, a Japonian retailer could buy a shipment of 20 radios and five TVs for 960,000 yen. A Latinian retailer could buy the same shipment for 18,000 pesos. After free trade, the Japonian and Latinian retailers, each acting in his own self-interest, do their buying. Here is the result:

Japonian retailer:

20 radios × 24,000 yen	=	480,000 yen
5 TVs × 1,200 pesos × 60 yen	=	360,000 yen
Shipment:	=	840,000 yen

Saving: 120,000 yen

Latinian retailer:

20 radios × 24,000 yen / 60 pesos	=	8,000 pesos
5 TVs × 1,200 pesos	=	6,000 pesos
Shipment:	=	14,000 pesos
Saving: 4,000 pesos		

In both countries, purchasing power has been increased. Both can afford to buy more of the same things, or to buy new things they could not afford before. Both are wealthier.

Possibly you aren't convinced until you can see it in dollars and cents. So why not create a world price, in dollars, for radios and TVs and do the arithmetic over again? At a 60:1 yen/peso exchange rate, the dollar price of a radio is $80 and the dollar price of a TV is $240, based on 300 yen equals five pesos equals $1. You will find that Japonia will have enough extra radios to sell at $80 each to buy from Latinia the TVs it stopped producing, and still have some dollars to spare. And Latinia will have dollars left over after selling extra TVs to buy all of the radios it no longer makes.

This is a severe test because neither radios nor TVs are sold at the "average" price (nor are they produced at the "average" cost). When voluntary exchange is the rule, these products, like all others, are produced at marginal cost and sold at the price the market will pay for the next increment of output. If we allow ourselves to think in terms of averages, it is easy to jump to conclusions.

One such conclusion is that our industry will collapse because it can't compete with their industry. It is true that some radio and TV manufacturers will not be able to compete with the lower-priced foreign products. It is also true that some manufacturers may have to close down some of their more antiquated production facilities. In either event, it is the marginal use of resources that must be relinquished, and that act could add to rather than subtract from, well-being.

There is a myth, which has about as many lives as a cat, that countries import and export surpluses. "Dumping" of surplus is a frequent complaint. But the fact is that most exported goods have been produced for export as a means of generating foreign exchange, which when in turn sold, produces a greater income in local currency than if the resources employed in export production had been devoted to production for domestic use.

If one country wants more corn, which should we plant: corn or cotton? The answer, of course, is that if with the cotton that we can sell we can buy more corn than we can produce with the same resources, we should plant cotton to have corn. If we stubbornly insist on producing our own corn, we deny ourselves the advantage of division of labor. Denial of that advantage is exactly the cost that trade barriers impose. But the cost is greater than money can measure because division of labor is the basis of civilization.

Somehow, watching the way the world behaves, it seems that it must be easy to forget the addition to well-being that results from the satisfaction of needs at lower

costs. Free trade allows pursuit of lowest cost, liberating resources that generate new consumption demands and new investment and jobs. Protective trade barriers amount to self-inflicted punishment, universally practiced. This tragic, divisive misunderstanding of our age probably will be a mystery to future generations. They will wonder how a period of great technological achievement could possibly have been accompanied by such strenuous efforts to obstruct trade and increase poverty.

Notes

1 https://ourworldindata.org/international-trade
2 https://data.worldbank.org/indicator/NE.EXP.GNFS.KD.ZG?end=2016&start=1961
3 http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Country=US&
4 Krugman (1996, p. 207) writes: "It is a late 20th-century conceit that we invented the global economy just yesterday"; and furthermore (1996, p. 120):

> one should have some historical perspective with which to counter the silly claims that our current situation is completely unprecedented: the United States is not now and may never be as open to trade as the United Kingdom has been since the reign of Queen Victoria.

5 "Absolute advantage" is often considered synonymous with "competitive advantage," a general term that is rarely carefully defined. In this book, we use competitive advantage as a more general term that refers either to absolute or comparative advantage.
6 To illustrate these principles, as well as show more clearly why nations may trade even when one trading partner has an *absolute* (cost) advantage in the production of all goods, consider the example below. Mexico has an absolute advantage in the production of both apparel and computers since it uses 12 fewer labor hours to produce a unit of apparel and 3 fewer labor hours to produce a computer. But Mexico has to give up four units of apparel, while the United States must give up only one unit. Mexico can buy computers from the United States cheaper than it can produce them itself; likewise the United States will fare better if it specializes in computer production and buys apparel where it is cheapest, from Mexico. According to neoclassical trade theory, then, absolute cost advantages are, in essence, irrelevant to the question of whether countries will engage in trade.

Exhibit 4.1

	Labor Hours Required per Unit		*Opportunity Cost per Unit*	
	Apparel	Computers	Apparel	Computers
Mexico	3	12	1/4 units computers	4 units apparel
United States	15	15	1 unit computers	1 unit apparel

7 The result that regions will completely specialize in the production of the product in which they hold a comparative advantage is dependent on the implicit assumption of constant costs in production. An alternative assumption, such as increasing costs, would yield the more realistic case of incomplete specialization (regions producing some of all commodities). The constant cost assumption is a result of Ricardo's restriction of the analysis to one factor of production. With only one factor, there can be no diminishing returns; labor productivity remains constant. With increasing costs, regional prices will

converge short of complete specialization. Kreinin (1979) provides an accessible discussion of this issue.

8 We will use the example in Endnote 6 to see why this is the case. But first we have to introduce another wrinkle. To calculate the total benefits from trade for each country, we need the equilibrium exchange rate for the two nations after trade takes place. The equilibrium rate is determined by the intensity of demand in each region for the traded commodities; it must fall somewhere between the internal rates of exchange in each region. For example, the United States will sell a computer for any price greater than one unit of apparel (otherwise it could produce apparel just as cheaply itself), while Mexico will pay U.S. manufacturers no more than four units of apparel for each computer. Depending on demand conditions, the realized rate of exchange might be established closer to the Mexican internal rate, in which case the United States would benefit the most from trade. Alternatively, it might fall closer to the American rate. With Mexico paying close to one unit of apparel for each imported computer, well under the four units of apparel that it would cost to produce a computer itself, it would garner the bulk of the benefits of trade.

Assume that the world exchange rate is established at two units of apparel per computer. Assume also that Mexico produces 100 total units of apparel: 50 units for home use and 50 units for export purposes. For its part, assume that the United States produces a total of 60 computers, 35 units of which it consumes and 25 units of which it exports to buy apparel. Given free trade, Mexico consumes 50 units of apparel and 25 computers (each unit of exported apparel buys half a computer—or, it takes two units of apparel to buy a computer; 50 exported units of apparel times one-half equals 25). By similar reasoning, the United States consumes 50 units of apparel and 35 computers. In the absence of trade, Mexico could produce only 12.5 computers at home with the equivalent amount of labor used to export 50 units of apparel to the United States. Likewise, U.S. manufacturers could produce only 25 units of apparel locally with the same labor that, in a world of trade, may be used to pay for the import of 50 units. In both nations, the consumption of apparel and computers is thus higher with free trade.

Note that if the rate of exchange falls closer to Mexico's internal exchange rate, this is because Mexican demand for American computers is relatively more intense than American demand for Mexican apparel. Therefore, although the United States enjoys greater benefits from trade in exchange terms, the benefits are distributed more equitably in utility (or consumer satisfaction) terms. It should be clear that the distribution of the benefits of trade cannot be analyzed independently of demand considerations.

9 New trade theory is closely related to the new endogenous growth theory, which is discussed in Chapter 5.

10 Trade theory is useful in evaluating projects and strategies because it forces comparisons of the advantages of producing a commodity to its opportunity costs. Social benefit-cost analysis is the most appropriate method for making such determinations. By using world prices of tradeables as the shadow prices in the model, the benefits (costs) of local production can be compared to the benefits (costs) of trade.

11 Relative prices do not exist in all cases. Commodity exports not available in the receiving region or imports not producible at home are noncompetitive, and, therefore, relative prices do not exist in both regions. The trade of noncompetitive commodities, then, cannot be based on comparative advantage.

12 The *Census of Transportation* is a useful source for determining interregional commodity flows. Regionalized input-output tables can be used, with caution, to distinguish regional trade flows from flows based on national technical relations and to examine the composition of exports and imports.

13 Unfortunately, international development agencies have fostered commodity export diversification in less developed countries (LDCs) only to increase competition and lower relative commodity prices realized by all LDCs.

14 The equality of factor prices reverses the logic of trade theory and leads to equal commodity prices. On the other hand, trade can continue without equalizing the terms of

trade if transportation costs are assumed to exist. Furthermore, increasing returns to scale makes the outcome indeterminate, and government intervention may be required to reach a Pareto optimum.

15 For example, labor-intensive production, like textiles, often leave high cost areas for areas with cheaper labor. Does the relocation of textile plants constitute a comparative or an absolute advantage? The answer is found by asking why labor is more expensive. The reason could be scarcity of labor or scarcity of this specific type of low-skilled labor. Alternatively, institutional factors, such as minimum wages, unemployment insurance, and worker health and safety regulations, could be increasing the price of labor. If the difference in labor prices is due to scarcity, then the production of textiles in the lower-cost area may be due to comparative advantage. Otherwise, it is due to absolute advantage since textile firms are not responding to resource availability but rather to environmental factors unique to each area.

16 Though the principles of trade theory are often illustrated with trade conducted by barter, it is important to understand exchange rates and their relationship to balance-of-payments. Balance-of-payments refer to the transactions between a country (or region) and the rest of the world. What the country pays out for purchases of imports must be financed with income from external sources, generally through the sale of exports. Although short-term deficits may be financed by borrowing, persistent balance-of-payments deficits mean that a country (or region) is spending "beyond its means." Eventually simple accounting dictates that a contraction in expenditures will be required.

We continue the hypothetical example of trade between the United States and Mexico but with consideration of each trading partner's currency. The left-hand side of Exhibit 4.5 provides the production costs in each country, in their own currency, prior to engaging in trade. The actual exchange rate between the two countries is not established until trade ensues.

Exhibit 4.2

			Production Costs in Dollars, 3 Exchange Rates					
	Production Costs/ Unit		*$1 = 2 Pesos*		*$1 = .50 Pesos*		*$1 = 5 Pesos*	
	Apparel	*Computers*	*Apparel*	*Computers*	*Apparel*	*Computers*	*Apparel*	*Computers*
Mexico	1 Peso	4 Pesos	$.50	$2.00	$2.00	$8.00	$.20	$.80
U.S.	$1	$1	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00

Since the exchange rate, $1 = 2 pesos, falls within the limits by real resource cost differences, both countries may preserve their balance-of-payments equilibrium. Mexico is able to finance imports of computers with the money that it receives from the export of apparel, for example. A similar situation exists for the United States with regard to the export of computers and import of apparel. Although $1 = 2 pesos is an arbitrary rate within the identified limits, the actual rate will be determined by the pattern of demand in the two nations. As long as the rate reflects relative resource costs, balance-of-payments equilibrium will be maintained in each country. Note that the inability of subnational areas to adjust rates is a reason why some researchers have argued that the implications of trade theory have limited relevance for regional economic development.

17 Thirlwall (1980) introduces important basic concepts and considers both trade theory and growth theory from a Keynesian perspective. One concept relates to balance-of-payments adjustments. Another is income elasticity of demand.

In contrast to the neoclassical growth model, Thirlwall's model is demand-driven rather than driven by the supply of labor and capital; the balance-of-payments equilibrium may constrain growth due to income adjustments in spite of price adjustments;

unemployment is involuntary, not voluntary (real wages are too high); and the regional economy may be dominated by positive, not negative, feedback. The latter may hold because of "increasing returns in the broadest sense" (1980, p. 421). This Keynesian model may look like its neoclassical counterparts, but it is driven by income effects instead of price effects. Balance-of-payments constrains growth because, unless the region can draw on a permanent source of external financing (transfers), export growth must keep up with import growth.

Thirlwall's model may be used to contrast the logic of economic growth based on price adjustments (price and quantity effects) to the logic based on demand-driven multipliers (income effects). Whereas Keynes considered ex ante investment needed to achieve full employment as saving, Thirlwall examines the *ex ante* exports needed to equal imports. After showing the Harrod trade multiplier formulation and the tendency for depressed regions to run a balance-of-payments deficit, he notes that

> countries concerned with regional disparities allow depressed regions to run balance of payments deficits by directing autonomous expenditure and income transfers of various kinds which support consumption and investment in these regions. If the trade sector of a region is large, however, the level of compensation required may be unbearably high to prevent the Harrod trade multiplier from working.
>
> *(1980, p. 422)*

In the model, both exports and imports respond to negative price elasticity and positive income elasticity of demand. The balance-of-payments equilibrium income growth rate (yb) is given by the following equation. The key assumptions of competitive markets for traded goods and "the law of one price" reduce the equation to:

$$yb = \frac{e(zt)}{p}$$

where e is the income elasticity of demand for exports, zt is the growth of income outside the region, and p is the income elasticity of demand for imports. Thirlwall then relates growth and unemployment using the Verdoorn relationship. Assuming some inverse relationship between growth and unemployment, he argues that policies should "encourage activities in the region which are as income elastic as possible in markets outside the region" (1980, p. 424). Financial incentives will have positive income effects.

Thirlwall's model supports attention to the export sector, not to realize comparative advantage or input-output linkages but because export demand is a key part of regional demand, which results in the ability to finance imports. Thirlwall supports export promotion which may proceed like targeted recruitment strategies only focused on goods with high income elasticities of demand. Thirlwall does not discuss strategies to reduce the income elasticity of imports. Such strategies may work against the region's short-run comparative advantage, which is a function of price effects, but may build competitive (absolute) advantage in the region. However, imports may have to be curtailed to some extent. At least the developer should consider ways to tie imports directly to enhanced export capacity or greater demand for local production.

18 McCrone (1969) is describing a positive feedback system that works as a vicious cycle of interregional divergence and decline similar to Myrdal's (1957) backwash effects, discussed in Chapter 6.

19 A separate currency might be valuable, however, to the extent that it allowed a region to set its monetary and fiscal policies without worrying about the consequences of external inflation, assuming such policies could stimulate growth effectively.

20 Myrdal (1957) sees spread effects as primarily benefiting the areas near the growth center. He argues that circular and cumulative causation, rather than balance and equilibrium, will generate increasing differences among regions, resulting from the free interplay of

market forces. Spread effects are more powerful in rich countries and often lead to interregional convergence, whereas backwash effects are more powerful in poor countries and will maintain or increase interregional inequality (Chapter 6).

21 "There is some presumption therefore for supposing that, if left to market processes alone, tendencies to regional concentration of industrial activities will proceed farther than they would have done if 'private costs' were equal to 'social cost' . . . and all economies and diseconomies of production were adequately reflected in the movement of money costs and prices" (Kaldor 1978, p. 149). Consumers may also derive increasing satisfaction from nonmaterial or noncommercial forms of consumption as growth becomes excessive. In this case, a community's level of production could be reduced without decreasing consumer well-being. Negative externalities would decrease as the production of "bads" declined along with the production of goods. Consumers experiencing less congestion or pollution and more access to natural amenities would enjoy greater satisfaction.

5

REGIONAL GROWTH THEORY

The regional growth theories discussed in this chapter attempt to explain changes in a key set of macroeconomic indicators, including output, employment, income, investment, savings, wages, and interest rates. The theories address both regional factors and (as discussed in Chapter 4) *interregional* growth. Regional growth theories address the question: what determines observed disparities in regional income and income growth? An important related question is whether disparities are likely to persist or instead disappear through the natural play of market forces. Several models suggest that the former is true and that a potential role for government intervention exists in alleviating disparities. Other theories predict that incomes across regions will eventually converge, and therefore regional development policies are unnecessary or even counterproductive. Existing empirical work is only a partial guide, since conclusions vary. Understanding regional growth theory then is important for local economic developers if only to comprehend why some citizens, businesspeople, and elected officials remain skeptical about the need for publicly funded development initiatives.

This chapter outlines two bodies of regional growth theory: (1) neoclassical models, including revisions described as endogenous growth theory or new growth theory; and (2) what we will term "post-Keynesian" models of regional growth, following McCombie (1988a, 1988b). At some risk of oversimplification, both traditional and new neoclassical growth theories focus on the supply side. Assuming sufficient demand, the theories consider what prevents the economy from achieving its maximum rate of growth. From the neoclassical point of view, this is a matter of determining the factors preventing firms from producing at full capacity such that economy-wide resources can be allocated most efficiently. On the other hand, post-Keynesian growth theories generally focus on deficiencies in demand, looking for reasons why demand is insufficient to fuel additional production and growth in some regions.

Local economic developers encounter these supply-side versus demand-side perspectives more frequently than they may realize. Consider the case of the potential impact of unionization on the local economy. On the one hand, any wage increases due to unionization may have a dampening effect on local industries by directly increasing costs relative to other (nonunionized) locations. On the other hand, pay increases give workers more money to spend, which increases demand for goods and services and potentially fuels additional regional economic growth.

Endogenous/new growth theory represents an extension of the neoclassical model to account for increasing returns to scale and externalities. Interestingly, this theory can generate conclusions that closely mirror some post-Keynesian conclusions. The supply-versus-demand perspectives on regional growth have thus moved closer together, at least in terms of some of their conclusions.[1]

Overview

The neoclassical perspective is the dominant framework for regional growth theory. Neoclassical growth theory is principally focused on the supply side, and the nature and magnitude of demand for goods and services is typically ignored. Although early neoclassical growth models de-emphasize or discourage public sector intervention in the market, new growth theory admits the benefits of a more significant role for economic developers in encouraging growth or reducing regional disparities. Indeed, the supply-side focus of much U.S. economic development activity, including infrastructure development, training programs, technical assistance, and science and technology programs may find some justification from new growth models that explain regional industrial specializations in terms of externalities and agglomeration economies. Post-Keynesian theories, with their emphasis on insufficient demand for the output of regional industries, have had a more limited though still important influence on regional development thinking. Their impact on policymaking has been stronger in Europe than the United States, partly because they imply a need for a much stronger and explicit regional policy framework than is politically palatable in the United States.

Neoclassical theories of regional growth

Using a concise set of economic maxims as a basis for analysis, the single-sector neoclassical regional growth model postulates that the process of economic growth within a nation leads to a reduction, then the elimination, of disparities in productivity growth and per capita income across regions. There is no need for development policies to encourage growth in underdeveloped or lagging regions because the system tends to achieve and maintain this equilibrium result on its own. In fact, government intervention is likely to do more harm than good, since the market, through the price mechanism, determines the most efficient allocation of resources. Thus, the reduction of allocative inefficiencies in the market (often assumed to be caused by existing government policies) constitutes the theory's key

policy recommendation. More complicated multi-sector neoclassical growth models yield less precise conclusions, with some even predicting that regional disparities may persist. Nevertheless, the potential harm from government action is generally regarded as likely to be greater than any benefit derived from trying to intervene in the workings of the market.

Despite the prominence of both supply and demand in any treatment of elementary economics, many development theories restrict their attention to only one side of the regional economy given the complexities associated with modelling both sides of the market. According to economic base theory, for example, changes in the demand for regional exports determine changes in local output (Chapter 3). Since no supply constraints exist that would limit production, increases in demand can presumably be met with concomitant increases in production. In contrast, neoclassical regional growth theory focuses exclusively on the role of supply as the fundamental determinant of changes in local labor market or metropolitan area output.[2] In essence, demand is assumed to be perfectly inelastic.[3] It is the growth in regional factor supplies and technological change that determine output growth. In fact, the basic neoclassical growth model implicitly invokes Say's Law: supply creates its own demand (McCombie 1988b).

It is useful to review national economic growth models originally developed in the 1940s and 1950s since neoclassical *regional* growth theory represents the "regionalization" of those national models. National-level neoclassical growth models focus on the economy's long-run *potential* growth path. At any given time, the actual level of production in a given economy may deviate from its potential level, where the latter represents a state of full employment. Because literally zero unemployment is never possible, potential output defined more precisely is the level of output that can be achieved at the lowest rate of unemployment consistent with no inflation.[4] Neoclassical growth theorists assume that short-term government stabilization measures (monetary and fiscal policy) maintain the economy at full employment. They then attempt to determine whether the economic system tends to grow at what is referred to as a steady-state, stable rate of growth. The simplest growth model suggests that the rate of long-run potential growth is determined by technological change and the natural rate of growth of the labor force.

The simplest neoclassical regional growth model, often referred to as the Solow model, incorporates the unique features of subnational geographic units. This means that while its basic framework and assumptions are identical to the national model, it accounts for the possibility that labor and capital will migrate between regions by assuming that both factors will seek locations offering the best returns. Workers will be attracted to high-wage regions, while capital will migrate to regions offering the highest rates of return. The model also assumes that the latest technology is available to all producers, regardless of location. This implies the instantaneous diffusion of productive innovations over geographic space; that is, once an innovation is developed, no barriers will prevent particular firms (perhaps located in outlying or rural areas, for example) from taking advantage of it.

The process of regional growth from the traditional neoclassical perspective may be described as follows. Assuming a constant returns production function, the level of capital stock, labor, and technology in the first time period determine, through the production function, the level of output in that same period. In turn, output growth is determined by the growth in factor supplies and technology. Since technology is assumed identical in all regions, differential rates of growth across regions in any given period may be due to differences in indigenous labor force growth and factor migration. In the long run, the system tends toward an equilibrium where productivity growth, wages, and the rates of return to capital are equalized across all regions. As in the national case, long-run growth is determined by growth in technology and the natural rate of increase of the labor force. (See Appendix 5.1 for more formal descriptions of simple neoclassical growth models.)

The findings with respect to regional disparities hinge on the migration assumption and the returns to scale assumption. Faster growing areas, for example, will not enjoy persistently higher wages than those in slow growth regions since their attendant higher rate of labor force growth will dampen wage rates. The dynamic also applies to returns to capital. At the same time, the rate of growth of output across regions may vary, depending on the natural increase of each region's labor force. Moreover, it is possible that some faster growing regions may have to import capital from slow-growth regions in order to equalize saving and investment. As a consequence, some regions may import capital, while others export it. Interregional capital flows will occur even though the rate of return everywhere tends to become equalized (Borts and Stein 1964; McCombie 1988a, 1988b). Figure 5.1 summarizes the determinants of the simple neoclassical regional growth model.[5] The automatic equilibrating mechanisms of the model imply that little need for government intervention exists in order to encourage regional growth in depressed places. Growth disparities in regional output will narrow over time and eventually converge. Productivity growth, and thus growth in regional wage rates, will be determined by the exogenous rate of technological progress. Once again, any interventions to accelerate this process will likely generate inefficiencies.

Thus far, the results are based on an assumption that the local economy is comprised of a single sector. This particular formulation is often referred to as "the naïve" model of neoclassical growth (Richardson 1978). Since neoclassical theorists themselves have extended the analysis to multiple sectors, this chapter's characterization of the one-sector model as the fundamental neoclassical approach is an oversimplification (Borts and Stein 1964, pp. 125–161). As soon as multiple sectors are introduced, the model admits the possibility that labor and capital flow in the same direction, perhaps leading to persistent disparities in growth rates between regions. This possibility re-opens the door for renewed speculation regarding whether certain cities and regions are able to out-compete other areas consistently, not to mention the fact that the model yields a much more varied array of implications for economic development practice. Depending on how the multi-sector model is specified, local practice that encourages the growth of the export sector may indeed lead to increases in regional growth. Alternatively, if the importance of

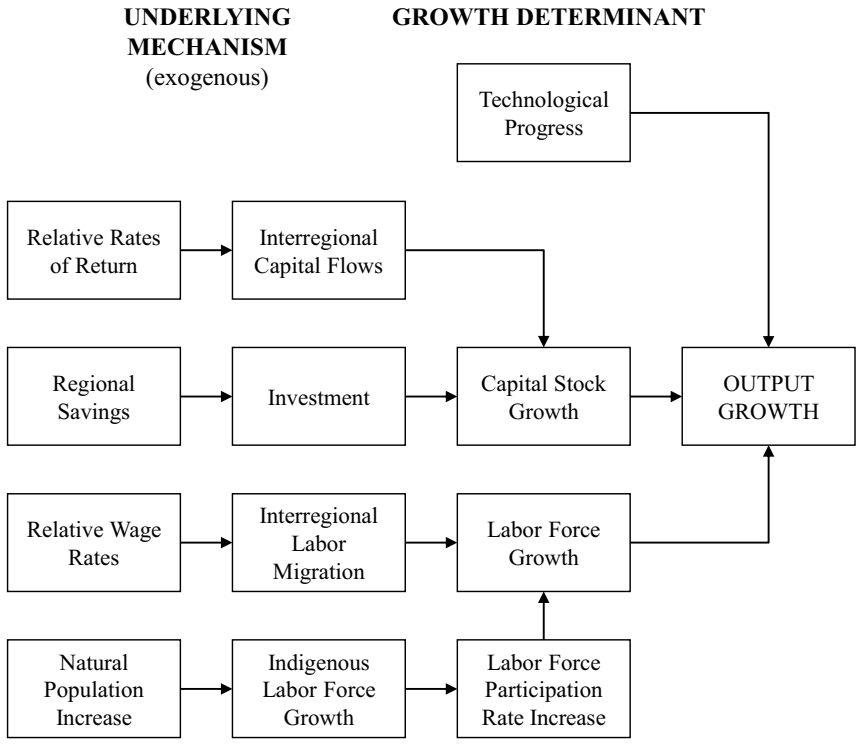


FIGURE 5.1 Determinants of regional growth

demand is assumed away, local policies designed to reduce the inefficient allocation of resources between sectors in a given region become more important.

The neoclassical growth model suggests that output growth in the near term is determined by growth in the capital-labor ratio. Investments in capital increase productivity. For example, with improved facilities incorporating the latest technology and additional and better machinery and equipment, the same number of workers can produce more and more commodities. If one assumes that the size of the labor force remains steady and that technology is constant, however, output growth cannot continue indefinitely because capital, like labor, is subject to diminishing returns. At some point, the additional increment of capital added to an existing workforce can yield no productivity improvement. Just as adding workers to a plant of a given size will eventually lead to overcrowding and a fall in productivity, capital can also, in effect, overcrowd the production process. At the same time, it is the prospect of achieving returns that induces investment in capital. Therefore, the neoclassical model implies that when the capital-labor ratio reaches the point where diminishing returns set in, investment will cease and growth will come to a halt. This is why ultimately exogenous technological progress and/or increases in the size of the labor force are needed to sustain long-run growth.

In the traditional neoclassical model, the factors driving long-run growth are therefore exogenous, or outside the model itself. *Endogenous* growth theory in neoclassical growth economics represents a revival of growth economics, an area of research that stagnated in the 1970s (Grossman 1996). One of the most important contributors is Romer (1986), who initially developed a model that demonstrated that long-run growth was possible even with no technological change and diminishing returns to capital. His innovation was to combine a neoclassical production function subject to constant returns with externalities or increasing social returns. Romer argued capital investments generate externalities, enabling all firms taken together to avoid diminishing returns. The externalities are termed spillovers and are related to the growth of knowledge (Romer's model) or human capital (Lucas 1988), important concepts that we address in later chapters.

Endogenous growth theory highlights the important role of increasing social returns with their spatial dimension (see, for example, Palivos and Wang 1996; Ioannides 1994). While most growth economists refer to spillovers as externalities that accompany economy-wide advances in knowledge and skills, there are good reasons to expect that some of these effects will be localized. In fact, local effects are quite consistent with the theories of cumulative causation (Chapter 6) and agglomeration economies (Chapter 9), a point Krugman has noted (1991a, 1997).

Lucas (1988), for example, has argued that the external effects of human capital or knowledge need to be specified more carefully to be useful for further theoretical and empirical work. Lucas' external effects of human capital, for example, have to do with influences economic actors have on the productivity of other actors. The scope of such effects depends on the "ways various groups of people interact" (p. 37). These effects could conceivably be regarded as either global in nature or purely local at the level of family or firm. But there is likely some middle (geographic) ground, since both individuals and firms typically interact at a larger social scale, such as the community or neighborhood, city, and industrial complex. The cost savings and enhancements in productivity that a firm gains by locating in proximity to other firms in certain cities and regions become a source of long-run growth for those places. Endogenous growth theory suggests that if we want to understand why some cities and regions grow while others stagnate or fall behind, we need to look closely at the nature of these external benefits—the ways they are encouraged *and* the ways they are inhibited.

Post-Keynesian regional growth theories

In contrast to neoclassical regional growth theory, post-Keynesian models of regional growth emphasize the disequilibrium nature of the growth process, the dependence of local fortunes on the strength of effective demand for regional exports, and the tendency for growth trends to become cumulative either in the positive or negative direction. McCombie (1988a, 1988b) provides a useful synthesis of the theory along with a comparison to the neoclassical approach.[6] Most importantly, the post-Keynesian approach does not ascribe to the view that markets

are generally equilibrating. The theory allows a much broader scope for government intervention.

McCombie (1988b) argues that the post-Keynesian perspective "provides a unifying theoretical basis for the export-base (or export-led growth) theory (Chapter 3) and the cumulative causation and polarization theories of Myrdal (1957) and Hirschman (1958) (Chapter 6)" (p. 400). This outcome is achieved because the theory asserts the primacy of the export sector, and the tendency for regional growth in output to lead to an increase in productivity through internal and external returns to scale. Recall that traditional neoclassical models assume constant returns to scale.

Figure 5.2 offers a simplified view of the regional growth process according to the post-Keynesian view. Output growth generated by producers in a given location drives increases in productivity through returns to scale. Improvements in productivity make the export sector of region more price competitive vis-á-vis producers in other locations. Price competitiveness stimulates growth in exports as consumers elsewhere buy more of the region's goods and services. Finally, purchases of regional exports generate further growth in regional output through a multiplier effect (McCombie 1988b).

The linkage between output growth and productivity growth is termed the Verdoorn effect. Growth of the region's production stimulates an influx of both migrating workers and investment; the growth of productive factors is not the cause but the consequence of output growth. The process can result in either cumulative advance or cumulative decline. It may be viewed as a formalization of Myrdal's (1957) notion of cumulative causation (Chapter 6).

The question for the local economic developer is how to stimulate output growth through increases in exports. That is, how can the performance of the export sector be improved? A number of factors are important, including prices,

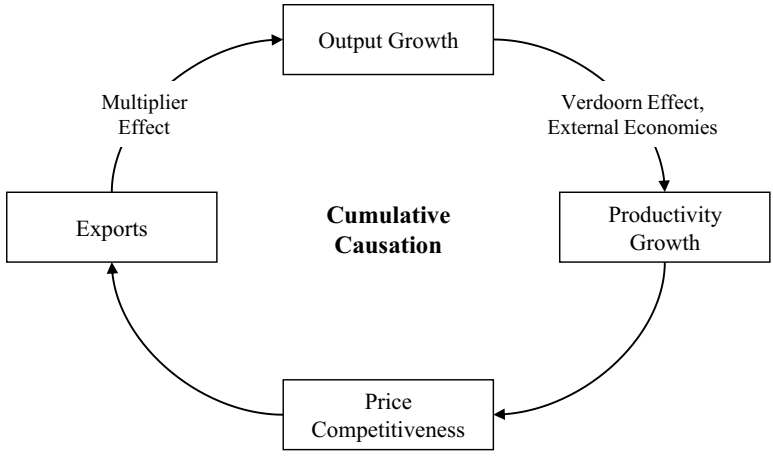


FIGURE 5.2 Simplified post-keynesian regional growth model

non-price aspects of competition, the income elasticity of demand for the region's exports, and the region's income elasticity of demand for imports (Thirlwall 1979, 1980; McCombie 1988b). To the degree that prices are set at the national level, the region's industry structure (e.g., the concentration of economic activity in industries producing income elastic goods) and factors such as product quality and service will determine its export prospects. The potential for some regions to gain a sustainable competitive lead in the production of some goods through increasing returns, externalities, and agglomeration economies means that other regions may fall progressively farther behind or at least face below-average rates of growth for sustained periods. In fact, post-Keynesians would argue that in a world of increasing returns, the tendency of some regions to lag behind others is the rule rather than the exception. Can market integration of lagging regions generate improvements that outweigh positive feedback mechanisms, benefiting growing regions, especially innovative ones?

Applications

Early neoclassical growth theory suggests that economic developers should do what is necessary to support the efficient allocation of resources and the operation of the price mechanism. For example, they might attempt to reduce aggregate inefficiencies in the economy by helping inefficient companies find more profitable locations or by encouraging unemployed workers to relocate, essentially two ways to assist with the economic adjustment process. Such assistance should take the form of information provision to companies and workers rather than direct financial or in-kind support. Many economic developers would not be comfortable with such a restrictive role. Modifications and extensions of this simple model, however, open up numerous avenues for intervention. For example, strategies for workforce training, industry networks, and expanding existing industries could become relevant.

Applications of neoclassical growth theory have been much more common in developing countries, where the monetary economy and market mechanisms are much weaker than in the United States and Canada. Many U.S. and Canadian regions are parts of industrial areas that are functioning as integral elements in an increasingly sophisticated and open global economy. Given this level of integration, proper application of neoclassical growth theory suggests that economic developers should rely heavily on market mechanisms and information flows rather than on various forms of government intervention. Indeed, developers should focus on activities that are consistent with traditional local government functions. Even in the competitive market economy, public goods and services must be collectively produced and financed. The objective would be to provide needed public goods and services as efficiently as possible, thereby minimizing the local tax burden on companies and workers. This efficient-government strategy would have another benefit in that it would potentially increase the amount of business and personal saving that is locally available. Greater local saving could lead to more local investment as long as competitive returns were available in the region. Although

economic developers are generally not interested in functioning as city/county managers, they need to forge good working relationships with them because of the value of sound public sector management.

Another application consistent with neoclassical growth theory would involve the analysis of existing forms of government intervention in business activities. Clearly, the widespread use of financial incentives would be soundly criticized as distorting market forces. More generally, economic developers could try to determine which economic development activities underway are really needed and which of these activities could be better handled by the private sector. Furthermore, the costs of intervention should be less than the benefits sought. Although surely to be unpopular with traditional economic developers, the elimination of some common but unnecessary economic development practices may improve the allocation of what are usually quite scarce local resources.

The post-Keynesian perspective makes a strong case for a national-level regional policy. Development incentives and infrastructure investments to lagging regions may help reverse a process of cumulative decline. Industry cluster strategies, to the degree that they are able to leverage increasing returns and externalities in slow-growth areas, may help reduce regional growth disparities as well. The problem with these applications, however, is that, like the growth center strategies of the early 1960s and 1970s (Chapter 6), they tend to be successful only where there is already a critical mass of economic activity. Developers might rather focus on improving the non-price competitiveness of local producers (both manufacturers and non-manufacturers) through technical assistance, technology diffusion, training, and so on. Endogenous growth theory suggests a role for economic developers in this regard, as a means of leveraging externalities and spillovers. Endogenous growth theory, with its focus on knowledge spillovers and human capital, also highlights the critical importance of quality educational institutions from primary and secondary schools through the level of research universities.

Elaboration

The traditional one-sector regional growth model has been subject to considerable scrutiny. The focus has been on four general problems embodied in its simplistic assumptions: (1) that the interregional reallocation of capital and labor depends solely upon factor price differentials; (2) that it is wage rigidity, rather than demand deficiency, that explains persistent regional unemployment; (3) that technological progress (product and process innovations) is instantaneously available everywhere; and (4) that the assumption of constant returns is a reasonable approximation of actual industrial conditions for theory-building purposes. A more detailed review of each criticism is useful for better understanding the nuances of the original model, revisions in the form of multi-sector models and theories of endogenous growth, and the ways in which the post-Keynesian perspective differs from the neoclassical one. For example, a consideration of the assumption of wage rigidity helps clarify some of the fundamental differences between the neoclassical and

post-Keynesian view of persistent unemployment problems, while the issue of constant-versus-increasing returns demonstrates how the emphasis on formal modeling in neoclassical economics may lead to the neglect of important topics. As the basic but highly flexible neoclassical model is modified, its implications regarding the growth process seriously challenge the prediction of regional convergence in growth rates and the associated call for minimal government intervention.

Technology diffusion

Related to the cumulative effects of economic growth in faster-growth regions is the notion that technological progress does not diffuse instantaneously across space. Technological advances would be expected to be made in more prosperous regions that possess the necessary agglomeration economies (Chapter 9) to permit significant investments in research and development. Thus, technological progress could enhance the competitiveness of faster growth regions vis-á-vis lagging or underdeveloped areas. In any case, all regions would not be expected to have equal access to the same technology both due to the friction of distance and due to institutional restrictions (such as patent laws, industrial secrecy, etc.). Clearly, the neoclassical assumption that technology is equally available everywhere is tenuous. Empirical research has partially confirmed that innovations are not adopted instantaneously and tend to diffuse through distinct routes, such as through the urban hierarchy or across buyer-supplier networks.[7] However, the more integrated the national space economy, the less important delayed technology diffusion should be as a source of differential regional growth.

Technology diffusion could be viewed as a case of market failure in the sense that regions do not possess perfect information on all available production techniques (McCombie 1988a). As market integration continues and information flows improve, backward areas should catch up to higher growth areas; the market mechanism should still lead to an equilibrium with convergence of regional growth rates. As is often the case, the neoclassical model is flexible enough to account for differences in technology diffusion.

A substantial literature has developed that relaxes the assumption of the basic neoclassical model that the level and growth rate of productivity is the same in all regions. This literature refers to the portion of output unaccounted by capital as total factor productivity (TFP), generally interpreted as technological progress. Alternatively, TFP is also explained as the intensity with which the factors of production can be used. TFP may become more important as talent-intensive services grow in more developed economies.

The contributions in the literature stress the importance of productivity in studying regional differences in levels and growth rates of output. Klenow and Rodriguez-Clare (1997), for example, argue that technology adoption and diffusion can have significant impacts on growth rates without requiring large differences in returns to capital. Specifically, they show that large differences in TFP result from slow technology diffusion from advanced regions to other regions.

Prescott (1998), in an evaluation across countries, finds that differences in factor endowments, in capital per worker, and in savings rates do not sufficiently account for the observed differences in income. He concludes that TFP is the driving factor behind labor productivity. Romer (1990) developed a framework that attempted to pin down the key factors behind the growth in technology. In his model, he specifically focuses on the role of human capital in spurring research and development (R&D), whereby increased innovative activity in turn increases TFP.

If technology diffusion is indeed an important source of regional growth, the implications for economic developers are unclear. Developers might attempt to improve the availability of information regarding new innovations to local firms as well as encourage research and development activities at home. Applicable strategies could include industrial extension, modernization programs, and the establishment of university-business linkages. Research suggests, however, that firms do not necessarily adopt new practices as they become available even if they know about them.[8]

Interregional factor reallocation

Increases in productivity are possible in the neoclassical model if an initial state of disequilibrium is assumed. If factors are allocated inefficiently (reflected in regional differences in rates of return), a possible source of productivity increases is the reallocation of factors between regions (McCombie 1988a). The neoclassical model predicts that labor will migrate to high-wage regions while capital will move where it can obtain the highest rate of return. Thus, a testable implication is that capital, wages, and the capital-labor ratio will grow fastest in low-wage regions, implying that the equilibrating tendencies predicted by the model may actually be at work. A seminal test of these hypotheses by Borts and Stein (1964) led to the rejection of the validity of the simple one-sector model based on compelling evidence that the fastest growth of capital and the capital-labor ratio has occurred in *high-wage* regions.[9]

One explanation for the model's poor performance may lie in the assumption of a single sector. Armstrong and Taylor (1985, pp. 59–63) posed a two-sector model of regional growth in which the domestic sector produces for local consumption, whereas the export sector responds to external demand. An increase in demand for the region's exports in their model will raise the price of those exports, and thereby the marginal revenue products of capital and labor. This, in turn, generates interregional and inter-sectoral differentials in wages and returns. Capital and labor migration *into* the region, as well as the inter-sectoral reallocation of labor and capital, will eventually reduce return differentials. Meanwhile, increases in regional income stimulate demand for the region's domestic product as well. The clear implication of their model is that regions exporting products for which demand exogenously increases will experience net inflows of labor and capital as well as regional growth.

The neoclassical theory's exclusive focus on differential factor prices as the determinant of migration is also questionable. Although investment capital may

flow easily around the globe, labor migration is far more difficult and costly. Highly unlikely assumptions include costless factor migration, reflecting the absence of barriers to migration, the possession of perfect information regarding factor returns in alternative locations, and perfectly flexible factor prices. Migrating workers incur both pecuniary and psychic costs from the transport and/or sale of assets (their homes). Furthermore, while investment capital may be safely regarded as highly mobile, existing firms that have their plant, equipment, and trained labor force in a fixed location are not (Armstrong and Taylor 1978). Even in an age of advanced information technology, the assumption of perfect information is unrealistic. Moreover, firms would incur added costs (as would workers) even if they attempted to calculate factor returns in every possible location.

Nevertheless, the one-sector model is not entirely without empirical support. The model is reasonably successful in explaining the variation in growth rates across states; capital and labor are shown to respond more to differential factor returns than employment opportunities, although the latter is still a statistically significant determinant.[10] Dynamic simulations of the model indicate a tendency toward convergence of regional growth rates of output and productivity, as predicted by the theory. However, it is noteworthy that a demand-oriented model has been proven to have more explanatory power in a test using the same dataset.[11] In a study of Indonesian regions, researchers applying growth theory found that the influence of quantity effects (the employment opportunity specification) is such that regional growth *diverges* in simulations over time (Giarratani and Soeroso 1985). This is because the growth-induced employment opportunities are stronger in the growing regions of Indonesia, creating a positive feedback mechanism that overpowers the equilibrating tendencies of factor flows assumed in neoclassical theory.[12]

In addition to regional differences in factor allocation, the literature has devoted significant attention to factor reallocation across sectors. Specifically, Restuccia and Rogerson (2008) show that while the optimal allocation will maximize welfare, misallocation of these inputs would result in lower levels of output and would manifest as a lower level of TFP. Misallocation can take two main forms. First, the wrong amount of input could be used. Second, the input available may not be appropriate. In the context of capital, misallocation would result in low aggregate output per worker as well as low aggregate TFP. In the context of labor, misallocation would suggest that people are employed in the "wrong" sector. In other words, high-productivity workers may be stuck working in low-productivity sectors. Hsieh and Klenow (2009) show that aggregate manufacturing output could increase by 30 percent–50 percent in China and by 40 percent–60 percent in India if capital and labor were reallocated to equalize marginal products.

Regional unemployment

Another source of criticism of the neoclassical regional growth model, and neoclassical economics in general, is the neglect of possible demand deficiencies as a cause of unemployment. Since the neoclassical model assumes that factor prices are

sufficiently flexible to keep capital and labor fully employed, involuntary regional unemployment is technically impossible. This approach is not particularly helpful in the regional context since persistent unemployment problems are frequently the primary concern of economic development practice. In the neoclassical world, regional unemployment can result from wage rigidities, perhaps caused or exacerbated by collective bargaining agreements, minimum wage legislation, and high unemployment benefits (McCombie 1988b). The implication is that, to lower unemployment, wages must be reduced through subsidies, limitations on trade union activity, or the elimination of its benefits.

McCombie (1988b) provides a useful analysis of the relationship between unemployment and real wages from both the neoclassical and post-Keynesian perspectives. Consider a cut in the real wage in order to restore a full employment equilibrium (the neoclassical prescription in a condition of high unemployment). Firms presumably employ more workers to produce additional output, which brings labor demand and supply back into balance but with a smaller labor force.[13] Instead imagine that the wage cut induces a reduction in consumption and, therefore, demand. Because workers have less money with which to purchase goods, firms reduce production below capacity, laying off workers in the process. Multiplier effects would come into play, further reducing production and employment. According to McCombie (1988b):

> If a fall in the real wage is associated with a decline in demand and the utilization rate of the capital stock falls, then it is possible that the level of employment will also actually fall.
>
> *(p. 401)*

The actual outcome depends on interregional effects, since exports may offset internal contractions in demand, and wage cuts may influence migration as well as wage-setting policies in other regions. In any case, the demand-side focus of the post-Keynesian approach raises important considerations.

Increasing returns and methodology

As noted earlier, one critical difference between traditional neoclassical growth theory and both endogenous growth theory and post-Keynesian theories is the returns to scale assumption. The assertion in early neoclassical models of constant returns in production, which arguably bears very little relation to the real world, is sometimes used as a reason to entirely discount such theories as simplistic, naive, and invalid. After all, simple observation would suggest that there are benefits to large size; firms clearly seek efficiencies through scale, as the popularity of expansions, mergers, and acquisitions in industry plainly testifies.[14] It turns out that the returns-to-scale assumption is a critical driver of the model's results, particularly from a spatial or regional perspective. Constant returns in the basic model suggest a gradual lessening of regional income disparities, whereas increasing returns

and associated externalities in post-Keynesian and endogenous growth models can imply polarized regional development, with some communities developing rapidly and others falling behind. The different implications for regional policy, particularly depending on one's view of distributional equity and the importance of place, are significant. Yet it would be incorrect and much less instructive to interpret the early treatment of returns to scale in regional analysis as a story of naive but technically skilled neoclassical economists pitted against gritty and realistic post-Keynesians and cumulative causation theorists. Instead, it is a story of how differences in methodological approach drive model building and the advancement in our understanding of the dynamics of regional growth and change.

Krugman (1997) makes this point clearly in his brief study of spatial analysis (or lack thereof) in mainstream economics.[15] Until recently, economists lacked the technical tools needed to model increasing returns in ways that were both tractable and insightful. This problem affected the neoclassical coverage of geographical questions in general; indeed, neoclassical economists focused on the questions they could address within the corpus (and with the mathematical tools) of microeconomic theory, neglecting location theory not because it was regarded as unimportant but because it could not be handled in a satisfactory way under the prevailing methodology. For similar reasons, "high development theory" (or the study of international development) also stagnated after its heyday in the 1940s and early 1950s. As Krugman notes:

> [T]he basic problem was neither one of ignorance nor of bias. Economists did not abandon the insights of development economics because they had forgotten about the subject; they did not ignore the ideas of geographers because to acknowledge space would somehow conflict with free market prejudices. No, these fields were left untilled because the terrain was seen as unsuitable for the tools at hand.
>
> *(p. 67)*

Endogenous growth models are possible because of improvements in mathematical tools. As a result, increasing returns have become a serious subject of neoclassical growth analysis simply because it is now possible to model them rigorously. And for the mainstream economist, the benefits of formal reasoning through expression in mathematics, such that the precepts and implications of theory can be presented in stark relief, outweigh the costs of neglecting phenomena that fall outside the purview of existing methodological techniques.

As a basis for the understanding of regional growth and change, new endogenous growth theories were further articulated and applied in various regional contexts (Capello and Nijkamp 2009). Together with the continued formalization of post-Keynesian ideas, regional growth theory improved in realism, but the empirical evidence remained mixed (Capolupo 2008). Furthermore, the complexity of the models made it much more difficult to generate clear policy insights (Maier and Trippl 2008). At least in the U.S. context, regional disparities have increased over

time (Moretti 2012; Florida 2017).[16] As regional inequality increases, it becomes increasingly important to understand how to counteract this trend effectively.

Discussion questions

1 Telecommunications technologies may increase the diffusion of innovations over space. Will the economic prospects of smaller metropolitan areas improve or decline with improvements in telecommunications technologies from the perspective of neoclassical growth theory?
2 Do post-Keynesian growth theories that are primarily concerned with the adequacy of effective demand seem applicable in your region?
3 How might concepts of sustainable development be incorporated into neoclassical and post-Keynesian growth models? Hint: Why are environmental impacts of development often ignored by firms?
4 Regional theorists are often concerned with reducing interregional disparities in income by promoting growth in lagging regions. Which arguments from growth theory support this concern? What are the costs and benefits of encouraging labor mobility from depressed to growing regions?
5 Assume that a region with a traditionally strong economy is hit by an economic shock in the form of several major and concurrent plant closures that result in a considerable number of lay-offs. According to traditional neoclassical growth theories, what adjustments are necessary for the system to return to a low unemployment equilibrium?
6 What kinds of costs might be associated with the economic adjustment process postulated in the previous question? Which costs might have longer-lasting effects on the future growth trajectory of the region?
7 The neoclassical perspective suggests that economic developers should be concerned with the efficient allocation of productive resources in their communities. What role should economic developers take in influencing the distribution of these resources?

APPENDIX 5.1

The simple neoclassical growth model[17]

An economy in which all variables are changing at a constant proportional rate, for example, 2 percent every year, is experiencing *steady-state* growth. An equilibrium is *stable* if, once the system is disturbed through some type of economic shock (e.g., the Great Recession), natural forces tend to bring the system back into equilibrium. The notion of stable growth requires a balance between two opposing feedback mechanisms. Positive feedback means that the system diverges from some initial state. Growth is usually a positive-feedback process. Negative feedback means that the system regains equilibrium after an equilibrium state is disturbed. Stable growth combines the two feedback mechanisms. Positive feedback (growth) moves the system farther and farther from its initial state, but negative feedback keeps the system on track.[18]

Neoclassical models predicting steady-state growth would be in general accord with observed economic phenomena. Data on the historical growth experience of the major industrial economies show that key economic variables (capital stock, labor, and output) tend to grow at constant proportional rates. Thus, growth theorists try to explain empirically steady-state growth and related phenomena.[19] The original developers of the theory, led by Solow (1956), were also interested in carefully examining the results of an earlier class of growth models that suggested that steady-state full-employment growth would probably *not* occur as a normal state of affairs.[20] This conclusion challenged the neoclassical position that the market mechanism is the certain route to full-employment growth.

The following are the specific assumptions and postulates of the simple one-sector neoclassical growth model:[21]

1 There is a single good (thus an economy with a single sector, say manufacturing) whose production may be characterized by a function that relates output to factor input supplies (capital and labor, for example) and technology:

$$Y = A_t F\left(K_t, L_t\right) \tag{5.1}$$

where Y, K, and L denote output, capital, and labor, respectively, and t subscript indexes time. A_t represents technological change. Generally, a Cobb–Douglas production function is assumed as the specific form of the general production relation. In what follows, we eliminate the time subscript in order to simplify the notation.

$$Y = AK^{\alpha}L^{1-\alpha} \tag{5.2}$$

where α and $1-\alpha$ represent the contribution of capital and labor to aggregate output or, more specifically, the output elasticities and relative factor income shares.

2 The production function 5.1 is characterized by constant returns to scale (i.e., a doubling of inputs leads to an exact doubling of output).

3 Technology and labor grow at exogenous, constant proportional rates δ and n, respectively, which puts both variables outside the scope of the model. For our purposes, technology growth may be viewed as the general advance of knowledge. At the national level, ignoring immigration and emigration, labor force growth is determined by natural population increase.

4 What is saved is, by definition, invested and, therefore, no separate investment function is needed. This is expressed by the following identity:

$$S \equiv I \tag{5.3}$$

where S and I denote savings and investment, respectively.

5 Saving is a constant (exogenously determined) proportion of output:

$$S = sY \quad 0 < s < 1 \tag{5.4}$$

where s is referred to as the average propensity to save, the share of output in a given period that constitutes savings. The growth of capital is simply the increment in new capital acquired by firms due to investment ($I = S$) divided by the existing level of capital (K):

$$\frac{Change\ Capital}{Initial\ Level\ of\ Captial} = \frac{I}{K} = \Delta K \tag{5.5}$$

The delta to the left of any variable is a simplified means of denoting a growth rate; thus ΔK is the growth rate of capital.

Manipulating the model outlined earlier yields the expression in (5.6), denoting the growth rate of output as a function of growth in factor supplies and exogenously determined technology:

$$\Delta Y = \delta + \alpha\Delta K + (1-\alpha)n \tag{5.6}$$

where, ΔY and ΔK denote the *growth rates* of output and capital, respectively; n is the rate at which the labor force is assumed to grow; α and $(1-\alpha)$ are the

elasticities of output with respect to capital and labor, respectively; and δ is the exogenous rate of technological change. Equation 5.6 simply states that the rate of growth in output is due to increases in the growth rates of the labor force, capital stock, and technological change.

A variable of critical interest is labor productivity, or output per worker. Labor productivity may be expressed as $(\Delta Y - n)$ or the growth in output less the growth in the labor force. To identify what determines the growth in output worker, we can rewrite equation 5.6 in the following terms:

$$\Delta Y = \delta + \alpha\Delta K + n - \alpha n \tag{5.7}$$

$$\Delta Y - n = \delta + \alpha(\Delta K - n) \tag{5.8}$$

Equation 5.8 indicates that labor productivity growth occurs either through technological change, δ, which by definition is determined outside of the model, or through the growth of the capital stock *in excess* of the rate of expansion of the labor force. When capital stock grows faster than the labor force, the ratio of capital to labor naturally increases (more machinery per worker). This process is referred to as "capital deepening."

To this point, we have simply explored the implications of the simple model. As already noted, early neoclassical theorists were primarily interested in the existence and stability of a steady-state growth equilibrium, whereby national output grows at a constant, proportional rate. Actually, this neoclassical model describes an economic system that tends toward equilibrium steady-state growth. Although the demonstration of this point is complicated, the important point is that the model implies that output growth in a state of equilibrium is determined solely by technological change and the rate of growth of the labor force. This is expressed as the following:

$$\Delta Y = \Delta K = \frac{\delta}{1-\alpha} + n \tag{5.9}$$

The model is stable in that any shock that drives the economy away from the equilibrium will only be temporary; the economy will return to the steady-state equilibrium. Moving n to the left side of Equation 6.8 also shows that, in steady-state growth, increases in productivity (output per worker) are determined by technological change alone:

$$\Delta Y - n = \frac{\delta}{1-\alpha} \tag{5.10}$$

The national model must be specified in greater detail in order to render it useful for analyzing regional economic change. In a system of cities or regions, increases in regional capital and labor supplies are a function of indigenous local growth as well as migration between regions. One could assume that all regions save an identical portion of income in each period, although regional variations probably exist. In addition, production technologies and the rate of new technology utilization

may or may not be assumed to be identical across regions. Finally, it is possible to deviate (both at the national and regional level of analysis) from the assumptions of a single good and constant returns to scale production functions. Indeed, in the case of regional growth, the two-sector model yields important contrasting implications for the relative growth rates across regions, as do models that incorporate the notion of agglomeration economies through production functions that exhibit increasing returns to scale.

The following are the basic assumptions of the simplest, one sector model of regional growth:

1. Production in each region may be described by the same constant returns to scale production function.
2. While saving in each period S_i varies across regions (regions are denoted by the subscript *i*) the propensity to save ($s = S_i / Y_i$) is identical everywhere.
3. The rate of technical progress, δ, is the same in all regions. No differences in technology diffusion exist.
4. In the national model, capital and labor growth were determined by s/v and n, respectively, where

$$\Delta K = \frac{I}{K} = \frac{S/Y}{K/Y} = \frac{s}{v} \tag{5.11}$$

and where $v = \frac{K}{Y}$.

In the case of regions, there is the additional influence of migration to consider:

$$\Delta K = \frac{s}{v_i} + \sum_j c_{ji},\ n_i = l_i + \sum_j m_{ji} \tag{5.12}$$

where c_{ji} is the annual net capital flow from region j to i divided by the capital stock in region i (the rate of change of net capital flow), m_{ji} is the net migration of workers from j to i divided by region i's labor force (the rate of change in labor due to net migration), and l_i is the rate of growth of the local labor supply.

The amounts of capital and labor are determined solely by regional differences in wage rates and the rates of return to capital. The model does not allow for the possible costs capital and labor may incur in the process of migration. Rather, it embodies the typical neoclassical assumption that economic adjustments will occur with no friction of distance. Regional output and productivity growth in equilibrium are analogous to the national case.

Equilibrium growth in the neoclassical model

By definition, the economy is said to be in a *steady-state* equilibrium if output is growing at a constant, proportional rate (e.g., 3 percent per year). This requires that the rate of growth of capital equal the rate of growth of output. The critical issue

from the neoclassical perspective is whether the economy *tends to* a steady-state growth path. In fact, the model described previously suggests that it does. Return to Equation 5.6, and replace Δ with sY/K:

$$\Delta Y = \delta + \alpha s\frac{Y}{K} + (1-\alpha)n \tag{5.13}$$

Now consider the case where the change in savings sY/K (and thus the rate of growth of capital) exceeds the values necessary to ensure steady-state growth. Since s is constant, K/Y must be below the value required for equilibrium growth. This ratio will adjust automatically to return the system to equilibrium because, by Equation 5.13, the rate of growth of capital must be greater than the growth rate of output. Therefore, since the capital stock is growing faster than output, the capital-output ratio must rise to the equilibrium level. A similar argument may be made to show how the capital-output ratio will fall to restore the system to equilibrium if full-employment savings and investment are below the amount required in a condition of steady-state growth.

Notes

1 As the generally unrealistic assumptions of the neoclassical model are relaxed, the models better reflect observed empirical trends. Some view neoclassical theory as providing a picture of how regional economies should operate, whereas post-Keynesian models are more consistent with reality (Chisholm 1990).
2 Chisholm (1990) notes that the reputation of neoclassical theory as a supply-side approach has fostered the notion that it provides an adequate description of supply-side issues. In fact, neoclassical growth theory neglects some important aspects of supply. This criticism may also be applied to economic base theory. An exclusive focus on demand does not necessarily demonstrate its satisfactory treatment.
3 Price elasticity describes how changes in quantity respond to changes in price. Perfectly inelastic supply means that the quantity of supply is fixed for the range of relevant prices.
4 This is referred to as the nonaccelerating inflation rate of unemployment (NAIRU).
5 Figure 5.1 is adapted from Figure 3.3 in Armstrong and Taylor (1985, p. 57).
6 McCombie adopts the term "post-Keynesian" to distinguish the perspective from the "Keynesian-neoclassical synthesis," which, according to Dome (1994), is "the synthesis between Keynes' *General Theory* and neoclassical economics; between macroeconomics and microeconomics; and between a fiscal and monetary policy and laissez faire" (p. 245). An example of the Keynesian-neoclassical synthesis is the neoclassical regional growth theory, outlined earlier, with its acceptance of the possible need for demand management strategies in the short run to maintain full employment but the belief that price adjustments would work in the long run to eliminate regional income and productivity growth differentials. Pinning down terminology is less critical than understanding the fundamental differences between perspectives.
7 See Berry (1972) and Thwaites and Oakey (1985). McCombie (1988a) provides a useful brief review of the innovation diffusion literature.
8 Salter (1966) showed that in some cases rational profit-maximizing firms may not adopt best-practice technology immediately.
9 This was true overall for the study period 1919–1957. Borts and Stein did find that the growth of capital was fastest in low-wage areas between the more limited time period of 1929–1948.

10 Ghali et al. (1978) estimated a simple neoclassical model of state output growth differentials between 1963 and 1973. They specified capital and labor growth as dependent upon lagged factor returns and employment opportunities, with the latter proxied by regional differentials in output growth. The lagged specification was meant to account for imperfect information flows.
11 Ghali et al. (1981) develop a recursive model that includes aggregate supply variables, aggregate demand variables, and factor mobility. They test two versions, with supply or demand factors functioning as the adjustment mechanism: interregional factor mobility is the adjustment mechanism for the supply-side formulation, while change in net exports is the demand-side mechanism. Interestingly, the model generates very similar growth rates under a 20-year simulation regardless of whether the demand-side or supply-side mechanism is used. This suggests that growth models that stress either supply or demand factors may be as useful as more comprehensive models in simulating growth or testing the impacts of public policies.
12 Although Ghali et al.'s (1981) attempt to broaden the explanation of factor migration represents an improvement over the simplest neoclassical specification, one could persuasively argue that an entirely different approach is needed. The human capital explanation of labor migration is one such alternative (Greenwood 1975). Indeed, the influences on migration are probably of significant enough complexity to warrant careful separate analysis rather than the somewhat trivial incorporation into an already simplified growth model.
13 This outcome requires further explanation. With demand and supply schedules based on neoclassical assumptions, wages could be "artificially" high. At this wage, the demand for workers is less than the available supply, whereas the supply of workers is greater than the quantity in demand. Unemployment occurs because workers are seeking employment at that higher wage, but jobs are not available. When the wage level drops to its "equilibrium" level, demand increases, and some formerly unemployed workers are hired. Unemployment is lower as a result. However, the remaining unemployed workers withdraw from the labor force presumably because they prefer not to work at the lower equilibrium wage. Thus, the fully employed labor force is smaller. Full employment is achieved at the cost of having fewer potential workers seeking work and therefore lowering the labor force participation rate.

    Some readers may question this neoclassical argument given the strong divergence between rising labor productivity and lagging wages in the United States since the late 1970s. With greater bargaining power, labor could have higher wages and more employment opportunities.
14 Flexible production theories highlight the benefits of smaller-scale production and increased outsourcing (Chapter 8). Also see Harrison (1994) for an insightful analysis of corporate flexibility, firm size, and regional growth and change.
15 Paul Krugman has argued for the better treatment of spatial questions in the main body of economic theory. For a summary of Krugman's work in economic geography, see Martin and Sunley (1996). For a view of the significance of his work for economic development and regional science, see Isserman (1996).
16 Regional disparities have been attributed to historical differences and path dependence. See Marti-Henneberg and Tirado-Fabregat (2018) and the discussion in Chapter 10.
17 This section draws on the Hamberg's (1971) mathematical analysis of neoclassical growth. See his Chapter 2.
18 Jones (1975, pp. 12–42) provides an elementary review of many of the basic growth theory concepts.
19 The economic regularities that growth models attempt to explain are referred to as the stylized facts of growth. See Branson (1989, pp. 564–568).
20 These are the Harrod-Domar models (Harrod 1939; Domar 1946, 1947); Higgins and Savoie (1995, pp. 76–84) provide a review.
21 The model also assumes perfectly flexible factor prices (thus full employment of capital and labor), factor substitutability, and diminishing returns to capital and labor.

6

THEORIES OF SPATIAL CONCENTRATION AND DIFFUSION

Theories of spatial concentration and diffusion examine economic growth as a process that involves changing industrial structure and spatial structure, both between and within labor market areas. The theories portray the economic growth process as more complex and dynamic than economic base or neoclassical growth theories. They provide a conceptual bridge from early regional theories developed before 1950 to more contemporary regional theories. Francois Perroux's (1950a) theory of growth poles, Albert Hirschman's (1958) notion of unbalanced growth, Gunnar Myrdal's (1957) theory of cumulative causation, John Friedmann's (1972) core-periphery model, and Raymond Vernon's (1966) product cycle theory are the best known of these theories. They are closely related even though they were developed in different contexts or were intended to address very different development challenges. The common focus is to determine whether or not regional disparities in the level of growth and development are likely to remain persistent or even worsen in the absence of public intervention.

One important application of the theories is *growth center policy*, which suggests that industrial growth can be diffused to backward regions by concentrating infrastructure investments and direct business investments to selected locations that possess growth potential.[1] Investments in these designated growth centers are used to create spatial industrial complexes from industries that are technologically linked in buyer-supplier relationships. (See the discussion of input-output analysis in Appendix 3.2.) Unfortunately, despite the popularity of spatial concentration theories among regional development planners, growth center applications have frequently failed. As we will discuss in more detail, these failures are due to both weak theory and its misapplication.

In general, all five theories move us from strategies focused on a few sectors, factors, or products to strategies concerned with detailed economic structure, the interaction between structure and growth, and the spread of growth across space.

Although the theories discussed here emphasize the concentration or polarization of growth in particular regions during some stage in a development process, they offer different explanations about how the pattern of economic growth will evolve across regions in the long term. Conceptions of regional growth diffusion range from Myrdal's hypothesis of persistent regional disparities to Hirschman's belief in strong trickle-down effects that gradually eliminate disparities.

Product cycle theory is useful because it moves us from a world of *given* commodities and factors of production to a world of *changing* production and trade relationships. In product cycle theory, product development becomes the driving economic force which emphasizes the dynamism of the growth process, like Perroux's growth poles, but with more clarity and specificity. Like entrepreneurship theories, the essential dynamic behind product development is the creation and development of new products.[2]

Spatial concentration theories

This section covers the theory of growth poles, unbalanced growth theory, cumulative causation theories, the core-periphery model, and product cycle theory.

Growth poles: Perroux's pure theory

The term "growth pole" is most commonly associated with Perroux's (1950a, 1950b) hypothesis that growth impulses emanate from particularly powerful actors, such as large firms, which operate in an abstractly conceived economic space. Using concepts derived from physics and mathematics, Perroux (1950a) argued that economic space consists of three principal characteristics: (1) a set of relations between a firm or an industry and its buyers and suppliers, (2) a field of forces in which these relations occur, and (3) a homogeneous environment or "aggregate" in which the forces interact. The concept of economic space as a field of forces gave him the definition of a growth pole: "centres (or poles or foci) from which centrifugal forces emanate and to which centripetal forces are attracted . . . the firm attracts economic elements, supplies and demands, into [its space], or it removes them" (p. 95). Poles of growth therefore may represent individual firms, industries, or economic sectors.

Firms, industries, or sectors as growth poles effectively dominate other economic actors through linkages based on commodity and information flows. We can imagine large firms that are able to control markets and dictate terms to dependent suppliers, for example. The "domination effect" exerted by a growth pole may or may not manifest itself in a spatial pattern of polarized growth. Perroux (1950b) argued that domination effects are likely to be nonlocal because the linkages between firms and other economic actors frequently transcend regional boundaries in highly unpredictable ways; a large producer in Atlanta, for example, may be more closely linked with industries in Singapore than with firms in the immediate surrounding regions. Perroux actually regarded geographic space "banal" or

unimportant for a true understanding of the economic growth process. Rather, he advocated that development be studied behaviorally and historically in order to understand the power relations among economic actors.

In essence, the theory of growth poles assumes that growth will be an uneven process and addresses how, why, and where growth poles occur. Perroux, who was interested in refuting the tenets of neoclassical equilibrium analysis, argued that growth proceeds in an unbalanced way and that changes in the basic structure of the economy as manifested through relations between dominant actors are critical to understanding the development trajectory of particular economies. Using an input-output framework, he sought to explain the structural change that occurs as output increases with the concept of a "propulsive industry." Growth poles are propulsive industries that dominate other sectors due to their large size, market power, high growth rate, and high degree of linkage. Subordinate industries often sell a high proportion of their output to the dominant industry on which they depend for their business success.

Growth experienced by the propulsive sector spreads to other industries via input-output multipliers.[3] More importantly, the propulsive sector leads growth by providing a focus for innovation and investment (Thomas 1975).[4] According to Perroux, the pole has some advantage due to technology, wealth, or political influence that permits it to increase internal economies of size and scale as well as generate external localization economies for linked industries (Moseley 1974).

Perroux (1988) refined the growth pole concept, seeking to address criticisms that pointed out the negative consequences of successful growth poles on the "dominated" units. He argued that growth pole development involves two distinct phases: an initial *clustering or attraction phase* when the dominated units lose resources to the pole, followed by an *expansion phase* when investments and information flow from the pole to the dominated units that sustain growth.

It is not difficult to see how these ideas might be applied in geographic space. We can imagine, for example, that a dominant industry's primary linkages could be to firms in the surrounding region, or at least to firms located within the same nation. In either case, the external economies initiated by the propulsive industry affect spatial relations as well as economic exchange. This logic led many reading Perroux to develop the concept of growth centers, which are intended to be propulsive regions rather than propulsive industries.

The fact that many economic development planners tried to implement growth pole theory in a geographical context led Perroux to make his own rare foray into spatial analysis. In particular, he articulated a strategy of creating development axes through the establishment of strong transportation links between growth centers. These axes would generate "spinoff development" which would benefit peripheral areas. In this analysis, he makes a new distinction between growth poles and *development poles*, which engender reciprocal economic and spatial relations that can increase overall complexity, "territorialized or non-territorialized." Here he appears to be arguing that we should continue to use growth pole theory in economic space and then apply the natural effects of polarization to territorial space.

In effect, he is saying that clusters of industries, which are linked by technology and trade in economic space, can become industrial complexes through mutual co-location. The tendency of firms to be agglomeration-seeking explains this spatial manifestation of economic relations. According to this reasoning, large, dynamic metropolitan areas will dominate smaller cities and their own peripheral areas as they accrue agglomeration economies (Chapter 9).[5]

Unbalanced growth theory

Although he did not claim to be borrowing Perroux's concept of growth poles, Hirschman was one of the first theorists to describe a development strategy based on the concept of geographic growth centers. He argued in the 1950s that in order for an economy to increase income, it must first develop within itself one or several regional centers of economic strength, termed "growth points" or "growth poles" (Friedmann and Alonso 1964, p. 623). In his view, some degree of inter-regional and international inequality of growth is inevitable, and indeed, beneficial. Hirschman saw activity generated within the growth center spreading to peripheral areas through increases in purchases and investments in these regions. He calls this the "trickling down of progress." He also recognized "polarization" effects, such as white-collar migration out of less developed areas and the dominance of growth center industry. In these poor regions, Hirschman contended that the trickling down of progress would outweigh the polarization effects. However, "if the market forces that express themselves through the trickling-down and polarization effects result in a temporary victory of the latter, deliberate economic policy will come into play to correct the situation" (Friedmann and Alonso 1964, p. 630).

Hirschman argues that public investment is the policy tool for directing growth. His strategy calls for directing investment toward industries that have extensive backward and forward linkages with other industries, which would enable the creation of the most advantageous external economies (economies external to a given firm in a particular industry and those between different industries). Since privately financed growth in a given region increases demand for public services like electricity and water, government could induce private investment to a chosen area by installing necessary infrastructure and services beforehand. Dispersing project funds widely over several regions could address concerns for equity and national cohesion but would have little chance of propelling the economy out of stagnation, in Hirschman's eyes. Public investment would first be used to establish growth centers and then seek to counteract polarization effects generated by the market. Hirschman's ideas were consistent with the views of economic planners in the industrialized and developing world in the 1960s who were becoming increasingly concerned that the neoclassical growth models (Chapter 5) were ignoring disparities in regional growth and welfare. Perroux's ideas were becoming more widely disseminated and modified to address regional concerns in the 1960s as well. His growth center concept became extremely influential as a solution to urban-rural disparities, peripheral stagnation, and the growth of mega-cities.

Higgins (1983) argues that growth poles and growth centers became extremely popular because they represented a middle course of action: decentralization with concentration, attention to peripheral areas (equity) with efficient means, and spatial inequality rather than income or wealth inequality. In contrast to economic base theory, popular in part due to its simplicity, growth pole/center theory attracted a large following because it was highly abstract, even vague, and therefore could be applied in different ways.

Hirschman's ideas became part of a lively debate in the 1950s regarding whether a balanced or unbalance investment pattern was more likely to be successful in advancing underdeveloped areas. Balance growth advocates emphasized the lack of effective demand in less developed regions and countries, a problem essentially ignored by the supply-oriented unbalanced growth advocates.[6] They argued for a "big push" of simultaneous investment across a range of complementary industries in order to exploit backward and forward linkages and generate external economies in underdeveloped regions. They assumed that a strategy of simultaneous investment in mutually supporting industries would create markets for the economy's production, thus reducing risks and therefore costs.[7] Balanced growth theorists saw this coordinated wave of investments as a way to overcome underdevelopment. Nurske (1953) argued that, because the forces were circular, such investments could turn cumulative decline into cumulative advance. In this case, the vicious circle becomes virtuous (Rosenstein-Rodan 1943; Streeten 1959; Gianaris 1978).[8]

Hirschman and other proponents of unbalanced growth, on the other hand, saw the larger problem in underdeveloped economies as one of weak entrepreneurial decision-making. From this perspective, development may be spurred by "generating a chain of unbalanced growth sequences in order to induce decision making through tensions and incentives for private entrepreneurs and state planners" (Gianaris 1978, p. 104). Therefore, generating development in stagnant, underdeveloped economies required focusing limited public and private investment in just a few key sectors and places to take advantage of economies of scale as well as maximize the use of scarce financial, physical, and human resources. Investment in the most strategic sectors of the economy is required to break the vicious circle of poverty.

Streeten (1959) concurs, arguing that bottlenecks created by uneven investment can themselves become powerful stimuli to the growth of lagging complementary activity. Whereas a balanced investment scheme would lead to the development of plants that would be smaller than that necessary for the optimum use of equipment, initial unbalanced investments in temporarily oversized plants could take advantage of greater cost reductions later as markets develop. Although overestimates of future demand may lead to losses in the short run, the expansion of capacity is more important than potential periods of slackness.[9]

Cumulative causation theories

Gunnar Myrdal (1957) describes a vicious cycle of development in the context of his principle of circular and cumulative causation: economic changes cause

related and supporting social changes in a process that continues in one direction.[10] Because of this circular causation and positive feedback, the dynamic behind poverty in underdeveloped areas becomes cumulative and often gathers speed at an accelerating rate. He argues, however, that any change induced by organized actors can start the cumulative process in either a favorable or an adverse direction. Moreover, "there is no tendency toward automatic self-stabilization in the social system" (p. 13). Although social forces may array themselves in such a way as to bring a social process to rest, this position is inherently precarious, and any exogenous change has the ability to start the change process in a new direction. Myrdal was trying to provide theoretical justification for development process intervention. He asserted that without intervention, backward areas may be relegated to perpetual underdevelopment, whereas a scheme of balanced locational investment may provide the needed push toward cumulatively positive growth.

Myrdal's analysis of the diffusion of growth is more pessimistic than Hirschman's. The play of market forces can increase inequalities between regions, leaving underdeveloped areas in the "backwater" of growing ones. Less fortunate regions receive the "backwash" effects of proximity to growth centers, such as out-migration, capital flight, and unfavorable terms of trade since "the movements of labor, capital, goods and services do not by themselves counteract the natural tendency to regional inequality" (1957, pp. 26–27). Migration, capital movements, and trade are "the media through which the cumulative process evolves-upward in the lucky regions and downward in the unlucky ones" (Ibid.). Myrdal is essentially taking issue with neoclassical interregional trade theory (Chapter 4), which stresses how the price mechanism should bring the economy into an equilibrium such that disparities between regions are gradually eliminated. Yet he acknowledges that underdeveloped areas may enjoy beneficial "spread effects" from nearby developed areas, including growing markets for primary goods produced in the poorer area, increasing demand for raw materials (thereby increasing employment and subsequently benefitting consumer goods industries), and the absorption of the poorer region's excess unemployed into the growing one.[11] Unfortunately, spread effects could be weak, thereby perpetuating inequality and ineffective democracy, which reinforce the need for activist state intervention.[12]

The Myrdal and Hirschman's counterposed outcomes depend on whether positive feedback (deviation amplifying) or negative feedback (equilibrium tendency) mechanisms are more powerful in the regions under study. Hirschman, like Perroux, recognizes that growth is usually unbalanced initially, occurring in places where innovation and investment are supported. Yet he argues that trickle-down effects will ultimately prove to be stronger than polarization effects. Myrdal sees negative feedback as less powerful than positive feedback. In other words, the spread effects promoting development in poor regions will be weaker than the backwash effects that drain resources from these areas.

Michael Storper and Allan Scott (2009) draw on these ideas. They identify cumulative causation as the dynamic that drives urban growth after the inception of any city. This cumulative process proceeds as follows: the organization of the

production system generates agglomeration economies that sustain growth. These external economies are powerful enough to increase city economic development even where wages, rents, and other costs of production and living are relatively high and continue to increase. As city size increases, economic diversity increases in tandem as new local specializations are added to existing ones. Innovation, which is necessary to sustain growth, is realized more frequently in larger cities than in smaller, less diverse places. Such innovation is not generic but arises from the specializations of the place. These differences in the city's major specializations matter because they define the domain of innovation.[13]

Friedmann's core-periphery model

Friedmann (1966, 1972) poses a theory of regional development based on the notion of cumulative causation that incorporates elements of stages theory (Chapter 3). The process of economic development, according to Friedmann, involves a critical transition from a preindustrial phase, where agricultural activities are dominant and industry is a relatively small share of economic activity, to a fully industrialized economy. This transition strongly affects the spatial structure of settlement, which, in turn, affects future economic performance. In the preindustrial phase, the economy is dominated by relatively autonomous cities and their related agricultural hinterlands. As industrialization begins, however, and as the economy moves into its transitional phase, investments tend to be concentrated in particular locations, establishing an unequal relationship between "core" regions and peripheral areas. These relationships evolve to establish a functioning system of cities. From the perspective of an underdeveloped country, Friedmann is concerned that the poor economic prospects of outlying areas, in contrast to the prosperity of core regions, will lead to political instability. Friedmann argues that without government intervention to ensure that additional cities develop outside the core areas, the cores will come to dominate the spatial economy, which will retard subsequent growth. His underlying model is a normative assertion (not necessarily justified with substantive empirical work) that a spatial economy focused on a few large urban centers, if allowed to establish itself, will ensure the continued impoverishment of its peripheral areas.

Friedmann (1986) later revised and updated this model given his understanding of the international spatial division of labor in the global economy. His model represents a fusion of regional development ideas with theories of central place and urban hierarchy (Chapter 9). He also draws from theories of concentration and diffusion. These theories support Friedmann's ideas, which essentially describe the geography of linkages and support the assumed core-periphery or top-down flow of growth.[14]

Product cycle theory

Raymond Vernon first developed product cycle theory as a way to explain the "Leontief paradox" that contradicted the expected outcomes of trade theory

(Chapter 4).[15] During the 1950s, the U.S. economy was considered relatively capital intensive. Yet, Leontief's empirical results for the international trade of the United States during this period showed that the United States exported relatively labor-intensive products and imported relatively capital-intensive products. Vernon's product cycle hypothesis offered one explanation for the paradox. His ideas drew heavily from his previous empirical research on the New York metropolitan region, which provided evidence for his argument.[16]

Product cycle theory can be explained by contrasting its tenets to the basic ideas of interregional trade theory and location theory.[17] Like interregional trade theory, product cycle theory is grounded in neoclassical economics and considers the interregional pattern of specialization in trade. Unlike trade theory, product cycle theory is a partial equilibrium argument about the dynamics of development. The theory is more descriptive of actual development dynamics and, concomitantly, less dependent on formal logical argument. It suggests that interregional development patterns are modified over time by recurring cycles from new product to maturing product to standardized product. Interregional trade does not necessarily lead to convergence of per capita incomes, nor is convergence achieved with labor mobility. Consumption differences, production economies, and communication advantages may continue to favor the more developed region even with complete factor mobility.

Like traditional location theory, product cycle theory focuses on firm-level decision-making (a partial equilibrium framework). However, location theory considers the profit-maximizing locations for existing products, most of which are standardized. In general, it ignores the factors important to the development of new products, which is the point of departure of product cycle theory.[18]

In the international case, product cycle theory presents stylized facts about the United States, Western Europe, and less developed countries. These countries are distinguished by their different industrial structures, levels of technology, factor costs, and consumer tastes. Capital is considered mobile and labor immobile between countries. Although all areas have access to modern science and technology, new products tend to originate in the more-developed country for two reasons. First, potential markets for more sophisticated new products are larger in the more developed country. Second, entrepreneurs there have better information about these commercial opportunities and innovation possibilities because communications channels are more efficient. Greater incentives for new product creation exist in the more developed country because both incomes and wages are relatively high there. High incomes correlate with more complex consumer tastes, and high wages encourage the production of new capital goods that can substitute for expensive labor.

The innovation process results in the creation of new products that initially satisfy local demand in the more developed country. As the product matures and becomes standardized, producers are able to export it to less developed countries. Once the production process becomes completely standardized, the product can be produced in either areas, but competitive pressures drive producers to seek

the lower-cost, less developed country location. Relatedly, the price elasticity of demand increases as the product matures.[19]

This diffusion process benefits the less developed country because it experiences more rapid economic growth as the result of external investment and trade in standardized products. Yet firms headquartered in the more developed country set the nature and rhythm of its growth. In essence, diffusion leads to a form of economic dependency in less developed areas because the tastes satisfied and the technology developed through new products are intended to meet the economic realities of the more developed country and, therefore, are not always appropriate for less developed countries.

The location of production in less developed countries does not follow the trade theory logic of comparative advantage where relative differences in product costs and factor endowments are most important. Instead of trade, direct investment embodying advanced technology for standardized production processes establishes new plant and equipment in less developed countries. The decision to invest is stimulated by the desire to defend the market penetrated earlier by exports of the maturing product. Low wages and insufficient capital accumulation in less developed countries are advantages to outside investors and increase the regions' attractiveness to them. Capital market segmentation may also work in favor of foreign investors who have access to the formal capital market. These advantages may compensate for the disadvantages of smaller markets, higher transport costs, and fewer external economies in less developed countries.

The regional context

Vernon's original three-country presentation of international trade can be simplified to consider one more developed region (MDR) and one less developed region (LDR) within the same country: during the new product phase, all production is consumed in the MDR. As the product matures, consumption is initiated in the LDR and increases as its imports continue. Obviously, production exceeds consumption in the MDR during the maturing-product phase. Then, it becomes profitable to locate production of the standardized product in the LDR. During this phase, production may drop to be equal to or less than consumption in the MDR. Later on, the standardized product may be exported back to the MDR. When this occurs, standardized production increases to exceed consumption in the LDR.

On the basis of this product cycle process, economic development can be defined as the creation of new products followed by the diffusion of standardized products. Development originates in the MDR and is exported to the LDR through trade and then investment. Establishing a new industry in the LDR creates a progressive force that can help eliminate barriers to interregional equality. Yet product cycle theory does not predict convergence of regional incomes; the development process can be convergent or divergent.

Even if regional incomes did not converge, the diffusion process could provide other benefits to the LDR and lead to other forms of convergence. First, access

to mature products expands the range of consumption opportunities in the LDR. Second, establishing branch facilities that produce standardized products expands job opportunities. Even if wages paid for standardized product manufacturing are low compared to wages paid in the MDR, they should be higher than the average in the LDR. Third, investments, loans, or grants from the MDR should increase in the LDR initially to support imports of mature products and subsequently to construct facilities for the production of standardized products. Fourth, increasing the number of standardized producers could help diversify the local economy and increase its stability. Finally, multiplier effects could create opportunities for new enterprises in the LDR, but this outcome may be unlikely because standardized-product manufacturers often require few local inputs beyond labor and physical infrastructure. Most are obliged to purchase goods and services from other divisions of their company. Thus, only local businesses providing goods and services to local households may grow.

On the other hand, the diffusion process could exacerbate the inequality between the two regions. Although favorable terms of trade could evolve for the exports of standardized products, this outcome is neither assured nor expected to be long-lasting given the high price elasticity of such products. Even if per capita income in the LDR increased, the inequality in the levels of development in the two region is likely to increase for three reasons. First, the dependency of the LDR on the MDR would increase. Consumers and producers in the LDR would exercise less and less control over the local economy since mature products were designed to respond to consumer tastes in the MDR and standardized products were developed with the technology of that region. Second, relatively high wages in the standardized product sectors could stagnate unless workers found ways to press demands for improvements in wages and working conditions.[20] Third, outsiders clearly own and control the branch-plant economy. Extensive "foreign" ownership would eventually increase the volume of repatriated profits (profits earned in the LDR are paid to owners located in the MDR). In some regions, the branch facilities would form a separate enclave economy that would have very limited beneficial spillover effects. Given these likely interregional outcomes, the national government may need to intervene to promote development in the LDR.

In general, product cycle theory supports the need for active government intervention to encourage the diffusion of standardized products and the creation of new products that would alter regional specializations. The theory calls for the implementation of public investments in transportation, communications, and other infrastructure. It would disseminate current information on scientific, technological, and other relevant developments to entrepreneurs. For the LDR, it would be particularly useful to insure sufficient exports to permit the importation of maturing products and to train workers and managers for industries producing standardized products.

In summary, product cycle theory describes the relationships between innovation, structural change, and economic development outcomes. In its regional application, the theory focuses on the spread effects generated by the diffusion of

productive investments from the innovating MDR to the LDR. Firms in the MDR introduce new products in response to the high incomes or high labor costs there. As new products mature, firms seek export markets and find them in the LDR. When products become standardized, they can be more competitively produced in the LDR. The innovation process required to create new products has developmental impacts in the MDR, while the investment needed to establish standardized products generates economic growth in the LDR.

The following section sequentially applies the five theories of spatial concentration and diffusion to economic development practice. The third section describes the theories more fully and criticizes them.

Applications

Growth center policies essentially represent attempts to affect the urban hierarchy as a way to overcome disparities among regions within one nation. One argument is that intermediate-sized cities should be favored for development as growth centers because they are large enough to attract capital, yet sufficiently dispersed spatially to be accessible to commuters from more remote areas. In addition, they may permit fewer diseconomies than larger metropolitan areas but more external economies than smaller areas.[21] Furthermore, intermediate-sized centers can provide the necessary level of infrastructure and services to serve as central places but have not yet reached the size and scale at which service provision and infrastructure maintenance becomes problematic, and land prices, other expenses, congestion, and environmental deterioration overtake the benefits to be found there.[22] This logic encounters a fatal flaw, however, because it ignores how externalities are internalized: society absorbs most of the diseconomies of agglomeration. Conversely, private actors enjoy most of the benefits of agglomeration economies. Rational government intervention may favor decentralization and growth centers, but private investors will still rationally prefer the larger cities.

Growth center strategies were supposed to improve upon the preexisting pattern of spatial development rather than create a new structure. The ideal spatial pattern would be a dispersed hierarchy of cities, far enough from each other to be considered "decentralized," yet still allowing access to peripheral populations. While there has never been consensus on the optimal size of a growth center, Hansen designated a "growth spurt threshold" of between 150,000 and 200,000 people to represent the ideal range for taking advantage of agglomeration without the drawbacks of large city diseconomies.[23]

Though these plausible hypotheses became the conventional wisdom in the 1960s and early 1970s, they eventually proved difficult to apply usefully in practice. On the one hand, many policy initiatives proceeded without any regard for the types of places most likely to serve as effective growth centers; the temptation to name any needy area a growth center proved too great (Higgins 1983). On the other hand, no research could establish a relationship between level of economic development and spatial structure. Allan Pred (1976) found that intra-organizational linkages

are often more important than spatial proximity (spread from core to hinterland) or urban hierarchy (diffusion from largest centers to smaller ones). Researching growth transmission processes in North America, he asserts that the assumed top-down channels of growth are wrong and that growth transmission occurs primarily between urban centers rather than between each center and its periphery. After citing the role of multi-locational firms in this process, which generate significant "non-local multiplier leakages" between urban areas, Pred demonstrates how many urban areas in the United States and Canada do not have linkages to smaller urban places nearby but have stronger linkages with New York, San Francisco, Los Angeles, and Chicago. He then urges planners to focus more on the spatial structure of organizations and on growth transmission studies before they adopt intuitive approaches to spatial economic development, such as growth center strategies. His argument has even greater force in the current era of telecommunications than it had in the 1970s, when he conducted this research. Consistent with Perroux's emphasis on economic space over "banal" geographic space, Pred views corporate organizational structure to be too important to ignore in spatial models of innovation and growth.

Although growth center strategies at the interregional level proved flawed, more useful applications of these ideas are available to the economic developer focused on one area. Most metropolitan areas in the United States experienced a significant growth spurt sometime in their economic history. In these cases, one dominant industry—either one firm, one industrial sector, or one industrial complex—can be identified as the "growth pole" that was largely responsible for the area's growth. Although staple theory offers more useful insights about long-term growth and change, concentration and diffusion theories provide engaging ideas about changes in industrial structure and the spatial pattern of growth.

Another useful idea is support for the strategy of infrastructure concentration which usually represents a more rational allocation of public investment than dispersion. Economies of scale in the provision of public facilities become more feasible, and these facilities can help local firms realize external economies. With the growing concern for sustainable development, infrastructure concentration becomes a strategy for preserving or conserving valuable land and natural resources and for utilizing existing capacity as well as a way to achieve thresholds required to accelerate economic growth. Since "pork barrel" politics encourages dispersion, it is helpful to have good theoretical support for concentration. Whether the economic developer is working at the state or local level with one type of infrastructure (e.g., transportation facilities) or with entire planned unit developments, infrastructure concentration makes sense. Economic developers can also use infrastructure concentration to advocate for sharing the tax base that is eventually generated by private companies accessing the infrastructure.

Finally, the core-periphery model directs attention to interactions between core metropolitan counties and nonmetropolitan hinterland counties within one labor market area. Most nonmetropolitan areas in the United States depend heavily on the adjacent metropolitan center because many residents of the hinterland work in

the core area. In rural "bedroom communities," out-commuting is essentially their economic base, and the wages and salaries of out-commuters are the most important source of purchasing power in most cases. Although primary and resource-oriented products from the hinterland may be sold in the core and elsewhere, the potential for rural development depends more on manufacturing or service-sector jobs available to rural residents.[24]

The economic developer in nonmetropolitan areas dependent on the nearby metropolitan area might be able to estimate, at least roughly, the magnitude of financial inflows and outflows. An assessment based on these flows will suggest whether spread effects or backwash effects are dominant. In either case, developers in these areas need to pay close attention to the plight of the metropolitan center because it impacts the level of local employment.

The theories of growth poles and unbalanced growth place great emphasis on economic power, which can be manifested in different ways. Local firms may have considerable market power if part of oligopoly industries. Local business leaders may be prominent in national trade associations. Local politics, entertainment, and media may also be strongly influenced by families who own or manage major firms. The economic developer who studies these connections is more likely to understand how to be effective given local power relations.

Product cycle theory applications

With respect to product cycle theory, economic developers can gain insights by thinking about the concept of economic diversity. Among the industrial sectors exporting goods or services, the developer could try to identify the sectors that primarily generate new, maturing, or standardized products. Although a relatively even mix of new, maturing, and standardized products is not easily achieved, the developer at least should become suspicious of naive diversification strategies that attend only to increasing the diversity among industries. An area may become increasingly attractive to a variety of industrial sectors over time, but all of these industries may produce standardized products. As a result, the area's vulnerability to external competition may increase as it becomes more diverse in term of its mix of industries.

Developers can also assess the competitiveness of their region using the framework provided by product cycle theory. Some regions may have sufficient size, specializations, and wealth to serve as locations for new product development. Other regions possess attractively priced human and natural resources and may be competitive due to relatively low costs of production. Still other regions may fail to be competitive for either new or standardized products. From the product cycle perspective, these regions are the most hard-pressed to establish some meaningful role in the global economy.

Competitive regions in the United States and Canada are more likely to function as new product locations than as locations for standardized production since the factors and intermediate inputs are relatively high quality and high cost. To the

extent that standardized products are generated from routine production processes, regions outside of the United States and Canada with lower production costs are likely to be more attractive standardized product locations.

The economic developer who wants to apply product cycle theory in its most literal form must try to identify manufacturing or export service companies that can create new commodities. If these companies can be found, the developer should survey management to find out how well the economy is able to support the process of new product/service development. Companies that were unable to move forward with new ideas because of agglomeration diseconomies or other local problems would provide the most useful insights. The developer may be able to mobilize the resources needed to improve the local physical or business infrastructure in ways that would enhance new product/service development.

A related approach is to divide important local companies into those headquartered locally and those headquartered elsewhere. Developers should survey companies from both groups to see whether they have different business orientations and therefore draw on the regional economy's capacity in different ways. The goal would be to identify the agglomeration economies and diseconomies important to companies in these two groups. As before, the general response is to find ways to support the economies and mitigate the diseconomies. To carry out these strategies successfully, however, requires substantial effort and resources. The developer would need considerable research capability to find the relevant firms and survey management. Business infrastructure would have to bestow benefits on more than one company to be politically feasible, and such infrastructure could be very difficult to mobilize.

More generically, product cycle theory emphasizes the possibility of competitiveness arising from research and development (R&D), and, generally, from professional education and technical training. A deep pool of university-based talent may provide opportunities for information exchange and joint R&D ventures with local enterprises. Such linkages have the potential to encourage new product or service development.

Economic developers could gain further insights by considering product cycle theory in terms of its implications for business relationships and linkages among local firms. Just as industrial complexes offer firms external economies that lower production and marketing costs, interfirm linkages can offer support for the processes of innovation and customization that can often lead to competitive success through new product development. Unfortunately, it is not clear how to select important interfirm linkages or support interfirm networks, especially at the local level.[25]

In conclusion, strategies that are based on product cycle theory should focus on the internal development of the regional economy rather than on the diffusion of growth from external sources. New product-oriented strategies should emphasize R&D, university-business partnerships, business services development, and other efforts to improve the chances of local product or process innovation. Although new product-oriented strategies are attractive for many reasons, they are

also risky because they may generate results too slowly given the time frames set by local public officials. Targeted efforts to assist particular firms may result in protests from firms not receiving assistance. Such strategies require extensive and intensive research that may be beyond the capacity of local economic developers.

Standardized product-oriented strategies are entirely consistent with those supported by economic base theory: industrial recruitment, efficient government services, and infrastructure investments that would lower production costs. Economic developers may recruit branch plants successfully when the internal market has sufficient size and costs are attractive to such branch facilities.

Furthermore, economic developers could identify the agglomeration economies supporting standardized products. There may be pools of skilled labor, suppliers and business services, physical infrastructure, and local knowledge that can generate external economies. Developers may be able to encourage the production of capital goods in these sectors, in essence, supplying the technology needed by currently competitive standardized product-oriented regions.

This strategy is similar to the economic development strategy articulated by Thompson (1968), who suggests that regions could move up "the learning curve" from routine production to precision production. Such a strategy has worked in some regions. For example, the Greenville-Spartanburg, South Carolina region, transitioned from textile product production to the production of textile machinery and related capital goods.[26]

As noted, the economic future is not bright for regions that are neither attractive for new products nor attractive for standardized products.

Elaboration and criticisms

The proliferation of regional strategies designed to develop growth centers provides a clear track record to evaluate past applications of growth pole theory and other models of concentration and diffusion. Overall, the number of failures far outweighs the successes. Is this the result of a misapplication of theory, or are the theories either fundamentally flawed or not well-specified? Certainly the very vagueness of Perroux's work has caused problems when extending growth pole theory to practice. His noble goal of creating a general theory of economic actors involved in power relations counterposed to neoclassical economics led him to keep the formulation of his thinking at a very general level. For example, growth pole refers vaguely to entrepreneurs, firms, and industries. This generality has invited applications of the concept to widely varying circumstances, often inappropriately. Despite Perroux's initial warnings not to apply his concepts geographically, they have been so applied many times. Unfortunately, unbalanced growth, cumulative causation, and core-periphery are not specified any better than growth pole theory.

One of the most basic assumptions of growth center applications has been that the effects of growth will spread or diffuse to the periphery. It is assumed that the interactions of the center with its periphery will be strong if the necessary linkages exist; yet nowhere is it stated how this phenomenon will occur if the linkages

to rural areas or slow-growth firms do not exist (Gore 1984). Perroux (1950b) speaks of the domination effect, bringing lagging industries (later applied to lagging peripheries) along. Yet he does not seem to question that this outcome might not occur in all circumstances. It is useful to recall the context in which Perroux first formulated his growth pole theory. He was writing in Europe during the early 1950s, a time of primitive communication networks between regions and nations when peripheral regions, abundant in vital natural resources, could directly experience spread effects from nearby centers. For example, areas of iron, coal, or forest reserves were directly affected by the growth of nearby mill towns. Despite his general avoidance of geographic applications of his theory, Perroux was undoubtedly influenced by this European context.

Support for the assumed core-periphery connection and related spread effects is found when strong backward linkages exist between an industry in the growth center and its periphery that provides natural resources. Once industries become human resource-based, however, it is likely that these spatial links are broken. With this insight, Higgins (1983) proposes a stages theory conception of growth poles: the process of change begins with a propulsive region of primary (natural resource) production experiencing growth at the center. This propulsive center processing primary products causes growth in the periphery. After further evolution, industry at the center generates more connections to other centers than to its own periphery. The growth pole concept may only be an effective spread mechanism during the second stage. It is worthwhile to look at growth poles in this temporal context, especially when one remembers that Perroux himself urged taking a historic approach to growth and development.

Because of their vagueness, concentration and diffusion theories have been applied almost indiscriminately to regions of various sizes. In the United States, the Economic Development Administration designated small, stagnating rural towns of 500 or so people as official "growth centers," to be assisted by funding and investments in propulsive industries. This approach has failed miserably. In such cases, it seems that policymakers mistook the need for growth and development in a region for the potential for such growth and development. As a result, funding flowed to these depressed areas with the hope of more equitable spatial development, but little economic growth resulted. Although the Economic Development Administration has long abandoned this program, states and local jurisdictions continue to misapply growth-pole logic. They provide incentives and/or focus infrastructure development in peripheral rural areas with the hope of attracting private investment to these places. This supply-side approach has rarely reversed the fortunes of nonmetropolitan areas in need.

In the early 1980s, secondary city development was advocated as a way to concentrate investments in these areas to spur local economic development appropriate to the local economic base and thus diffusing benefits to the periphery. However, consensus on the potential of this approach never existed, and by the 1990s, such efforts were largely abandoned by international lending institutions in favor of macroeconomic approaches, such as structural adjustment.

Growth center strategies also tended to emphasize "one-shot actions" instead of sustained investment that, for example, Hirschman would have stressed. An initial capital outlay designed to stimulate growth was assumed to become self-sustaining through the domination effect. This "one-shot" emphasis led to the inappropriate bias toward investment in industrial parks and spec buildings at the expense of investment in educational and social services. Moseley (1974) advocated developing human resources, building local administrative capacity, and decentralizing political power as more self-sustaining approaches to growth center development.

For the small growth center, heavy subsidized investment in one type of industrial infrastructure may prevent it from adapting to changes in the macroeconomic climate.[27] Likewise, investments in heavy industry to generate "propulsive effects" on a developing economy with a large rural sector often miss the mark. The existing economic activity in many medium-sized centers in developing countries focuses on the processing and marketing of agricultural products. Much of the marketing activity is very small scale and considered to be part of the "informal" economic sector; that is, it is nonregulated, nonstationary, and requires very little capital investment and overhead costs. Such informal marketing activities often generate relatively large amounts of income and employment. It follows, then, that a growth pole strategy in such a context would be best focused on harnessing the entrepreneurial drive that undergirds the informal sector. Investments in agro-processing, basic marketplace infrastructure, transportation links, and credit extension would thus be appropriate.

Another criticism of growth pole theory is that in today's world, the national level is the wrong level on which to focus. Transportation and communications linkages have transformed the structure of economies around the world. Thus, if Pred's work were extended internationally today, he would find that many primate cities around the world have stronger economic linkages to other large cities elsewhere in the world than they have with cities within their own country. This is especially true for those "poles" specialized in the advanced services but is also true for manufacturing complexes. Spread effects to a center's periphery and to smaller centers are becoming increasingly less likely.

Currently, the local level has become more important because the local labor market area is now the basic functional economic unit in the global economy. Local economic developers are now more relevant actors, as the influence of macroeconomic policies have waned. At the very least, this reality means that theoretical assumptions must be closely examined and adjusted before any spatial economic development strategy, such as development of growth centers, is embarked upon.

Economic developers have been preoccupied with seeing growth pole theory as a justification for growth center strategy rather than as a way to understand economic development. Thus, we have seen growth center designation in clearly stagnating areas, large-scale industrial projects in isolated rural areas, and other misallocations of investment capital. We have also seen blanket applications of the growth center strategy to widely varying contexts without consideration of the "stages" of growth pole development that make certain contexts clearly inappropriate for such

a strategy. It is safe to say that growth center theory is no longer useful in the context of the developed, post-industrial economies found in North America, where linkages are often human-resource based, giving rise to different developmental needs. Multi-locational firms play an important role in strengthening the linkages between headquarter and branch locations at the expense of linkages between the firm and its geographic periphery. These firms can have detrimental effects on developing regions when they fail to generate significant spread effects to peripheral areas or in some cases actually aggravate rural-urban disparities.

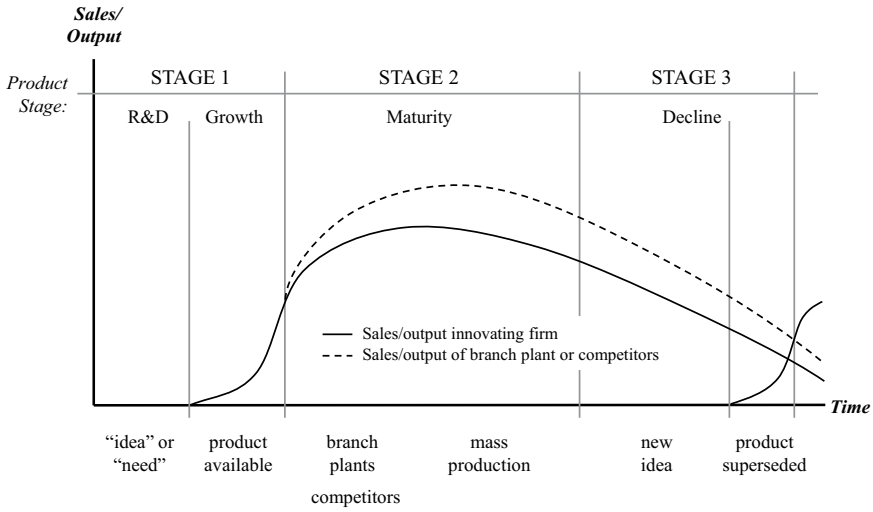
In conclusion, theories of concentration and diffusion cannot be taken as self-contained sets of rules, principles, or statements designed to explain a phenomenon. Many of these ideas are essentially descriptive; to gather explanatory power, they need to be further elaborated and carefully specified. Perroux's original work often seems as though it was co-written by an economist and an amateur physicist struggling over some grand professional compromise, while the refiners of Perroux have subsequently accumulated baggage from an assortment of economic and spatial theories. All this was done with the intention of both clarifying Perroux's ideas about economic development and attempting to put them into practice as a normative development strategy. The result of implementing a concept without its own unified theoretical base has been the misapplication of Perroux's ideas, depending on the "spin" of the practitioner.

Higgins and Savoie (1995) present an updated and supportive treatment of Perroux's theory. They state that we need more knowledge before we can apply growth pole theory effectively. They emphasize the need for a better understanding of growth and change in different settings and of the role of market forces in creating and alleviating regional and income disparities. They also call for examining the potential of using different types of government interventions to guide market forces. They advocate research into the role that distance currently plays in spatial processes. Given the revolution in telecommunications that has occurred, this advocacy is now even more important. Finally, they recommend research into city size and urban hierarchies and the role they play in development.

Their admonitions would also apply to the other related models—unbalanced growth, cumulative causation, and core-periphery. Unbalance growth has been both updated and subsumed in neoclassical growth theory, especially the recent specifications which treat spatial factors more explicitly (Chapter 5). Although cumulative causation and unbalanced growth ideas continue to receive some attention and application, trade theory and growth theory (Chapters 4 and 5) can address many aspects more systematically. The revised and updated core-periphery model is now specified in the context of world-city research (Friedmann 1995).

Product cycle theory is far more specific. It explains that each stage of a product's life requires a distinct set of locational attributes. The characteristics of regions that encourage new products or standardized products are different, as are their locations in the urban hierarchy. New product locations offer better jobs and have a higher skill mix than standardized-product regions and tend to attract more professional and technical workers. High-tech industries or other industries with

significant research and development activities are more prevalent. R&D efforts can lead to new product innovation. Entrepreneurial activity in these regions is presumed to be high due to better information and "swift and effective" communication resulting from proximity (Vernon 1966, p. 195). Furthermore, new spin-off industries are likely to be created from innovative companies. All these activities increase linkages within the local economy. Regions with active product innovation tend to become relatively high cost, larger markets that offer agglomeration economies. These locational attributes of product cycle theory are summarized in Figure 6.1.



Region:	**REGION 1** *(innovating region)*	**REGIONS 2, 3** *(less-developed regions)*	
Product:	New product introduced in response to higher incomes or higher labor costs in Region 1; mature-product firms seek export markets in less-developed regions (2, 3, etc.)	Standardized product attracted to regions with lower costs (e.g., labor)	New product cycle begins in Region 1 through innovation or entrepreneurial activity
Locational characteristics:	New-product locations offer better jobs and have higher skill mix; greater entrepreneurial activity; spin-offs; increasing linkages and agglomeration economies	Lower comparative costs; product's value is high relative to weight; labor force with lower skills; localization economies	
Developmental impacts:	Attracts more professional and technical workers; high-tech industries more prevalent	More rapid economic growth from external investment and trade in standardized product; may become economically dependent on Region 1	

FIGURE 6.1 Product cycle stages and locational characteristics

Vernon argues that new product locations must offer firms flexibility in sources and types of inputs and good communication channels to reach consumers, suppliers, and even competitors. Comparative costs, emphasized in location theory, are more important to understand why standardized production is attracted to regions that offer lower comparative costs, especially abundant lower-cost labor. Facilities are likely to be located in such regions as long as the product's price elasticity remains high, production is vertically integrated, product obsolescence is deferred, and product value is high relative to weight. Vernon identifies standardized textile products as a good example of such products.

Hekman (1980) broadens the application of product cycle by looking historically at one industry—cotton textile production. His article is an excellent source for identifying the elements needed for product innovation: entrepreneurs and managers, product designers, engineers, toolmakers, machine builders, and so on in contrast to typical factors cited in location theory: labor, transportation, and electric power. The combination of entrepreneurship, skilled mechanics, innovations in management, and textile machinery production resulted in highly immobile agglomeration economies. As the product became standardized, however, the South offered lower costs to support automation and the substitution of unskilled for skilled labor. Thus, the product cycle is useful in explaining the historical development and location of textiles and certain other manufacturing sectors.

Erickson and Leinbach (1979) adopt product cycle theory to explain the diffusion of branch plants to nonmetropolitan areas. The factor inputs required for standardized products make nonmetropolitan areas relatively attractive production locations. As the product becomes standardized, major changes in factors inputs occur. First, scientific knowledge, engineering applications, and technical expertise, required to create new products, decline in importance. With standardization, external economies made available to the firm by virtue of its location in a more developed region become increasingly less important. On the other hand, the demand for good production managers and unskilled workers grows.

Erickson and Leinbach argue that management inputs are most important to foster growth as the new product matures. Management expertise is least important for standardized-product production. Capital is relatively unimportant during the new-product phase but becomes very important to achieve the growth necessary to export the maturing product and then to construct the branch plants needed for standardized-product production. Their argument is unclear about the changes in factor intensity over the product cycle, however. The new product would require different labor inputs to be used with limited capital inputs. The standardized product clearly requires both heavy capital investment and significant amounts of unskilled labor. Capital-intensive production, which Vernon originally posed for standardized products, usually implies high labor productivity and high average wages. On the other hand, production primarily exploiting unskilled labor would usually suggest lower labor productivity and wages.

After Vernon's article was published, product cycle theory gained widespread popularity and was adopted in marketing and by economic geographers, who

molded it to their particular uses. Additional regional applications are found in Norton and Rees (1979),[28] and Moriarty (1983, 1992).[29] Another group of economic geographers and planners has used the product cycle model to help them understand the role of technology in regional development.[30]

Criticisms of product cycle theory have been raised by Vernon (1979) himself, Steiner 1987 and Taylor (1986), among others. One general criticism is that, as a partial equilibrium theory, the product cycle concept may only be appropriate for manufacturing and primary export staples, thereby ignoring the growing importance of service sectors. It is difficult to extend the theory to all exporting sectors because the product cycle concept and the reality of export service production are not easily reconciled.

Vernon suggests that the explanatory power of the product cycle model for international trade patterns has eroded because of the changing international environment. United States-based firms are more "comfortable" locating outside the home market. With the rise of the multinational corporation, fewer firms have distinct home markets and production facilities in the first place. Market information on various international markets has become more accessible. Moreover, the large companies that account for the most international investment and trade are often vertically integrated, which lessens the importance of agglomeration economies available in any given location. Furthermore, the previously unique characteristics of the United States such as high income and labor scarcity are no longer unique. Other nations, such as Japan and those in Western Europe, now have economies similar to the United States. With the world economies becoming more homogeneous, the potential for the United States to lead in product innovations has declined (Vernon 1979).

Taylor (1986) attacks the product cycle concept on numerous grounds. First, he considers the theory an example of technological determinism. This criticism is somewhat misplaced. Standardized product production may be determined by technical, input-output relations. However, new and maturing products are shaped far more by design, marketing, and management factors than by technology.

Taylor points out that the theory assumes a sufficient market and/or effective marketing, but, in fact, the market may not be able to absorb all production. Furthermore, product differentiation is an important marketing strategy that is ignored. Neither is product cycle theory clear on the issue of ownership or control nor is it clear even about the definition of the product itself. Its treatment of invention and innovation is unrealistic and cannot offer much evidence of products moving through the entire cycle where mass production is the end result.

Although these criticisms are somewhat valid, Taylor and other critics fail to offer an alternative formulation. These criticisms fail to recognize that Vernon never posed product cycle theory as a general theory of development. In fact, its intuitive simplicity remains one of its main strengths. Rather than trying to integrate concepts relating to the innovation process at the enterprise level, it may be more useful to focus on the definition of the product and product development *per se* as well as consider the proper treatment of export services.[31]

Discussion questions

Theories of spatial concentration and diffusion

1 Do any ideas from growth pole theory appear to be applicable currently to metropolitan economies in the United States?
2 What can we learn from the failures of the growth center strategy?
3 Can you construct an argument to defend the concentrated provision of public infrastructure as a means of making development more sustainable?
4 Are the major industries in your area linked to other industries within your region, or are they primarily connected to industries located elsewhere?
5 Why would the unbalanced growth approach tend to stimulate more entrepreneurship than the balanced growth approach? Which should be more effective in impacting the "vicious circle" of underdevelopment?
6 Under what circumstances should spread effects be more powerful than backwash effects?

Product Cycle Theory

1 How does price elasticity change over the product cycle?
2 Assume you could assemble any mix of industries, occupations, or products in a region in order to build a "seedbed" for new products. Which activities would you want located in your region?
3 Are both the organization and control of production important determinants of regional growth or simply the outcomes of trade theory-type comparative advantage?
4 Which factors would you examine to determine a region's competitive advantage from the perspective of product cycle theory?
5 Which economic development strategies would make sense if you worked in a region with competitive advantage in new product creation, standardized product production, or neither of the above?
6 Much emphasis is placed on swift and effective communication in product cycle theory. In the 1960s, spatial proximity was required. In the age of telecommunications, is proximity still required?

APPENDIX 6.1

Location theory and applications

As noted in Chapter 2, location theory and migration theory are beyond the scope of this book. Both consider location decisions at the firm or household level, while the theories in Part II consider the regional economy as a whole. Yet it is important to briefly consider location theory at this juncture for two reasons. First, Vernon and other contributors to product cycle theory argue with some of the basic tenets of classical location theory. Second, location theory has applications that economic developers should understand.

Industrial location theory considers how profit-maximizing firms select their location in space. Some of the literature treats production at one point and examines how competing firms select locations to serve demand in a geographic market area. Other literature assumes that demand is centered at one point and considers how land- and resource-intensive production will be organized in space. The latter is the inspiration for central place theory, discussed in Chapter 9. Much of the literature assumes equal access to markets and focuses on how the location of raw materials, intermediate supplies, or labor should influence the location of the production process. The analysis of comparative costs leads to the identification of the best, cost-minimizing location.

The seminal works in location theory are by Weber, Lösch, Hoover, Isard, and Alonso. An excellent brief review is in Alonso (1964, Chapter 4). The optimal location of individual firms, although important, does not address the interaction effects that lead to agglomeration. Yet agglomeration economies, which tend to be found in larger urban areas, provide an important focus for product cycle theory as well as other regional theories. These locational factors, such as deep pools of labor, and so on, presented in the Chapter 9 discussion of agglomeration economies, are important during the new and maturing product phases. Once the product is standardized, the comparative costs of alternative locations and the logic of classical location theory come into play. See Harrington and Warf 1995.

Moriarty (1980, especially Chapters 5–6) and Herzog and Schlottmann (1991, especially Chapters 11–12) provide useful descriptions of how geographically based factors influence the location of manufacturing firms or their branch facilities. The location process is a two-stage process. In the first stage, the large geographic region is identified from which the markets served by the facility can be accessed. In the second stage, the specific site and community are selected.

If consumer markets are targeted, access to the relevant wholesaling and distribution centers needs to be identified. If the product serves intermediate markets, the locations of purchasers need to be identified. The product itself, specifically its weight-to-value relationship, determines the relevant mode of transportation, although often several modes are used to ship one product. With market locations and transportation modes determined, geographic areas can be identified that provide reasonable access to these locations in terms of the transportation costs and convenience of transportation service.

Once acceptable market-serving areas are mapped, the analysis turns to the availability and cost of various location factors. Primary and intermediate inputs include land, labor (in appropriate occupational or skill categories), utilities (natural gas, electricity, telecommunications), supplies (intermediate inputs and maintenance), and public services (police, fire, etc.). Qualitative factors are also considered: the livability of the area (quality of life for employees and especially for management), the business climate (often emphasizing the posture of local government and the degree of union activity), and environmental issues (both the desire for reasonable environmental quality and the threat of costly environmental regulations). Capital costs are not very important since capital is rarely accessed at the selected location.

Traditionally, local property taxes and state income taxes have not been influential in the industrial location process, notwithstanding the emphasis given to them by state and local developers. However, this situation changed in the 1990s, with the widespread use of financial inducements and incentives (Wasylenko 1991). It may now be possible to skew locational choices away from optimal locations with enough corporate subsidies.[32]

The typical manufacturing facility can usually find several locations that offer good access to markets and roughly equivalent capital outlays and operating costs of production. The process involves starting with many possible locations and screening out more and more communities and sites until only a small number remain. The site selection decision often resolves to more subtle qualitative factors since the remaining sites have very similar capital costs and can provide the necessary production inputs at similar unit cost. In these instances, personal relationships and effective marketing can be decisive.

This brief description of the site selection process enables one to reconcile two different views of the industrial location process. Most economists, relying on growth theory and trade theory, argue that firms select profit-maximizing locations as a result of logical calculations and rational analysis. They disparage the role played by economic developers in the location process. Economic developers, on the other hand, can document the ways they have facilitated the location process

and how effective recruitment, marketing, and incentives have influenced locational outcomes.

In fact, both groups are correct. Firms usually select places where they can carry out their operations profitably; if they do not, they may not remain in business very long. However, more than one place usually exists where firms can conduct profitable operations. Economists emphasize the screening process that eliminates most communities and sites. Economic developers focus on the hard work and relationship building that usually becomes telling in the eleventh hour when the final location decision is made.

Notes

1 Attempts to identify or create promising growth centers have led to important contributions to the literature on central place theory and urban hierarchy (Chapter 9).

2 Theory and practice often labeled "economic development" would be more appropriately called economic growth. Theories presented in previous chapters explain the process of economic *growth*. Product cycle theory and theories presented in Chapters 7–10 attempt to model the process of economic *development* and help us understand the theoretical and practical differences between growth and development. The growth-development distinction is of fundamental importance to local economic developers, as explained in Chapter 2 and applied in Chapter 10.

3 In a major review of the growth pole literature, Darwent (1969) describes "propulsive industries" as having distinct characteristics: high interaction with other firms (i.e., linkages), a high degree of dominance, and greater than average size (to generate economies of scale and economies internal to the industry). The linkages can be either *backward*, with other firms involved in supplying factors of production or intermediate inputs, or *forward*, relating to all sectors other than final demand. The strength and importance of these linkages determine a propulsive industry's role as a growth pole. Interindustry flows can be used to assess the relative importance of inputs and outputs and, therefore, the potential dominance of one industry over others. See the discussion of input-output analysis and linkages in Appendix 3.2.

4 Perroux's ideas regarding the role of the innovator or propulsive industry can be seen as a mediated approach to economic theory. Like Schumpeter (1934), he explicitly elevates the importance of individuals in their role as innovators and decision-makers in the economic process. Thus, Perroux's "active units" involve human agency in creating an engine of economic growth.

5 Amos (1990) views development as a global process governed by long cycles of about 100 years. Spatially, growth poles become dominant, and polarization occurs during the first half of the cycle and then these poles diffuse growth and development over the next 50 years. Amos speculates that, around 1980, the diffusion cycle from U.S.-based growth poles was ending and a new concentration phase was beginning, led by growth poles arising in Japan and in other Pacific Rim countries. Amos' article includes concise summaries of growth pole theory and long-wave theory in presenting a spatial-temporal synthesis similar to that of Suarez-Villa (1988).

6 Underlying balanced growth arguments is the notion that certain socioeconomic forces act to keep less developed economies or regions in a permanent state of underdevelopment. The problem may not only be lack of capital but the lack of demand for capital. On the demand side, the small size of the market in an underdeveloped economy may dampen any inducement to invest. Market size is determined by the buying power of the populace, which is limited by low real incomes, which in turn result from low productivity. Productivity remains low due to minimal inducements for investment, thus a "vicious circle." On the supply side, low per capita income fails to satisfy the needs of

consumption and so effectively limits the capacity to save. However, low incomes are a function of low productivity, and productivity is dependent on the capital investment that is itself limited by low savings.

7 A scheme of planned industrialization, as envisioned by balanced growth theorists, necessarily requires substantial state intervention in the workings of the market economy. Firms are concerned with what is profitable in terms of private net marginal product and not with social net marginal product. The latter, which would include the benefits derived from pecuniary external economies, should ideally be considered in any calculus of profitability. If investment is based solely on potential profits for private firms, inducement to invest in any given project will be inadequate when rational investors, acting under profit motives and in isolation, perceive market deficiencies. Although the marginal productivity of capital over a range of complementary industries (encompassing many individual projects that such investors would avoid) is often considerable, rational individuals would fail to recognize this potential. One role for the state then, is to ensure that producers do not overestimate the risks of production and underestimate potential benefits.

8 Though much of the literature regarding the balanced/unbalanced growth argument was written during and after the 1950s, previous authors dealt with similar issues. Friedreich List advocated balanced investment among agriculture, manufacturing, and commerce and argued that it was the duty of the state to establish such a policy (Gianaris 1978). Conversely, Adam Smith and the Physiocrats stressed growth in the agricultural sector as a means of creating surplus food production to feed growing urban populations. Thomas Malthus argued that increasing returns justified concentrating investment on industry.

9 Have countries and regions that have experienced faster rates of growth developed in a balanced or unbalanced fashion? In a series of tests using different combinations of sectors for a sample of 40 developing and developed countries and over the period 1938 to 1960, Swamy (1967) generally found positive and statistically significant correlations between measures of sectoral variability and aggregate economic growth rates. The results proved robust across different time periods and in an analysis of countries at different levels of development. He concluded, somewhat cautiously, that the evidence "points out that sectoral growth rate imbalance need not inhibit the overall growth of the economy" (1967, p. 300). Demery and Demery (1970, 1973) also published evidence of a positive relationship between unbalanced growth and aggregate growth rates. Tests by Youtopolous and Lau (1970), however, indicated that a high level of variation in sectoral growth rates tends to be negatively correlated with overall growth rates. Their analysis suggests the fastest growing places grew in a more balanced fashion.

10 Myrdal first challenged the equilibrium view of the social process in his classic 1944 study, *An American Dilemma, The Negro Problem and Modern Democracy*. He derided the prevailing view that the level of social and economic development of the black population would necessarily be slow and uncertain, and that any state intervention would be ineffectual at best, and counterproductive at worst. The status of the American black, which seemed to be stagnating at the time of his writing, suggested that some sort of "stable power equilibrium" had evolved. Myrdal predicted that this equilibrium was only a "temporary interregnum." He was proven correct by the subsequent upheaval in interracial relations that occurred in the 1960s and 1970s.

11 The concept of spread-backwash has been subjected to a number of tests using several different methodologies, including spatial regression methods (Casetti et al. 1971; Lewis and Prescott 1972) and trend surface analysis (Robinson and Salih 1971). In his analysis of 21 studies on spread-backwash, Gaile (1980) found that although promising methodological work had been done, not only have the empirical findings of the work been inconclusive but the research in general has neglected a "theoretical focus." Most of it also fails to examine spatial unbalanced/balanced growth in an interregional context, concentrating instead on the intraregional scale of development. This focus is noteworthy since the original concept, as formulated by Hirschman and Myrdal, focused on interregional development.

12 Unfortunately, since spread effects in less developed countries are characteristically weak, the low level of development coupled with regional inequalities combine in the cumulative process such that "poverty becomes its own cause" (Myrdal 1957, p. 34). This process suggests that the state must promote policies favoring underdeveloped regions. Myrdal notes that advanced European countries approach the status of welfare states precisely because stronger spread effects caused less inequality, a social luxury that provided for the growth of effective democracy. These states are characterized by a "quiet contentedness" that is the result of national integration achieved through government regulation of market forces.

13 Storper (2013) elaborates on these economic relationships underscoring the importance of institutions in regional development. He concludes this book by arguing that cities are employment centers first (workshops) and secondarily playgrounds (sand boxes) for the affluent.

14 Friedmann (1986) argues that world cities now constitute the core areas of the economy, while underdeveloped regions comprise the periphery. The core areas fulfill command and control functions and are locations of capital accumulation. They also serve as places where migrants are destined, which generates high social costs. The revised model, grounded in neo-Marxist theory, emphasizes capitalist contradictions and the resulting polarization between core and peripheral countries, between regions within countries, and within metropolitan areas. Friedmann (1995) synthesizes world-city research as pertaining to (1) large nodal regions (urban core areas) that embody intensive interaction, (2) a changing global urban hierarchy based on command and control, (3) capital accumulation predominantly in core areas, and (4) a powerful "transnational capitalist class" that is engaged in conflict with more localized classes (p. 26). The Appendix after Works Cited provides a brief overview of Marxist theory.

15 Parts of this section are drawn from Malizia and Reid (1976).

16 Hoover and Vernon did extensive research on the economic development of the New York metropolitan area. See Hoover and Vernon 1959 and Hoover 1971.

17 An overview of location theory is provided in this chapter's Appendix 6.1.

18 Beginning in the 1930s, Simon Kuznets, Arthur Burns, and others working at the National Bureau of Economic Research provided evidence that industries went through cycles. They identified industry cycle phases—experimentation, rapid growth, stability, or decline. Product life cycles follow a path that resembles industry life cycles. Analysis at the industry level could bring the product cycle concept and industry cycle evidence together to form a stronger argument.

Ann Markusen (1985) presents the profit cycle as a better conceptualization than the narrower product cycle concept. She views regions as highly varied locations with unique histories. Like Pred (1976), she sees broad generalizations about regional economies on the basis of geographic location as overly simplistic. She changes the assumptions and broadens the scope of the model. She argues that the focus should be on corporate decision-making behavior. The level and rate of profit determine the trends in output growth. In product cycle theory, demand is assumed to be adequate, and production decisions are simple reactions to market demand.

Markusen also criticizes the treatment of market structure in product cycle theory. In the product cycle model, free entry and price competition require firms to search for least-cost standardized product locations. In the profit cycle model, imperfect competition is the rule. Oligopolistic industries change the spatial pattern of production and employment in response to changes in profits. She empirically examines the profit cycle in 15 industries and finds considerable variation in the pattern and trends of regional location. For a concise summary of the profit cycle as it relates to the product cycle, see Malecki (1997, pp. 64–65).

19 In fact, standardized-product companies from the less-developed country may invade and become dominant in the home market of the innovating country. See Barnet and Mueller (1974) about the last phase of their four-phase product cycle model (pp. 132–33).

20 The benefits of unionization discussed by Thompson (1965) are not likely to materialize in the less-developed region. Such regions are carefully screened by companies seeking

locations for branch facilities and are preferred precisely because the probability of successful unionization there is very low.

21 Agglomeration economies figure prominently in the reasoning of growth center advocates. As in growth pole theory, agglomeration involves maximizing interindustry linkages and multiplier effects. Unlike growth poles, however, growth centers focus on encouraging the organization of these linkages in geographic proximity. Clustered public investment in services and infrastructure encourages agglomeration. The agglomeration of industrial activity results in cost savings as firms share the benefits of infrastructure, amenities, and the exchange of information, which results from being in close proximity (Chapter 9).

22 In the context of developing countries, Rondinelli (1983, p. 14) also called for such a targeting of intermediate-sized cities, arguing that

> they offer economies of scale for a wide variety of basic social and economic activities, organize the economies of their hinterlands, provide access to transportation and communications networks, offer off-farm employment in tertiary or secondary sectors, and provide access to markets, services and facilities in larger towns and cities.

An integrated system of such cities would spread the benefits of growth and innovation from the primate city to other areas. He cited the lack of such a hierarchy or system of central places as a reason for the failure of development to diffuse to non-primate areas.

23 The issue of optimum city size has a long history in urban planning and regional policy. Planners focused on minimizing the average cost of municipal services to argue for cities in the 200,000 to 500,000 size range and against large cities. Alonso pointed out that marginal revenue and marginal cost may be more pertinent than focusing solely on average cost. These marginal rates may be equal at city sizes well above 500,000 or 1 million if average and marginal revenue increase with city size. In advocating intermediate-size cities around 200,000 as growth centers, Hansen implies that average revenue does not increase monotonically with size.

24 Most of the territory in the United States is in rural or nonmetropolitan areas. The economic base of some of these areas is in primary products where agriculture, forestry, fishing, mining, and oil and gas extraction dominate the local economy. To these places one can add places providing outdoor recreation and related tourism services. Parts of the western United States, for example, have economies that are driven by nearby national parks. Other rural communities have grown as retirement communities. As the "baby boomers" continue to retire, such communities will become more popular. These areas rise and fall with the economic base/export staple in ways described by these theories in Chapter 3.

25 Most of the applications to date focus on the state-level assistance to stimulate the formation of interfirm networks. See Rosenfeld (1995), for example.

26 The transition from routine to precision production is difficult. First, considerable international competition exists in the production of capital goods for consumer products such as textiles, automobiles, furniture, etc. Second, as suggested by Moriarty (1983, 1992), restructuring from consumer-goods manufacturing to capital-goods manufacturing is more difficult for smaller and less technologically sophisticated regions.

27 In other words, overemphasizing efficient production can retard the region's ability to produce adaptively or innovate in response to changing markets and "niche-filling" opportunities.

28 Norton and Rees (1979) note the change in the regional location of the industrial seedbed from the mechanical era, which was based on the proximity of machine tools production, to the current era, during which the electronics sector serves as the spatial anchor. However, the geographic roots of the current seedbed are less deep due to global communications and the fact that researchers have much less loyalty to place than the machine tool craftsmen who lived in the Midwestern manufacturing belt. The authors use product cycle theory to argue that agglomeration economies tie industries to one place, while standardization makes them footloose.

29 Moriarty provides more thorough empirical analysis and more consistent conceptualization than either Erickson and Leinbach or Norton and Rees. Moriarty examines the

spatial diffusion of manufacturing through the U.S. urban hierarchy. Although product cycle theory provides an instructive point of departure, he provides a more specific locational model. The analysis emphasizes relationships between average wage rates, agglomeration economies, and urban size. Moriarty argues that larger places offer higher wages and more external spatial economies than smaller places. As a result, small-scale, high-wage, capital-intensive manufacturers seek metropolitan locations. Conversely, large-scale, low-wage, labor-intensive manufacturers find smaller places and nonmetropolitan areas more attractive.

Moriarty suggests a reformulation of product cycle theory. He identifies that theory with the period of the 1950s and 1960s when market-oriented multi-locational firms followed the locational predictions of product cycle theory. After 1970, the availability, quality, and cost of labor became more important than markets. Large manufacturers sorted out their production to exploit the relative strengths of large cities and smaller places. Nonproduction workers became increasingly prevalent in large areas as processing, fabrication, and assembly operations grew in nonmetropolitan areas.

30 Malecki and other researchers draw on aspects of the product cycle model to understand the dynamics of technology-oriented regional development. Malecki proposes a model which takes into account "the product life-cycle model and its corollaries, the profit cycle, the innovation cycle and the manufacturing process cycle" (Malecki 1997, p. 63). Although these related cycles enrich our understanding, they are not sufficiently well specified to suggest many practical applications. Product cycle theory remains more applicable than any of these more complex formulations. Malecki (1997, pp. 63–71) provides an excellent summary of the relevant literature.

Malecki (1981, 1989) argues that the connection between regional development and high technology is not well understood. High-tech firms do not universally serve as growth simulators. Nor do they represent good examples of development that follows product cycle theory. Definitions of high-tech activities are often not well specified and are applied loosely to different operations of high-tech industries.

Goldstein and Luger (1990) try to clarify the importance of high-tech in regional development. They identify many of the interacting factors necessary for success of research parks. Some high-tech areas have become innovation centers. The premiere successes generally cited are Route 128 near Boston, Silicon Valley in California, and Research Triangle Park in North Carolina. However, each of these areas has a complex array of unique characteristics (Saxenian 1994). Policies based on recruitment and promotion of high-tech industries rely on the assumption that the location of these companies will eventually result in growth patterns characteristic of the premier areas. This assumption is tenuous at best. High-tech manufacturing facilities located in research parks tend to introduce process innovations rather than product innovations. While product innovation is the driving force in the product cycle, process innovation becomes important later after the product matures. Therefore, many research parks simply attract high-technology manufacturing facilities and do not become vibrant innovative centers.

Goldstein updated this analysis of technology-based economic development 20 years later (Goldstein 2009). He begins by noting the broadening of sectors considered tech-oriented with the growth of information technology and "the knowledge economy." He summarizes relevant theories, which include endogenous growth theory (Chapter 5), cumulative causation, and Porter's cluster theory (Chapters 8 and 9), as well as the important ideas of path dependence, institutional capacity, and creative milieu/creative class. He identifies popular approaches used to promote tech-based regional economic development that involve investments in human capital and R&D, formation university-industry partnerships for product commercialization, and place-based strategies to attract talent and entrepreneurs. Because these approaches are often not sustained long enough to be effective, he argues that strong leadership is needed to sustain investment and consequently increase the supply of knowledge workers in the region.

31 Given these criticisms, how can product cycle theory be sharpened to provide better understanding of regional economic development? First, the product must be more

clearly defined for the set of industries that are exporting or have the potential to export. All industries that are exporting from the region should be analyzed annually and, for simplicity, classified as generating either maturing or standardized products. The annual analysis responds to the fact that product cycles are inherently dynamic.

If this analysis of product differences fails to proffer clear distinctions, focused examination of the ownership and control structure of major establishments may be more useful. If many branch manufacturing facilities which produce standardized products exist, the region is likely to be attractive as a relatively low-cost location. The problems and opportunities facing such regions depend on their ability to offer low comparative costs (absolute advantage). If the region contains major headquarter establishments or R&D facilities, it is likely to have a high-wage, high-skill occupational mix and should function much more like a new product location. Industry size, ownership and control structure, and major function (R&D versus standardized production) provide powerful insights about the region's competitiveness.

32 The use of financial incentives has become routine since the 1990s. The location of the Mercedes plant in Alabama at extraordinary cost to the taxpayers of that state brought national attention to the issue. The major public subsidies offered to Amazon and its selection of Queens in New York City and Crystal City near Washington, D.C., for major facilities in 2018 once again put incentives in the national spotlight.

7

ENTREPRENEURSHIP THEORIES

The regional development literature views entrepreneurs primarily as change agents. Their defining characteristic is that they do something novel or different, whether recognizing unexploited profit opportunities by offering new products that both create new markets and disrupt existing markets (Schumpeter's view) or by finding superior ways to produce or deliver existing goods and services (Kirzner's view). These views are more precise than the common use of the term "entrepreneur" as someone who starts a new business or owns a small business.[1]

The study of entrepreneurship is not part of mainstream economic theorizing, which favors formal (mathematical) systems tending to equilibrium. Traditional neoclassical theories have no clear role for the entrepreneur because they do not recognize human agency. With few exceptions, theories previously discussed have conceptualized the regional economy as operating according to the predictable behavior of economic actors that include producers, investors, workers, and consumers. These actors conform to the well-accepted concepts of utility or profit maximization; consumers and workers maximize their utility, whereas producers select inputs, devise production plans, and produce goods or services in order to maximize profits. Through the competitive market, the economy achieves an equilibrium where costs are minimized and physical and human resources are utilized efficiently.

The entrepreneur has no role in this neoclassical world. Prices and technologies are known by assumption; neither uncertainty nor imperfect information exists for entrepreneurs to act upon. A temporary imbalance of demand over supply might encourage new firms to enter the market, but new entrants are just like existing producers that increase output in response to price signals. Furthermore, innovative entrepreneurs work toward establishing markets that do not yet exist; thus there is no clear price signal for them to act upon (Eckhardt and Shane 2010). Yet in modern capitalist economies, stories about successful entrepreneurs are commonplace. Entrepreneurs have accomplished far more than efficient

management of resources. Neoclassical theory notwithstanding, the existence of a particular class of economic actors who attempt to marshal resources in unique ways to bring new ideas for products or services to economic fruition is undeniable. It is also close to impossible to explain more than sevenfold increase in per capita income over the 20th century solely on the basis of static efficiency gains (Baumol 2010). This type of unparalleled economic progress requires consideration of dynamic and transformational actors, namely innovative entrepreneurs. Moreover, stimulating entrepreneurial activity is an important, growing focus of economic development efforts throughout the United States and Canada. Claims that economic developers should focus primarily, if not exclusively, on promoting entrepreneurship are not uncommon (Shapero 1981; Schweke 1985; Yarzebinski 1992; Rosen Wartell et al. 2011).

This chapter begins with a review of entrepreneurship theories that situate the entrepreneur within the broader conception of economic growth and change. These theories usually take neoclassical economic theory as their point of departure. Important theorists in this vein include Harvey Leibenstein, Israel Kirzner, and Joseph Schumpeter as well as more recent contributions by David Audretsch, Zoltan Acs, and Maryann Feldman. Related theories address the factors explaining entrepreneurial behavior and its context. Economic theorists are less dominant in this body of work; psychologists, sociologists, historians, management scientists, and urban and regional planners have been more important in advancing this research.

We then review theories that emphasize the spatial dimension of entrepreneurship. These theories connect entrepreneurship and regional development, particularly those that identify the characteristics of entrepreneurial places (e.g., Shapero 1977, 1981 and others). From the point of view of the local developer, these theories are more relevant because they have direct implications for encouraging or promoting entrepreneurial activity at the local and regional levels. All entrepreneurship theories are important, however, because they articulate a fundamentally different vision of growth and development over time that incorporates structural change. Although not purely theoretical, it is also worth summarizing the growing empirical literature that investigates the spatial context of entrepreneurship.

The application of entrepreneurship theories focuses on business development, especially the role of small- and medium-sized firms in the economy, the link between size and newness to innovative activity, and differences in entrepreneurial outcomes at the regional level (Storey 2003; Audretsch 2004). Historically, the study of small businesses has been closely associated (even synonymous) with entrepreneurship research (Malecki 1993; McQuaid 2002; Storey 2003; Audretsch 2004; Plosila 2004; Bianchi et al. 2006). Recently an emphasis on firm age, as opposed to size, has become the primary barometer of entrepreneurial development (Haltiwanger et al. 2013). Still, the nurturing of young and small businesses remains a popular focus of local economic development efforts, and the two foci overlap greatly (e.g., Sexton and Kasarda 1992). Thus, the application section provides a critical examination of the logic behind business development strategies, particularly those targeting small enterprises.

In the "Elaboration" section of the chapter, we address Schumpeter's ideas at some length, since he provides the most comprehensive theory of entrepreneurship and economic development. We also examine Shapero's work as well, since he addresses the spatial dimension most completely and is an important predecessor of contemporary debates on economic resiliency, opportunity versus necessity entrepreneurs, and entrepreneurial ecosystems. We present additional discussions of entrepreneurship and regional development in the final section and add a case study in the appendix.

Theories

Entrepreneurship theories share a perspective on development that puts human agency at the center of the development process. People doing work make development happen. The key figures are entrepreneurs carrying out venture creation or similar functions that generate development through the innovation process. The theories constitute an important departure from neoclassical economic theory, which assigns little role to the entrepreneur (Baumol 1968; Kirzner 1973; Casson 1987; Baumol 2010). In the neoclassical model, firms must choose among alternative values for a small number of well-defined variables: price, output, and input levels. The choice involves the consideration of costs and revenues associated with each alternative set of combinations. The firm decides which of these combinations yields the optimal values in order to maximize profit. The economy as a whole tends toward equilibrium where resources are allocated efficiently. In this context, the entrepreneur has no *unique* function.[2]

Economists have addressed this problem in two fundamental ways. On the one hand, many regard entrepreneurship as beyond the scope of the self-contained and well-defined problems that economics attempt to solve. It is hardly possible to study entrepreneurship without raising issues of managerial skill, psychology, motivation, and so on. These topics are not easily accessed with the tools of the modern, mathematically oriented economist. As a result, entrepreneurship is ignored. On the other hand, some economists have introduced the entrepreneur by altering basic assumptions of the neoclassical model to varying degrees (Casson 2003). These theories succeed in finding a role for the entrepreneur in broader models of economic growth and change, although they do not address the thornier questions that are most relevant to local development practice: (1) What determines why some undertake entrepreneurial ventures and others do not? (2) What determines the degree of entrepreneurial activity across particular places? (3) In which ways might economic development strategies encourage entrepreneurial activity and success?

The role of the entrepreneurs in economic growth and development

Leibenstein (1968, 1978, 1987) distinguishes "allocative efficiency" from "x-efficiency." Allocative efficiency refers to the efficiency with which "resources and factors of production are combined to satisfy effective demand within an

economy." Leibenstein sees x-efficiency as being more important. It is tied to "differential and inadequate motivation and information usage." Leibenstein states that "the simple fact is that neither individuals nor firms work as hard nor do they search for information as effectively as they could." He believes that for any particular firm or industry, the relationship between output and the application of inputs is indeterminate because firms do not achieve x-efficiency. Therefore, the production function cannot be clearly or uniquely specified.[3]

Leibenstein sees the role of the entrepreneur as providing the motivation to increase x-efficiency in four ways. First, entrepreneurs connect different markets to exploit arbitrage possibilities. Second, they remove market deficiencies by "filling gaps" in the market process. Third, they are input completers in that they coordinate all of the inputs required for production. Finally, they create or expand firms as productive outlets (Binks and Vale 1990, p. 36). Leibenstein sees the entrepreneur as the person who has the motivation of personal success or monetary reward to keep pushing to reduce the uncertainties in seeking the most efficient production function.

Kirzner (1973, 1979, 1982, 2009) presents the entrepreneur in the context of the general equilibrium system.[4] His entrepreneur helps move markets towards equilibrium by exploiting arbitrage opportunities for profit in real time and under conditions of uncertainty. Thus, the entrepreneur perfects information flows and, in the process, reduces market fragmentation and imbalances between supply and demand. The primary entrepreneurial trait required to carry out this arbitrage function is *alertness* to market opportunities. Entrepreneurial actions are necessary to eliminate price distortions and move the system toward general equilibrium.

Schumpeter (1934, 1947, 1950) explains the innovation process much more comprehensively and assigns the entrepreneur a central role in the transformation that typically distinguishes economic development from growth. He identifies entrepreneurs introducing innovations as the phenomenon that best explains capitalist development as an historical process.[5] Innovation creates the "perennial gale of creative destruction" that increases uncertainty and causes development to be an uneven and cyclical process. More importantly, entrepreneurial innovation increases the social product. Instability is a necessary cost of continual growth.[6]

Most contemporary research on the regional development implications of entrepreneurship follows from either the Schumpterian or the Kirznerian perspectives. The Schumpetarian tradition receives far more attention, largely because of its direct association with innovative entrepreneurship and its implication for long-term regional growth, decline, and transformation. The Kirznerian view of entrepreneurship is perhaps more directly relevant for understanding the vast majority of new and small business enterprises—most of which are not particularly innovative.

Although still largely outside of mainstream economic theorizing, there have been notable attempts to integrate the entrepreneur into neoclassical growth theory. The Knowledge Spillover Theory of Entrepreneurship (KSTE) serves as an important illustrative case that integrates neo-Schumpeterian perspectives on the role of the entrepreneur into an endogenous regional growth framework (Audretsch and Lehmann 2005; Audretsch et al. 2006; Audretsch and Keilbach

2007; Acs et al. 2009, 2013; Ghio et al. 2015). Incumbent firms, universities, and other "knowledge" incubators invest in the production of new knowledge but are not always capable of recognizing the full potential market value of their investments. The entrepreneur, by contrast, recognizes otherwise ignored opportunities and, in doing so, does not bear the full costs of producing the basic knowledge. Knowledge spillovers enable entrepreneurial firms to contribute to economic growth despite size disadvantages. Whereas large corporations promote innovation through internal R&D, entrepreneurial firms exploit external economies available in knowledge-rich regions. Their primary activity is to organize the necessary resources to translate ideas into new products and services.

Implicit in this explanation of innovation is the importance of spatial proximity. The hypothesis from the new economic geography (Chapter 5) is that spillovers occur close to the sources of knowledge generation where entrepreneurs exploit them (Krugman 1991b; Fujita et al. 1999). Entrepreneurial firms must be resourceful to access external knowledge and need sufficient financing to succeed (Audretsch et al. 2006). Regionally specific barriers to entrepreneurship and the regional endowment of entrepreneurs also come into play.

Framing KSTE within a broader context, Audretsch et al. (2006) reinterpret Schumpeter's well-known concept of creative destruction. In Shumpeter's closed system, creative destruction is the source of both innovation and competition that increases productivity and welfare. In the open region subject to global competition, job losses, company closures, and other forms of destruction are caused by competition from lower-cost producers in other places.[7] The entrepreneur promoting innovation that advances the knowledge economy may be better characterized as carrying out "creative construction."

The KSTE helps explain why investments in R&D do not necessarily translate into growth as predicted by regional growth theory and posits that innovative entrepreneurship will flourish in areas with more investment in knowledge and R&D. By providing the primary conduit for knowledge spillovers, entrepreneurship provides the "missing link" that acts as the connector between the creation of new knowledge and regional growth. The commercialization of available knowledge does not just happen; entrepreneurs must purposefully carry out this task (human agency). The KSTE is supported by evidence showing that new firm creation acts as an important mediator between knowledge inputs and regional growth (Acs and Plummer 2005; Audretsch and Keilbach 2008; Acs et al. 2012). Although not a direct test, some of these basic propositions are complementary to Klepper's (2001, 2002, 2011, 2015) work on the central role of spin-off firms in commercializing new technologies. He shows that small firms are relatively more likely to engage in radical innovation compared to large ones (see also Acs and Audretsch 1987, 1988, 1990; Acs 1996).[8]

Entrepreneurs and regional development

Research on entrepreneurship at the regional level has blossomed since the late 1990s, perhaps associated with a recognition of the growing importance of

innovation to long-term economic growth, as well as the widespread uncertainty about viable sources of jobs in the face of the heightened international mobility of capital.[9] Entrepreneurship, by contrast, is viewed as inherently more place-based, as most startups form in close proximity to the residence of the founder(s) where they likely have superior knowledge of local market opportunities and superior social and business networks (Delmar and Davidsson 2000; Sorenson and Audia 2000; Stam 2007; Dahl and Sorenson 2009).

Another strand of inquiry connects entrepreneurship to regional resilience and related concepts of economic sustainability. According to Albert Shapero (1977, 1981), a region's long-term economic viability requires *resilience*: the ability to adapt and change with changing economic forces and trends. Resilient places can adapt to opportunities and rebound from adversity more quickly than places that lack people who possess these talents and resources.

Shapero points out that most places equate economic development with more employment, income, or exports and support industrial recruitment and promotion as the best way to achieve these outcomes. If successful, Shapero argues that this strategy is likely to engender more costs than benefits. Significant public concessions and inducements, new infrastructure and services, and major growth pressures often accompany new facility location. In the long term, the area may become reliant on few large establishments and share the fate of those narrowly specialized cities that declined because they were unable to adapt to change.

The work of Benjamin Chinitz (1961) stands out as a key early contribution linking entrepreneurship to regional resilience. In his comparative analysis of the industrial evolution of Pittsburgh and New York City, Chinitz stresses economic diversity and industrial dominance as key factors that help to explain why some regions, exemplified by New York City, are capable of continually reinventing themselves through entrepreneurship. Pittsburgh, by contrast, was historically dominated by steel, making it less supportive of new and small businesses and ultimately less capable of adapting to changing economic conditions. At one level, Chinitz's work serves as an exposition of beneficial economies of scope associated with large and diverse regional economies (Carlino 1980). However, Chintz also emphasizes that local industrial structure helps shape the cultural norms that either encourage or dissuade entrepreneurial risk-taking. Similar themes would be taken up later by Saxenian (1994), in her comparison of high-tech culture in Silicon Valley compared to Boston's Route 128 corridor.

Shapero (1981) also sees a close tie between regional resilience and entrepreneurship. To build resilience, he argues, local developers need to create an environment in which entrepreneurship can flourish: high-quality factor inputs (talented and skilled labor), business and personal services that support innovation, research and development activities, and physical infrastructure which results in more communication and networking opportunities.

There has been considerable attention to resilience as a "new" guiding concept in regional growth and development, largely as a reaction to the "Great Recession" of 2008 and stimulated by funding from the McArthur Foundation. Some of this

work has generated insights about the development process, although it does not directly build upon Shapero's promising early work directly linking entrepreneurship to resilience (Chapple and Lester 2010; Christopherson et al. 2010; Fingleton et al. 2012; Hill et al. 2012; Augustine et al. 2013; Lester and Nguyen 2016; Martin et al. 2016). An exception is Clark et al. (2010), who suggest that regions dominated by smaller firms may be more resilient, although they do not test this proposition against a direct measure of resilience. One consequence is that the concept of resilience has been applied so broadly as to lose its conceptual strength.

Another cross-cutting contribution builds on social capital theory, which is often cited as an important factor in regional development. Dealmakers play a vital developmental function in addition to entrepreneurs leading growth companies, angels and experienced businesspersons helping them, and venture capitalists or other sources providing early-stage finance. Dealmakers tend to be serial entrepreneurs who have successfully (and unsuccessfully) started and spun off ventures previously. They are especially valuable as mentors and sources for expertise for new company formation. Like other factors related to entrepreneurship, the regional distribution of deal makers/serial entrepreneurs is highly variable with heavy concentrations in locations like Silicon Valley, New York City, and Boston (see Feldman and Zoller 2012; Zoller 2010.)

Entrepreneurship theories do not provide complete theories of the historical or spatial aspects of development; yet, they offer important insights about innovation and economic development. As development evolves over time, entrepreneurs create something new—new combinations, new companies, or more generically new forms of work. Entrepreneurial development affects spatial relationships. Resilience and diversity (even if not precisely defined) appear to be important characteristics of sustainable local economies.

Applications

The primary application of entrepreneurship theories at the local level in the United States and Canada is through business development strategies. Three different relevant business development strategies are often confounded: (1) new business development, (2) small business development, and (3) entrepreneurial business development. The different foci are largely a matter of specific objectives. Focusing on developing *new* businesses may be an attractive way to offset, in part, employment contractions or firm closures. The main advantages of strategies to promote *small* businesses, either new or existing, may be greater economic diversity and stability. The developer may focus attention on new and existing *entrepreneurial* businesses in order to encourage local innovation and long-term development through new firm creation and expansion. The confusion enters when one realizes that, at some point, all existing businesses were new and small, and, at least some of them are entrepreneurial. The distinctions between strategies turn on definitions of innovation and entrepreneurship and pertain to the importance of firm size.

New business development strategies attempt to promote the creation of new enterprises of all kinds. Developers have devised a range of programs to support startups, including technical assistance, marketing networks, financing, and infrastructure provision (Popovich and Buss 1990). One popular approach is the creation of incubators that provide new businesses with basic infrastructure and services at low cost for a limited period.[10] Business incubators for new business development are a useful development tool in the same way industrial parks or spec buildings support the industrial recruitment or expansion process. Whether they lead to the creation of enterprises that otherwise would not have been established is an open question. Most incubators screen applicants and require business plans to determine their potential for success (Lumpkin and Ireland 1988). A confounding factor is that only those most likely to survive are offered space. Of course, these firms were the most likely to succeed in the absence of incubator space.

The more significant problem with new business development strategies is that, unlike recruitment or expansion, few new enterprises are likely to add many jobs to the local economy. A large percentage of new businesses fail altogether, while most that survive do not grow large. One study found that, of the 245,000 startups in the United States in 1985, 75 percent of the jobs created by these firms in the subsequent three years were attributable to 735 firms, a very tiny share of the total cohort (Harrison 1994).[11] More recent work reports similar results.[12] The fact that so few new businesses have any significant growth potential suggests that new business development may be a strategy doomed to yield low returns. Yet there are other benefits beyond direct job creation. Fritsch and Mueller (2004, 2008) provide evidence that the primary job benefit of entry is not due to jobs created by the new firms themselves, which are typically short-lived and often at the direct expense of incumbents. Rather, new entries place competitive pressures on incumbent firms, potentially yielding higher growth in the long term. New business development may also be an important ingredient in neighborhood (or rural) revitalization efforts, where the scale of the success is in line with the size of the community. Indeed, the proliferation of microenterprise loan funds attests to the demand for startup assistance in lower-income communities. Nevertheless, the limited growth potential of most new businesses does not bode well for the developer who attempts to use new business creation as a mechanism to increase jobs significantly.

Small business development and *entrepreneurial business development* are concerned with both new and existing businesses, yet one can safely say that the roles of small businesses and entrepreneurial companies in the U.S. economy differ significantly.[13] The terms "small" and "business" are almost redundant. The most reliable statistical information available from the Census Bureau suggests that, in 2007, almost 28 million firms existed in the United States, and 78 percent of them had no employees. These firms typically represent sole proprietorships that may generate personal income but limited or no full-time employment opportunities. Even if only firms with paid employees are considered, less than 2 percent have 100 employees or more. In 2010, there were only about 100,000 firms with 100 employees or more

and about 17,000 with 500 employees or more. The average size of firms with employees was less than 20, whereas the median was fewer than 5 employees; the same average size and median have existed since the late 1970s.[14]

This static picture does not contradict the statement that "small businesses create most net new jobs." The confusion arises by using the wrong adjective—*small*. As noted previously, a tiny fraction of firms is responsible for the lion's share of new job creation. Evidence by Birch (1979, 1987), Acs and Mueller (2008), and Decker et al. (2014) shows that much of this job-creating is attributable to a handful of relatively young, entrepreneurial firms with significant growth potential, presumably because they serve large markets, develop new products, or introduce new technologies.[15]

Although more research is needed on high-growth firms, one message is clear: job creation efforts that focus on small businesses *per se* (companies with fewer than 100 employees) are, like new business development strategies, not likely to generate many net new jobs. "Small" businesses eliminate almost as many jobs as they create. Almost all survivors that have employees do not grow (or decline) dramatically. Furthermore, small businesses dominate the local (non-basic) sector; their multiplier effects are minimal because the size of the local market limits their expansion potential.[16] High turnover, low barriers to entry limit, and the limited size of the market reduce the potential effectiveness of assistance to existing small firms.[17]

The types of economic activities targeted distinguish *entrepreneurial business development* strategies. In this sense, they are much more focused than new or small business development programs. Generally, entrepreneurial firms are defined as young enterprises introducing fundamentally new products or innovations. They are often classified as high-technology firms or internet-based businesses, although they may belong to any industry. The statistical portraits developed by some of the research suggest that successful entrepreneurs typically have considerable business experience, working either for others or in previous business ventures. Many have insider information about how to apply new technologies or meet market needs. They tend to be single-minded, narrowly focused, and driven to carry out an idea they believe has great merit. They may be pursuing an opportunity; but, more often than not, they are driven to innovate as the result of corporate downsizing or some other form of adversity.

The typical means by which economic developers might directly support entrepreneurs in their region include: financing assistance (accessing angel investors or venture capital); providing technical assistance (locating suppliers or customers, conducting energy audits, or negotiating regulatory requirements); meeting infrastructure needs (incubator or accelerator facilities); and facilitating networking through the organization of entrepreneurial councils, entrepreneurship forums, monthly breakfast meetings for the CEOs of young growth companies, and other events to provide opportunities for peer support. The success of these measures will vary with regional context. However, in providing direct assistance in any region, economic developers should avoid promoting new ventures that would increase competition for the same local market opportunities, thereby reducing the chance

for any new venture to gain monopoly profits. In service sectors with low barriers to entry requiring minimal training, the ultimate outcome could be fewer firms and less regional employment.

Specialized direct assistance may be impactful in regions with many of the following characteristics: one or more research universities, significant private sector R&D, a large cohort of college or technically educated 20- to 35-year-olds, the presence of angel investors and serial entrepreneurs, and a relatively large labor market area. In such locations, economic developers may take on the challenge of building an entrepreneurial culture. The building blocks could include support for business planning (launch-the-venture plans), new-business competitions with cash prizes, formal and informal mentoring by retired executives (SCORE chapter), or, if serial entrepreneurs are available, periodic events featuring successful entrepreneurs, cheap space with month-to-month leases, and privately managed funds providing small seed-capital grants. Although business startup rates have declined since the 1980s, the high degree of job insecurity in the U.S. economy provides a powerful negative incentive for entrepreneurship.

Of course, the degree to which the state or local developer can develop viable programs in any region will vary and certainly favor larger places. Improving the supply of venture capital, for example, may not be possible in regions without good airline connections. More fundamentally, these programs and activities must address two important concerns. First, it is difficult to identify entrepreneurs at a point in their venture when they might benefit from assistance. Entrepreneurs are too busy to surface during the early stages of business development. They usually become visible to economic developers after they are established and need far less help. Second, entrepreneurial companies often achieve success by going public or through acquisition by existing corporations. Capital raised from going public enables the entrepreneurial company either to expand in place or in another location. When acquired, the entrepreneurial firm may be merged with the acquiring company or moved to the headquarter location.

Thus, typically, entrepreneurial companies must overcome major challenges, come into view when assistance from economic developers is not highly valued, and often leave the region when they are about to experience significant employment and sales growth. Like new and small business development strategies, entrepreneurial development programs, on average, are likely to have very limited impact on local employment. Like industrial recruitment, economic developers should consider entrepreneurial development a high risk-high reward strategy. This bottom-line lends support to the idea of improving the quality of local facilities (e.g., public education and vocational training) and services (e.g., high-speed internet connectivity) for *all* businesses.

Studies of entrepreneurial motivation suggest other types of strategies, particularly in the area of workforce education and training.[18] More importantly, material incentives must be in place to support entrepreneurship. Individuals should be able to build businesses without great difficulty and accumulate wealth as a reward for assuming business risk. Economic developers, for their part, should try to sustain

local competition and lower barriers to market entry; they should try to make local government regulation of business effective yet simple. They should support local tax policies that are fair and not oppressive to any particular industry or group. They should be tolerant of new ideas, support democratic processes, and foster ethical standards that promote individual initiative, responsibility, and honesty. These fundamentals appear to be more important than specific business development strategies.[19]

Evidence of effectiveness of entrepreneurship strategies

Business support services entail the provision of counseling services to entrepreneurs that offer assistance on topics such as developing business plans and dealing with a variety of financial, legal, marketing, and production challenges. Two studies provide evidence that firms receiving services from the U.S. Small Business Administration's Small Business Development Centers (SBDCs) benefit from enhanced survivability rates (Chrisman and McMullan 2004; Chrisman et al. 1985). However, the lack of comparison to a control group in Chrisman et al. (1985) raises doubts about whether improvements in business performance were actually due to SBDC treatment. Three additional studies of business support services in Canadian and European contexts offer evidence of a positive relationship between receiving services and firm survivability and success (Cumming and Fischer 2012; Keeble and Walker 1994; Storey 2003). Belso Martinez (2009) found no significant evidence of a relationship between participation in business support services and business growth among small firms in the Spanish footwear industry.

Incubators provide a temporary physical location for emerging firms at a reduced cost and often provide firms with business support services. The reviewed literature offers little empirical support for the idea that incubators aid new firm survival and success in the long term. Peña (2004) found no significant evidence of a relationship between participation in an incubator and the growth of new firms in Spain's Basque country. Tamasy (2007) summarized empirical studies on the role of incubators, reporting that "results suggest that business incubators do not increase the likelihood of firm survival, innovativeness, and growth" (p. 469).

As opposed to the one-on-one counseling setting for business support services, entrepreneurial education is generally delivered in a classroom setting and aims toward building a more general awareness of the skills and knowledge necessary to pursue entrepreneurship, rather than focusing on building an individual business. These programs may be aimed at youth or a college-aged population through business school curricula. Charney and Libecap (2000) evaluated the University of Arizona's Entrepreneurship Program and reported that graduates were more than three times likelier than control group members to start their own firms and have higher incomes. Of course, it is also possible that selection bias explains the results.

The startup loans/subsidies category covers a variety of programs aimed at reducing barriers to market entry for new firms, including the provision of low-interest loans, subsidies, and incentives. In his study of Spanish footwear entrepreneurs,

Belso Martinez (2009) found a "significant positive effect on return of sales and sales growth for public subsidies" (p. 208). Almus (2004) found that German firms receiving startup loans experienced significantly greater employment growth than firms in a control group did. Finally, Davidsson et al. (1994) study of new firms across Sweden found a positive relationship between the regional provision of startup support—such as loans, infrastructure development, and reduced social insurance obligations—and the regional firm birth rate.

The literature offers a mixed verdict on the ability of public venture capital and seed financing programs to encourage entrepreneurship. In his analysis of an Australian public venture capital fund, Cumming (2007) reported that the public fund was more likely than its private counterparts to make investments in startups but could offer little insight into the long-term outcomes of these investments. Lerner (1996) analyzed the performance of firms receiving Small Business Innovation Research (SBIR) awards and found that awards only had a positive relationship with employment and sales growth when the firms were located in areas with high levels of private venture capital activity. This finding led Lerner (1996) to conclude that SBIR awards served as a complement to private funds rather than a standalone enabler of entrepreneurship. Finally, Norrman and Bager-Sjögren (2010) found no significant relationship between the receipt of funds from the Swedish Innovation Center and the subsequent development of firms.

Targeted industry policies seek to attract and develop firms in a specific sector, usually a high-technology sector. An example of such an initiative is a state science and technology policy. Woolley and Rottner (2008) present an analysis of these programs focused on nanotechnology and find that the presence of state technology initiatives and related economic tools contributed to earlier founding of nanotechnology firms in that state, along with subsequently higher rates of firm formation.

Compared to the previously mentioned factors, government spending is a decidedly vague policy. However, analysis of its relationship to entrepreneurship may offer overall insight into the role of government policy. Monte and Luzenberger (1989) and Reynolds et al. (1994) found no significant relationship between the level of government spending on economic development and entrepreneurial activities. The case for more general public services spending on items such as education, public safety, and overall government spending was more positive. Bartik (1989) found a positive relationship between government spending and business startups. Reese and Ye (2011) found a positive relationship between government spending on public services and sustained economic health—citing this as evidence of the role of investments in quality of life for economic development.

The literature reported that tax rates had either an insignificant or a negative relationship to entrepreneurial activities. Bartik (1989) found property taxes to have a particularly significant, negative relationship to startups and speculated that this may be because these taxes are levied regardless of profitability. Bruce and Mohsin (2006) also find support for a negative relationship between tax rates and entrepreneurship but state that the impacts are so small as to make changing tax policy an infeasible approach for stimulating entrepreneurship.

Feldman et al. (2011) and Kim et al. (2012) present evidence that suggests a connection between policy efforts which enable labor mobility and the level of entrepreneurial activities. Motoyama (2019) provides a comprehensive assessment of many entrepreneurship-promotion strategies. Overall, he shows that these policies and strategies are largely ineffective. In his final chapter, he offers commonsense ways to promote and support entrepreneurship.

Elaboration and criticisms

Although Schumpeter ignored the spatial dimension, his theory provides the most complete picture of entrepreneur-led economic development. The disequilibrium model he developed (1934) has two circular flows. The upper circular flow contains routine production and consumption of the economy. Over time, the upper flow reproduces the economy and seeks equilibrium. The lower circular flow disrupts the upper flow's stationary state through innovation. Thus, only in the absence of economic development and innovation is general equilibrium possible.

Revenues received in the routine circular flow are needed for existing inputs and are not available for risky investments. Innovation must be financed from outside the upper circular flow. Bankers (more properly, venture capitalists or merchant bankers) stand ready to provide credit to entrepreneurs from the savings of property owners. By using their power to create new money in the form of credit, they provide the needed funds.[20] Due to full employment, credit creation generates inflationary pressures in the economy, which reduce real wages and force saving. That is, since inflation increases profits and reduces real wages, consumption declines relative to total income and therefore real saving increases.

Capitalism as an evolutionary process cannot remain stationary. According to Schumpeter (1950), through innovation, producers anticipate and produce what consumers need rather than respond to consumer sovereignty. Entrepreneurs are motivated to introduce new combinations—new consumer goods, new methods of production or transportation, new markets, new sources of supply, or new forms of industrial organization created by capitalist enterprise. New combinations are the driving force behind economic development.[21] Creating new combinations is the function of Schumpeter's entrepreneur. Thus, Schumpeter's entrepreneur is neither capitalist (owner), nor inventor, nor manager. Schumpeter's entrepreneur is the heroic innovator who requires intuition, the "capacity of seeing things in a way which afterwards proves to be true" and of "grasping the essential fact" (1950, p. 85).[22]

The established firm is more likely to concentrate on expanding output and gaining market share using existing methods and procedures, increasing economic growth as a result. On the other hand, entrepreneurs tend to carry out new combinations in new firms, which eventually displace older ones. They create new products or markets, find new methods to produce and market commodities, or introduce new methods to organize production. Through the innovation process, entrepreneurs foster economic development.

With this conceptual model, one should not look at capitalism in static terms nor worry about existing structures of the economy. The more important issue is how capitalism creates structures and destroys existing ones. The capitalist system is "incessantly revolutionizing the economic structure from within, incessantly destroying the old one, incessantly creating a new one" (Schumpeter 1950, p. 84). This process of "creative destruction" or innovation is the essential dynamic of capitalism. Competition from new combinations, then, is the real threat to existing firms, not only in fact but also as an ever-present threat. "It disciplines before it attacks" (Schumpeter 1950, p. 85). Monopolies and other forms of imperfect competition are not only temporary market conditions but can be beneficial if based on price-lowering economies of scale.[23]

Schumpeter does not believe that innovations or new combinations are evenly distributed in time but instead appear "discontinuously in groups or swarms" (Schumpeter 1934, p. 223). This process takes the form of a cycle when entrepreneurs, financed by bank credit, introduce innovations. If these innovations are successful, imitators follow, any existing monopoly ends, investment for related innovation increases, and the economy begins an upswing. The railroad, the automobile, and the internet provide examples, as their introduction caused numerous related innovations. Investment and innovation eventually slow down, however, and mass production, due to standardization of the innovation, floods the market and dampens price increases. Rising costs and interest rates reduce profit margins, the economy contracts, and recession ensues. Sequenced around the overall upward trend of the economy, recessions and depressions are a natural response to the grouping of innovations during the previous economic upswing. Business cycles are inherent in the long-term process of economic growth.

In his developing economy, Schumpeter believes that above-normal profits are the reward for innovation and the assumption of risk. It is the price society must pay for revolutionary gains in economic development. In addition, Schumpeter contends that capitalism actually reduces inequality in several ways: (1) by increasing equality of opportunity relative to earlier, more class-bound societies, (2) by creating mass-produced products that benefit the working masses more than they do any other sector of the economy, (3) by philanthropy and social legislation underwritten by the process of capitalist economic growth, and (4) because "absolute poverty" falls as capitalist development proceeds, although the variation in incomes and wealth may increase. Unfortunately, the distributions of income and wealth have grown dramatically more unequal since the late-1970s in the United States.

In summary, the entrepreneur investing under risk and uncertainty is not the rational calculating manager making routine decisions. The entrepreneur is neither manager nor inventor nor capitalist. The capitalist may risk funds, but the entrepreneur controls the use of those funds. The entrepreneur is an innovator who introduces new combinations—a new product, new method, new market, new resource, or new organizational form.

The introduction of new combinations, which are spontaneous and discontinuous, leads to cyclical development and the "creative destruction" of existing

activities for new and better ones. In this vein, Schumpeter is not concerned with the monopolization of markets or the rise of colluding oligopolies. Large producers often are more efficient than smaller producers, and oligopolies will ultimately be smashed by innovation that makes these industries obsolete. Of course, this position is supportable as long as entrepreneurship continues. Dominant companies have been able to extend patent protection, purchase inventions, and suppress innovations that threaten profits and market share. Large corporations may also be better able to sponsor R&D and introduce new technologies.[24]

To his credit, Schumpeter gives an important role to development finance. Again, his ideas must be reconsidered in the contemporary world of financial sources and instruments. Corporations can finance innovation from retained earnings (business savings) or from the sale of securities (stocks and bonds). Independent businesspeople must rely primarily on commercial lenders. But these financial intermediaries are not often sources of development finance (equity capital). Independent businesses need access to long-term equity capital, what is called "patient money," that is not easily found. Although angel investors finance and manage the few promising ones, most new businesses continue to be financed with informal sources and personal loans (credit cards or home-equity loans). Some entrepreneurs may now be able to access start-up capital through crowdsourcing.

In regions that are largely technology-borrowing and import-substituting, some economists have claimed that Schumpeter's priorities of innovator over "mere manager" should be reversed. One of the problems lies in the inefficiency of the routine managerial functions that prevent entrepreneurs from continuously expanding their firms and from moving into more complex economic activities.[25] In addition, the entrepreneur does not have to stimulate demand; imports have already mapped out large markets. In this environment, perceiving truly new economic possibilities and carrying out pioneering technical and organizational innovations are not very relevant.[26] The work of Kirzner (1979), Baumol (1983), Leibenstein (1987), and Kilby (1988), among others, illustrates the need for efficiency-seeking behavior. This need includes gaining the ability to manage an increasingly complex business organization.[27]

Related to the problem of how the entrepreneur fits into or drives the development process are the many theories about the institutional, cultural, and educational factors that inspire entrepreneurs to undertake business ventures. Among the best known is McClelland's (1961) model of *n* achievement. McClelland argues that entrepreneurs are motivated by a need for achievement, not necessarily other more commonly regarded factors, including monetary reward and acquisition of power. He bases his thesis on a detailed study of entrepreneurship in the industrialized West versus underdeveloped countries. Much subsequent work in the international development field in the 1960s and early 1970s focused on the different factors affecting the supply and demand for entrepreneurship in industrialized versus less developed countries (Leff 1979).

The most important studies from the local developer's perspective are those that connect entrepreneurial behavior to environmental influences. In a study of Italian entrepreneurs, Dubini (1988) examines the interaction between personality and

location.[28] Other studies attempt to identify generic barriers, or, alternatively, the characteristics of receptive environments, for example, Bruno and Tyebjee (1982). Important examinations of entrepreneurial behavior can be found in Bird (1989), Bird and Schjoedt (2009), and Acs and Audretsch (2010).

The contributions of scholars from so many different fields have led to the creation of a rather rich and diverse literature on entrepreneurship that has proven resistant to the type of intellectual lock-in that often plagues research dominated by a single discipline. But at the same time, it also means that body of entrepreneurship research often seems scattered and piecemeal. Studies on regional differences in entrepreneurship are rarely connected to individual actions, while studies of individual motivation and organization rarely acknowledge environmental influences or the broader context in which entrepreneurship takes place.

While there is still no universal theory of entrepreneurship, the individual-opportunity nexus proposed by Shane, Venkataraman, and others has received considerable attention as a step forward in advancing a framework for understanding how the disparate stands of entrepreneurial research fit together into a coherent whole (Venkataraman 1997; Shane and Venkataraman 2000; Shane 2003; Eckhardt and Shane 2010). Human agency is at the center of this framework, whose primary focus is to understand how and why entrepreneurs discover, evaluate, and organize resources in order exploit perceived opportunities for profit. However, it also recognizes that individual motivations and actions are shaped by contextual forces, including place and regional attributes, such as culture, industrial organization, regulations, and policy decisions, as well as institutional resources and supportive networks (also see Thornton et al. 2011). For regional development, the key takeaway from the individual-opportunity nexus is that research should focus how policies and regional endowments influence an individual's motivation for identifying opportunities and whether they enable or hinder their ability to exploit these opportunities once identified successfully.

Entrepreneurs and regional development

Recent empirical work situates entrepreneurship and innovation in broader models of regional development. Much of this research addresses new company formation and the related concepts of human resources, knowledge spillovers, and industrial organization. Identifying opportunities to spur entrepreneurship initially depends on an understanding of the factors that enable new firm formation, survival, and growth. Scholars theorize that firm startup and performance depend on personal characteristics of the entrepreneur, the environment facing the entrepreneur, and, after startup, the characteristics of firms (Wagner and Sternberg 2004; Tamasy 2006; Korunka and Kessler 2010). Relevant personal characteristics include education, experience, wealth, access to information and support networks, and motivation. Among the important regional characteristics are the education level of the regional workforce, available financing, infrastructure quality, market demand, the presence of other entrepreneurs, a culture that is supportive of small businesses and

tolerant of failure, related firms or industry clusters, and research activity. In addition to being impacted by these personal and regional factors, the growth prospects of new firms may also be diminished by their novelty and small size (Tamasy 2006).

Additional studies report significant regional variation in the formation of entrepreneurial enterprises, whether measured by the relative presence of small business, the self-employed, or new/young firm formation rates. These studies also provide empirical evidence of the factors that are associated with differences in regional entrepreneurship, although most are based on cross-sectional regressions and are best interpreted as correlations and not necessarily cause and effect. The following list provides, in rough order of the significance or scholarly attention, a summary of those variables found to influence regional variations entrepreneurship positively.

1 Regional market demand as expressed primarily through population growth rates and/or growth in household/personal income (Monte and Luzenberger 1989; Davidsson et al. 1994; Keeble and Walker 1994; Reynolds et al. 1994; Wagner and Sternberg 2004; Lundstrom and Stevenson 2005).
2 Education and experience levels of entrepreneurs and the regional workforce (Bartik 1989; Audretsch and Fritsch 1994; Cooper et al. 1994; Keeble and Walker 1994; Davidsson and Honig 2003; Bosma et al. 2004; Peña 2004; Lundstrom and Stevenson 2005; Bruce and Mohsin 2006; Bergmann and Sternberg 2007; Kim et al. 2012).
3 Capital availability (Cooper et al. 1994; Keeble and Walker 1994; Bosma et al. 2004), or higher homeownership rates as a proxy for the availability of household equity (Reynolds et al. 1994; Renski 2014).
4 Population density and agglomeration affects (Audretsch and Fritsch 1994; Davidsson et al. 1994; Garofoli 1994; Reynolds et al. 1994; Lundstrom and Stevenson 2005; Verheul et al. 2009; Sternberg 2011).
5 Favorable regional attitudes toward entrepreneurship as proxied by the abundance of small firms in a region and/or the relative absence of large "dominant" firms (Keeble and Walker 1994; Armington and Acs 2002; Lee et al. 2004; Wagner and Sternberg 2004; Acs and Armington 2006).
6 Entrepreneur access to firm networks (Davidsson and Honig 2003; Bosma et al. 2004; Peña 2004; Lundstrom and Stevenson 2005).
7 Regional variations in industrial mix, to the extent that entry is more common in some industries than others, and these more or less entrepreneurial industries are relatively more concentrated in certain places (Fritsch 1997; Johnson 2004; Fritsch and Falck 2007; Renski 2014).
8 Higher tax rates limit entrepreneurship (Bartik 1989; Lundstrom and Stevenson 2005; Bruce and Mohsin 2006; Hansson 2012; Kim et al. 2012), while higher spending on public services creates places attractive to entrepreneurial talent (Bartik 1989).
9 Level of regional innovation (Goetz and Freshwater 2001; Kim et al. 2012), or the presence of creative individuals as measured by employment in artist and cultural industries (Lee et al. 2004; Renski 2014).

10 More extensive labor regulations and higher wage levels limit entrepreneurship (Bartik 1989; Van Stel et al. 2007; Verheul et al. 2009).

Based on the empirical evidence, policies that can influence these factors may be expected to affect the level of regional entrepreneurship activity.

A smaller, but growing, body of work looks to explain spatial differences in new business survival and/or growth. The results are more mixed than those for regional entry rates and may depend on the type of industry in question. For example, population growth, educational attainment, and the prevalence of smaller firms in the region are often found to be neither significant nor associated with higher failure rates (Acs et al. 2007; Renski 2011). Beneficial external economies of localization are associated with higher new business survival rates in some studies (Woolley and Rottner 2008; Renski 2011), although others find a negative effect from a concentration of similar firms, presumably due to heightened competition (Stuart and Sorenson 2003). Several studies find that new firms are more likely to survive in urban areas (Fotopoulos and Louri 2000; Acs et al. 2007; Brixy and Grotz 2007), as well as in industrially diverse regions, which are usually larger metropolitan economies (Renski 2011). However, several others find lower survival rates in urban areas possibly due to greater competition or because cities attract more innovative entrepreneurs working in more risk-laden domains (Renski 2009; Huiban 2011; Yu et al. 2011).[29]

Shapero argues that resilient regional economies need many small firms that may succeed or fail but which, overall, offer more stable growth. Furthermore, small firms, indigenous or recruited, are often more innovative than large ones. The most desirable entrepreneurial firms are small knowledge-intensive enterprises because they build the region's skills and human resources. Better-educated workers become more fully involved in the community. Thus, local economies become resilient and diverse as a result of people who are creative, willing to take initiative, and able to assume risk. Resilient, diverse areas can adapt to external forces and adopt new patterns of behavior (Alchain 1950).

The proper "industrial ecology" for resilient, self-renewing economies is built in stages. Expansion of a high value-added company can often be considered a random event. To survive and prosper, however, such firms need (1) proper financing, which may require educating local lending institutions; (2) a network of supportive business services—technical, legal, financial, marketing; and (3) adequate physical infrastructure. In particular, Shapero was keen on educating bankers to help them evaluate new business loan requests more accurately.[30] The entrepreneurial culture as well as the local business environment should improve as a result.

Over time, diverse economic growth increases local incomes and consumer demand. Deeper markets make the region more attractive to additional new companies (Shapero 1977).

Shapero offers many interesting insights about innovation and economic development. Like Kirzner and Schumpeter, he puts entrepreneurs at the center of the growth and development process. Entrepreneurs learn from experimentation and

from failure. They are motivated by positive but more often by negative career events. They usually gain valuable work experience with large, established firms. They often strike out on their own after confronting a crisis, such as losing a good job. Collectively, they can sustain economic development.

Yet, Shapero's argument has several flaws. He measures entrepreneurship as the rate of new company formation, but this indicator is far too broad because it treats all new businesses as if they were entrepreneurial firms. As a result, Shapero does not suggest good measures of the capacity communities have for self-renewal.[31] Shapero assumes that all regions have the ability to recruit new or young companies and can build an industrial ecology or milieu that will promote new company formation. These assumptions, however, are not correct for many places, especially smaller cities and rural areas. Furthermore, Shapero never clarifies exactly how entrepreneurship leads to self-renewing local economies. He does not define resilience operationally.

Shapero misunderstands diversity when he points to the evolutionary process as an example that "nature" provides economic developers. In nature, diversity decreases as closed ecosystems evolve over time. In the ecological context, the concept of *resistance* may be counterposed to resilience (Volker et al. 1992; Volker and Wissel 1997; Bodin and Wiman 2004). In the regional development context, large firms and oligopolies have demonstrated considerable staying power. Highly specialized regions have withstood greater cyclical instability and often experience sustained periods of growth. Perhaps deep pools of talented workers (occupational specialization) represent one form of resistance that can lead to positive economic outcomes. Resistance can also be viewed as a characteristic that increases with city size underscoring the notion that size matters.

Further research on entrepreneurship most helpful to economic developers should assess ways to increase the odds of entrepreneurial success in particular regions. Yet, as they stand, the various theories of entrepreneurship provide a substantial counterweight to economic growth theories. The latter analyze the economic outcomes of existing structures; the former examine how the economic structures themselves change. This distinction is an essential aspect of the difference between growth and development.

Discussion questions

1 In what ways does entrepreneurship rely on notions of individual agency that is otherwise lacking in mainstream economic theorizing?
2 What are the benefits of focusing on developing *new* businesses generally? How do these compare and contrast to strategies that focus on small or locally owned businesses?
3 How do entrepreneurship theories such as the knowledge spillover theory of entrepreneurship align with other contemporary theories of regional growth, such as new growth theory? Does this union help bridge the divide between growth and development?

4 Are entrepreneurs and new businesses inherently more place-based than incumbent firms, such that targeting them is more likely to produce local returns than trying to recruit businesses from elsewhere?
5 What types of development strategies might arise from a Kirznerian perspective on entrepreneurship versus a more Schumpeterian perspective?
6 According to Shapiro, what is the association between entrepreneurship and regional economic resilience? How does this align with or differ from other conceptions of economic resilience, such as those stressing industrial diversity?
7 What social or cultural factors determine the inclination to innovate? Do these help explain regional variations in rates of entrepreneurship?
8 Does regulation, the general extension of state control over the economy, reduce or motivate innovation? Can you provide some examples where state regulation has fostered or hindered innovation?
9 Do entrepreneurship theories offer insights as to how the goals of sustainable environment and sustainable economy might be balanced? Does an entrepreneurship-based strategy make it possible to undertake ecologically sustainable development while also ensuring economically sustainable development?
10 Can the entrepreneurial element of economic advance be promoted directly through policy or is it better to improve the overall livability of an area and/or the business climate?
11 Should a region attempt to "pick winners"' by nurturing and supporting specific entrepreneurial business seen as having growth potential, or should a region instead try to encourage as much entrepreneurship as possible.

APPENDIX 7.1

Entrepreneurship strategies in context: the Research Triangle region

Many ideas discussed in this chapter can be illustrated by using the Research Triangle region as a case study. The Research Triangle Park (RTP) is one of the best-known research parks in the world. In the early 1980s, the *Wall Street Journal* editorialized that RTP, along with Silicon Valley and Route 128 in Boston, was one of the more prominent centers of entrepreneurship in the United States. The editorial was wrong.

From its inception in 1959 until the late 1980s, RTP housed largely institutional research. U.S. and foreign corporations headquartered elsewhere established branch R&D facilities in RTP. By the early 1990s, RTP had experienced over $2.0 billion in development and provided for more than 35,000 employees in a metropolitan area of about 1.0 million population. Over the years, corporate R&D conducted in RTP has served parent companies. Activities range from experiments that have led to new products (e.g., drugs to retard AIDS) to routine research that enables the company to customize an existing product in order to provide better customer service. Although IBM put RTP on the map in 1965, eventually employing over 10,000 people in production as well as R&D, most other major corporations limited RTP operations to research and prototype development.

IBM's R&D activities were innovative to the extent that they led to new products and technologies. As a major focus during the 1980s, the company developed, tested, and produced personal computers in the RTP. IBM developed this product line in order to gain share of a market that was growing much faster than the mainframe market it already dominated. Firms like Apple, Intel, and Dell were the more innovative firms; IBM was a successful imitator.

In fact, the IBM case seems to illustrate Schumpeter's argument about structural change fairly well. Large oligopolistic firms that have come to dominate a market find their competitive position undermined not by competition from within their own market but by firms producing a fundamentally different yet substitute

product. In this case, personal computers effectively undermined the market for mainframes.

The most successful innovative company in the Research Triangle area that actually followed the scenario of an entrepreneurial firm is SAS Institute, Inc. SAS, like most startups, could not afford to develop a facility in RTP, in part, because of regulations allowing for building on only 15 percent of the site. In the late 1960s, two members of the faculty at North Carolina State University commercialized software products they had developed to implement canned statistical procedures on mainframe computer systems. By the late 1990s, SAS had become one of the largest independent software companies in the United States, with annual domestic and international sales in excess of $300 million. Red Hat and Quintiles are also successful entrepreneurial firms in the Triangle area that had no relationship to RTP. IBM has acquired Red Hat, and Quintiles and IMS Health have merged to form IQVIA.

In the late 1980s, major tenants of RTP began downsizing in response to growing competitive pressures. IBM changed its time-honored policy of job security and began to lay off employees. Two British pharmaceutical companies merged into Glaxo-Welcome, leading to the merging of R&D facilities and personnel in RTP. In the 1900s, Nortel, a major Canadian communications company, had 9,000 employees at its peak; it closed down its RTP facility in the early 2000s. Other large corporations experienced similar although less dramatic downsizing.

As a result of mergers and downsizing, many highly skilled research and marketing staff were looking for jobs. Some of these workers either left the Triangle area or found employment with other local firms. Some became consultants and found enough work to justify staying in the area, at least in the near term. Others founded new companies some of which succeeded.

These new companies began as entrepreneurial firms. In this case, Shapero's insight that entrepreneurship is encouraged more by adversity than opportunity appears to be correct.[32] Some of these firms are engaged in exciting new product development in the areas of computer software, genetic engineering, clean energy, or medical devices. Other founders have exploited profitable niches providing services to their former employers. The most prominent among these in the Research Triangle area are IQVIA (formerly Quintiles) and other contract service organizations that test new drugs and report research findings to major pharmaceutical companies. These activities represent an example of outsourcing, which is a way to reduce labor costs more than a means to spur innovation.[33]

By the turn of the century, the Research Triangle area had finally achieved, in fact, what had been proclaimed two decades earlier. The area had become a hot bed of entrepreneurial activity. The local Council for Entrepreneurial Development, one of the largest organizations of its kind in the country, moved from it spacious RTP offices to cramped, funky space in downtown Durham. This relocation reflected the preference young tech-savvy entrepreneurs appear to have for vibrant urban centers. Experienced businesspersons are also coming to redeveloping areas in downtown Durham and Raleigh as never before. Sometimes their motivation is to work in a region where their household can experience a higher quality of

life. Other times, it is to pursue opportunities with growing entrepreneurial firms in the area. New business licenses and incorporations are being issued at rates far above the historic averages.

Since the turn of the century, the spatial pattern of entrepreneurship thus has shifted from the RTP's suburban office park environment to the core areas of Durham and Raleigh. Major redevelopment projects in both cities combined with advanced research at the three major universities and successful commercialization of technology have resulted in more rapid economic recovery and sustained growth.

As noted earlier, state and local economic developers may have been able to assist these entrepreneurial companies directly in useful ways. They could help entrepreneurs find mentors, peer groups, or formal organizations they control, like the Council for Entrepreneurial Development. Many younger entrepreneurs appear to seek compact, mix-use walkable locations with urban amenities. Economic developers can lend support to such redevelopment efforts.

In conclusion, the most attractive strategies based on entrepreneurship theories do not attempt to forecast markets or pick winners. In larger regions, various kinds of direct assistance can be beneficial, especially through entrepreneur-led organizations and serial entrepreneurs. In all regions, long-term approaches make sense to build the infrastructure that makes the region more attractive, both to entrepreneurial firms and to talent-rich households. One important and challenging task for state and local economic developers is to assess the entrepreneurial capacity of the places in which they work. They should use the theoretical insights presented in this chapter to think through the elements of a local entrepreneurial ecosystem and the connections between these elements.[34]

Notes

1 New firms that survive and grow or small firms may indeed be innovative.

2 Citing Baumol (1968), Casson (1987) notes:

> The "disappearance" of the entrepreneur is associated with the rise of the neoclassical school of economics. The entrepreneur fills the gap labeled "fixed factor" in the neoclassical theory of the firm. Entrepreneurial ability is analogous to a fixed factor endowment because it sets a limit to the efficient size of the firm. The static and passive role of the entrepreneur in neoclassical theory reflects the theory's emphasis on perfect information—which trivializes management and decision-making—and on perfect markets—which do all the coordination that is necessary and leave nothing for the entrepreneur (1987, p. 151). See also Casson 1982 and 2003. In the more recent edition, Casson acknowledges that modern neoclassical theory, specifically endogenous growth theory, recognizes the entrepreneur as the agent improving technology through the introduction of innovations.

3 Knight (1921) anticipates Leibenstein by recognizing that economic decisions are made in real time under conditions of uncertainty. Of all decisions, planning decisions incorporate the longest time frame and involve the greatest uncertainty. Large corporate organizations can reduce uncertainty by bringing more elements under corporate control and expanding available resources. Thus, the large corporation may be more effective than individual entrepreneurship. Its effectiveness depends on corporate managers who exercise alertness, foresight, and good judgment in making sound planning

decisions. Successful managers become corporate leaders who bear the costs and reap the benefits of uncertainty.

Since the global economy is dominated by the large corporation and not independent firms, corporate innovation is quite relevant. One hypothesis is that the business groups which are organized within many countries can provide the entrepreneurial function (see Strachan 1976). Another hypothesis is that through "intrapreneurship," individuals can innovate within the corporate umbrella (Pinchot 1985). In either case, identifying innovators and understanding the innovation process in the U.S. context is critically important. See also Drucker (1985).

4 Walras, who, in the late 19th century, formalized the general equilibrium system in mathematical terms, recognized the need for an information channel to communicate and coordinate *a priori* plans between consumers and producers. Such communication is necessary to apply the neoclassical assumption of perfect information in a meaningful way. Walras devised a mythical auctioneer who perfected markets by providing information as a public good to various actors about the plans of other actors. This coordination of *a priori* plans was sufficient to overcome the ignorance reflected in initial price discrepancies. The effective auctioneer would enable households and firms to arrive at equilibrium prices and quantities that cleared all markets. Kirzner, a member of the Austrian school of economics and protégé of von Mises, substitutes a real actor for Walras' mythical figure.

5 Schumpeter also conceptualizes the entrepreneur in the Austrian tradition. His theories are based on assumptions of an existing capitalist institutional environment with private property and initiative, a system of money and banking, a spirit of industrial bourgeoisie, and a scheme of motivation demonstrated in advanced economies during the late 19th century (Schumpeter 1934, p. 145).

6 Another possibility is that economic change may gradually give rise to anti-capitalist political and social elements. Schumpeter acknowledges that cyclical unemployment and economic inequality will occur, but he believes that the secular trend will be positive. Contrary to Marx's prediction, unemployment as a percentage of the labor force has shown no upward trend; the capitalist system will continue to be productive enough to provide relief of cyclical unemployment (Schumpeter 1950). See Elliot's (1980, 1985) comparison of Marx and Schumpeter.

7 This interpretation recognizes that the "global knowledge economy" is not pervasive. In fact, the global interregional economy derives its competitive strength from multiple sources including regions that are the low-cost producers of various commodities. These regions are putting competitive pressure on higher-cost regions to lower costs or, more realistically, finding other ways to compete. Of course, cost differentials are not the only factor. These low-cost regions also tend to have few labor protections, lax environmental policies, and unfair trade practices, including manipulated currencies.

8 This is not to say that large firms are not innovative. Larger firms (those with over 100 employees) generate innovations more consistently and are more dominant in introducing new products, especially in more traditional industries. They also have the financial resources to encourage innovation by funding internal R&D and supporting new profit centers. They are also able to find innovations recently commercialized and purchase the innovating company or the rights to use the technology. The issue is not firm size; the product, management, competition, industry growth potential, regulatory environment, and so forth are the more relevant factors that determine entrepreneurial success.

9 Many important articles are organized in edited volumes. See Zoltan Acs, ed. 2006. *The Growth of Cities*. The most relevant sections are new economic geography (Part II), new growth theory (Part III), knowledge spillovers in cities (Part IV), and human capital and the growth of cities (Part V). See also David Audretsch, ed. 2006. *Entrepreneurship, Innovation and Economic Growth*, and Charlie Karlsson et al., ed. 2009. *Entrepreneurship and Innovations in Functional Regions*.

10 Incubators typically provide low-cost space, shared office assistance, and business development assistance (Allen and McCluskey 1990).

11 Harrison's (1994) numbers are from an internal study by Dun and Bradstreet.
12 Small firms with employees can be placed in three groups. Lifestyle firms which account for 90 percent of all start-ups will take on some employees but remain small and often go out of business. The remaining 10 percent has growth potential. Nine of the ten will forecast revenues up to $50 million in five years. These "middle-market" firms may attract private equity, usually angel investors. Entrepreneurial ventures are the remaining 1 percent with high growth potential with forecasted annual growth rates of 20–50 percent (Bygrave 1994). Therefore, economic development strategies to help all small businesses, whether defined as companies with fewer than 500, 100, or 50 employees, would most likely result in job churning more than job creation. Strategies aimed at new businesses have more potential to result in net new jobs, but these jobs may not last long due to competitive pressures and business failures (Kane 2010). Finally, the ability to find, qualify, and assist entrepreneurial ventures in meaningful ways would be both difficult and extremely rare.
13 Unfortunately, the distinctions are rarely drawn sharply. During the 1980s, the entrepreneur became a popular, even heroic, figure. At the same time, David Birch (1979, 1987) presented the idea that new and expanding small firms were primarily responsible for all net new job creation. Soon, the culture of entrepreneurship became entangled with the demography of businesses. As a result, small businesses development, which in almost all cases, refers to non-entrepreneurial activity, became confused with entrepreneurial business development. The very few new businesses with high growth potential, almost all of which begin small, may be considered entrepreneurial firms. Many other businesses fail within a few years. The survivors individually offer few jobs as long as they remain in business.
14 What is noteworthy is the economic importance of the few companies with 100 employees or more. In 2010, these firms controlled 65.1 percent of total employment and 70.8 percent of total payroll. In 1987, firms with 100 employees or more controlled 57.5 percent of total employment. Firms with over 5,000 employees accounted for only 0.35 percent of all firms but 33 percent of all employment and 37.9 percent of total payroll. These figures are from the U.S. Census Bureau Enterprise Statistics. The Office of Advocacy in SBA compiles enterprise information from business census sources by firm size.
15 In other words, the employment size of high-growth firms is an unstable category. For example, a high-growth firm may have fewer than 20 employees for several years until it enters its high growth stage. Within a year or two, it may have over 100 employees. Thereafter, it may enter a maturing stage during which employment growth occurs gradually. As a "small business," it experienced highly variable rates of employment growth. Focusing on a firm's transitory employment size is both confusing and irrelevant.
16 One of Adam Smith's most basic insights is that the division of labor is limited by the extent of the market.
17 Wages, hours, working conditions, fringe benefits, and advancement potential are also typically better in well-established corporate enterprises. Further discussion of small business development strategies can be found in the Winter 1992 edition of *Economic Development Review* (Volume 10).
18 Microenterprise loan programs, for example, use training and peer support groups in an attempt to create local entrepreneurs, although evidence suggests that most of the individuals participating in these programs tend to establish retail or personal service businesses with minimal growth potential. Ideally, younger persons should be able to pursue careers locally rather than migrate elsewhere to find economic opportunity.
19 The Great Recession was triggered by irresponsible behavior in the financial sector which underscores the importance of ethical standards and the serious damage that can be caused in their absence.
20 The neoclassical growth model ignores the money sphere assuming that real saving will finance direct investment conducted with perfect foresight. Schumpeter sees the money sphere as centrally important. He was well aware of the role of finance in the economy and served as the Austrian finance minister after World War I. For an outstanding book

on Schumpeter's life and work, see Thomas McCraw's (2007) insightful biography of Schumpeter.

21 Schumpeter defines development as "a distinct phenomenon, entirely foreign to what may be observed in the circular flow or in the tendency towards equilibrium. It is spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing (1934, p. 64).

22 From the perspective of having foresight, Schumpter's innovating entrepreneur can be seen as one manifestation of Kirzner's forward-looking arbitrageur who seeks any possible opportunity for profit (Kirzner 2009).

23 The auto industry, for example, may have offered cheaper and higher quality cars in the 1920s as an oligopoly than it had offered previously as a more competitive industry. Competition and the advantages it provides are found not only in the market for existing products but in the arena where the threat of new products and industries provides competitive discipline to existing firms.

24 Multinational corporations have advantages in the area of technological innovation because these firms have greater experience in the management of research and development, a lower cost of capital, and a lower discount rate for evaluating the present value of R&D (Leff 1979).

25 Kilby (1988) believes that there is an enormous backlog of new technological products and unapplied production techniques both in the developed industrial economies and in the less developed economies.

26 Adapting techniques and organization, maximizing factor productivity and minimize costs, securing working capital finance, and improving substitutes for non-available skills and materials are the tasks on the production side that will more often than not represent the critical entrepreneurial function in the modernizing economy of the late twentieth century (Kilby 1988).

27 According to Schumpeter, not only does capitalism produce commodities, it also produces culture. As rationalization becomes dominant, capitalist development begins to undermine the institutions of property and contract. Socialism becomes increasingly possible. Schumpeter was not completely serious with this analysis but was preaching doom to thwart the threat of socialism he perceived after World War II.

28 She identifies three types of entrepreneurs: self-actualizers, people driven by negative circumstances, and followers of family tradition. After examining the spatial distribution of such entrepreneurs and the characteristics of the environments in which they operate, she argues that the barriers to increased entrepreneurial activity vary both by personality and by place. For example, self-actualizing entrepreneurs may face strong cultural barriers in a parochial region that a family-tradition oriented entrepreneur would find very receptive. This variation implies that local developers should identify local impediments that are, in some sense, personality-specific.

29 One useful distinction is between new firms that serve the local market and others that export from the region and therefore have much greater growth potential. MSAs with higher incomes and more growth stimulate locally oriented startups (demand-pull). On the other hand, factors that pertain to industry mix, workforce talent, and related localization economies associate with high-tech startups (supply-push). See Motoyama and Malizia (2017).

30 This educational program could encourage banks to offer more debt capital, but it is not likely to provide a source of patient money or risk capital. The best way to finance innovation is the subject of long-standing debate. Options include relaxing regulations on financial institutions, creating new secondary markets for small-company securities, changing the taxation of dividend income and capital gains, and providing tax credits for qualified investments in young companies.

31 Possibly, the survival rate of new companies or their diversity across industries or the capacity of young firms to export would be more useful measures. More broadly, assessments of the regional entrepreneurial ecosystem may provide insights.

32 David Birch identified creatures in the animal kingdom to distinguish among firms. Most firms are mice; they are small at birth, remain small, and have short lives. In comparison to the multitude of mice, there are a few elephants; elephants grow to be large and live for a long time. The few rapidly growing firms, "the gazelles," survive through alertness and speed. Gazelles appear to illustrate Shapero's research on entrepreneurs. They are motivated primarily by insecurity and live in constant fear of being eaten by large felines (what has been called entrepreneurial terror). Economic developers want to catch some gazelles. Unfortunately, they usually cannot recognize them until they go speeding by heading for greener pastures.
33 The high cost of permanent employees has motivated many companies to limit such hires and fill many positions, especially entry-level, high-turnover ones, with independent contractors. Companies can pay these employees attractive salaries and still save significant sums by not being responsible for social security taxes, health insurance, retirement packages, or other fringe benefits.
34 The Kauffman Foundation has a series of reports on entrepreneurial ecosystems in Kansas City, Indianapolis, Chattanooga, Durham, and other cities.

8

REGIONAL INNOVATION THEORIES

In a now classic paper on the nature of innovation, Kline and Rosenberg (1986) wrote that there is "no need to belabor the point that technological innovation is absolutely central to economic growth and to improvements in efficiency" (p. 279). What matters is developing an understanding of when, how, and where innovation occurs among firms, industries, and locations; under what conditions it may stall; and how it may be fostered through planning or policy. Also important is the practical and normative implications of innovation for individual and regional incomes, the evolving development paths of nations and regions, and the prospects of addressing serious societal concerns like inequality and environmental sustainability.

Work along these lines in the literature on regional economic development and growth began to expand in the 1980s and then exploded in the 1990s and 2000s. Until the mid-1980s, the innovation process was largely treated as a black box, exemplified by the increasingly acknowledged but little explored role of technological change in neoclassical growth theory, or as driven by human capital or general knowledge spillovers in endogenous growth theories. What characterizes theories of regional innovation today is that they are based on deconstruction of the innovation process itself, including the complex roles of a variety of actors and institutions interacting in different ways and degrees at local to global scales.

The focus of this chapter is on theories that seek to explain how the pursuit of novel processes and products occurs and influences the comparative prosperity of different regions. In general, the theories focus the economic developer's attention on the organizational features of the regional economy, from the organization of production within resident firms to the means by which firms manage their relationships with other business enterprises, build and manage their supply chains, link into global value chains, engage with universities and government laboratories, and draw on local infrastructure and the labor market. The theories also highlight

the significance of formal and informal institutions and the embeddedness of economic relationships in broader social and political contexts. In general, regional innovation theories demonstrate how social, cultural, and political relationships and institutions have an important influence on the performance of local firms individually and as actors in broader networks, districts, and clusters.

In terms of application, such theories suggest that local economic developers should take a coordinating role in setting up formal mechanisms for knowledge and technology transfer among firms, and among firms and other organizations (e.g., universities and government labs). They should also identify and address significant barriers to the adoption of new technology and knowledge among local businesses (particularly small businesses) and target recruiting and existing industries programs wisely to facilitate the continuing successful evolution of competitive regional clusters. If there is a general theme in the latest research on innovation and its implications for policy, it is that strategies are best differentiated to specific regional conditions and often to the unique characteristics of different economic specializations within the region. Moreover, economic development must be viewed as a broad arena of professional practice that involves diverse organizations from development agencies, private business services and consultancies, and industrial extension agencies, to universities, community and technical colleges, and national and state or provincial laboratories.

After a brief discussion of the innovation process itself and the foundational influence of evolutionary economic thought, the "Theories" section of the chapter summarizes the primary features of three core theories of regional innovation: regional innovation systems, the theory of flexible specialization, and territorial innovation models. The section "Applications" outlines several applications of regional innovation theories: manufacturing modernization and networks, industry clusters, the diagnosis and redress of innovation system failures, and constructing regional advantage and smart specialization approaches common in European economic development practice. The section "Elaborations and criticisms" elaborates on regional innovation by first exploring the concept of flexibility itself according to three scales identified by Gertler (1988): (1) flexibility in machinery, (2) flexibility in the organization of work within the firm, (3) and flexibility at the level of the economy. It then discusses the role of transactions costs and the implications of innovation for cumulative regional growth.

Theories

Innovation activity—particularly that associated with technology-intensive industries—is highly uneven geographically (Moretti 2012). Successful high-technology hubs like Silicon Valley in California, the Boston region's Route 128, the Research Triangle in North Carolina, the greater Toronto region, and Cambridge in England are highly visible and the subject of much press attention and academic research. Such regions also enjoy a diversity of industries, thick labor markets, robust venture capital, leading universities, and corporate and government laboratories.

With their specializations in science-based industries like biotechnology and information technology and their complement of research institutions, one could easily conclude that the ongoing success of leading technology hubs is grounded fundamentally in scientific research that uncovers novel technologies and products, which are then brought to market by savvy entrepreneurs and their venture capital backers. A natural policy conclusion is that fostering more research and development directly (e.g., via subsidies, tax credits, or public research spending) or indirectly (e.g., via supporting universities and labs) will ratchet up the regional rate of innovation and technology-based economic growth, especially when one considers that research is a public good that is likely underprovided by the private sector. Another conclusion one might draw is that regions without such rich technology-related endowments, such as older industrial centers, smaller metropolitan areas, or sparsely populated rural areas, have little prospect of succeeding on the basis of economic development strategies focused on innovation.

This implied view of innovation as applied science is called the "linear model" by Kline and Rosenberg (1986, pp. 286–287): research leads to development, then to production, and then to marketing, with little feedback among the various steps. Kline and Rosenberg contrast the linear model with an alternative perspective, where the starting point in a chain of relationships among research, invention, and production is most often the identification of a potential market need or source of demand. Invention and design follow to meet the need, provided appropriate technology is available, first from the existing stock of knowledge and then—and only if necessary and prospective returns merit—through new mission-oriented research. Designs are refined as technical solutions and related market viability are tested and re-tested. Furthermore, process innovation occurs through lessons learned from actual production and distribution.

A key feature of the model is that science is not a starting point in a hierarchy of relationships but lies "alongside the development process," most importantly as an accumulated store of knowledge and secondarily as research activity. With respect to research, innovation itself drives scientific research, and different kinds of science are needed at different stages in the innovation process. For example, basic research is more often needed at the invention and design phase, a focus on systems is often needed at the development stage, and process-related research is more likely to be of value at the production stage. Throughout, the capacity to tap and absorb useful knowledge is crucial, "knowing where to look," and "with whom to talk" in all phases of the innovation process. Innovation results from continuous and interactive feedback, refinement, and learning among the different steps required to bring a new product or service successfully to market.

While Kline and Rosenberg's proposed view of innovation is not definitive,[1] it has had a fundamental influence on modern regional innovation theories. Kline and Rosenberg's foregrounding of feedback loops, interactive learning, knowledge sourcing and sharing, demand-driven research, types of science, and the way new tools and instruments that are developed in the innovation process subsequently help foster new scientific frontiers has shaped subsequent work on innovation,

especially innovation systems theory. Imagining the various stages of innovation being conducted not within a single firm but with the involvement of networks of actors—producers, independent contract labs, government labs, universities, advanced business services providers, consultancies, and the like—raises immediate questions about the effective functioning of those networks so that learning is maximized and promising opportunities are captured. Effective functioning will, in turn, likely be influenced by hard and soft institutions (including laws, regulations, and social norms) and evolving means of engagement and communication.

Also foundational in regional innovation theories are related ideas in evolutionary economic thought, and specifically the thesis that economic growth is the result of "the co-evolution of technologies, firm and industry structures, and supporting and governing institutions" (Nelson 2008, p. 13). Influenced heavily by Schumpeter's (1934, 1950) focus on uncertainty—that often there is insufficient information to predict with any reliability the result of trying something wholly new—evolutionary economic theory rejects the equilibrium perspective of neoclassical theory and its underlying assumption of actors who make optimal choices among well-understood and predictable options. Instead, evolutionary theory claims that actors make rational or sensible choices by relying on routines, which may or may not fail them in times of considerable flux. At any given time, some actors may try something new, thereby becoming a source of innovation, creating winners and losers among firms, industries, workers, and places. The effect of such innovation is what Schumpeter called "creative destruction," the key motive force driving growth and development.

From the evolutionary perspective, the economy is always changing, both from internal and external influences. Relatedly, there is no ideally functioning market tending toward equilibrium, and thus the concept of market failure as a justification for public intervention to foster innovation lacks meaning. Instead, evolutionary economics thinkers justify innovation and other industrial policies on the basis of their social and economic returns (Nelson 2008, p. 12). This basic idea would come to influence much of current thinking about the appropriate role of government in supporting national and regional innovation, particularly the "constructing regional advantage" and "smart specialization" frameworks shaping European policy.

Regional innovation systems

Implicit or explicit in various models of interactive innovation and evolutionary economic thought are the three core elements of innovation systems: actors, networks, and institutions (Asheim et al. 2019). Theories of regional innovation systems have their origins in the theory of national innovation systems (NIS), which developed in the 1980s as a way of formulating competitiveness strategies and policies to advance economic and societal learning and innovation and, therefore, economic growth. The "system" consists of formal and informal linkages among actors networked and engaged in innovation as well as the institutions that govern these linkages. NIS ideas were a purposeful counter to the view that national

competitiveness is a function mainly of trade, comparative advantage, and relative cost efficiency (Lundvall 2010). The context is important. NIS ideas have been most influential in Europe. Like their counterparts in the United States, in the 1980s European leaders were concerned about the rapid rise of Japanese and Korean producers in key industries like automobiles, electronics, and steel. It was a rise fueled by an openly activist developmental state (Block 2008). Unlike the United States, Europe viewed its science infrastructure and level of R&D as lagging.

NIS is both a theory and an industrial policy approach, with the latter focused on diagnosing and seeking redress of various system failures that purport to restrain innovation activity. As noted by Asheim et al. (2019), Michael Porter's theories of competitiveness and industrial clusters, which in his initial earlier work lacked a spatial component, are fully consistent with the NIS focus on innovation as the primary source of a nation's competitive advantage. Porter's policy prognoses differ substantially, however, as they are based primarily on a neoclassical rather than an evolutionary view of the causes of economic growth and development.

Firms and other actors may be part of multiple, overlapping innovation systems: national, regional, sectoral, and technological (Malerba 2004; Weber and Truffer 2017). Regional innovation systems recognize the influence of proximity as well as local context, norms, and history on behavior among networked actors. The exchange of complicated, uncodified knowledge may be easier through face-to-face interaction; the trust that necessarily underlies forms of cooperative competition is likely to be more robust among actors in the same locality; and levels of interactive learning and feedback in an innovation process may be greater when firms and other participating organizations are nearby. System failures may be traced to multiple factors, including a low level of relatedness among industries in a region, a thin local labor market, weak population size and urbanization economies, the limited availability or low quality of regional infrastructure, and the inadequate functioning of territorially defined institutions. The list of potential system failures is long, but the advantages of spatial proximity are apparent.

Theory of flexible specialization

Concurrent with the early development of NIS and RIS ideas, Michael Piore and Charles Sabel argued in an influential book published in the mid-1980s that the post oil-crisis industrial economies were crossing a second "industrial divide," a period of profound uncertainty where the direction of technological development was shifting (Piore and Sabel 1984). The first industrial divide, which occurred in the 19th century, marked the emergence and subsequent dominance of mass production methods over more craft-based modes of economic organization. Henry Ford's pioneering and widely imitated method of production—the assembly line—drew its strength from massive economies of scale, standardization, an internal division of labor, and large and stable sources of demand. This technology and organization of production eventually drove smaller, craft-based producers out of business; indeed, the literature characterizes these modes of production as "Fordist."

Piore and Sabel argue that by the late 20th century, mass production itself was in crisis, with its rigidity and large scale insufficient to respond effectively to fundamental changes in the nature of demand. The thesis was put forward during a time of relative economic stagnation (the mid-1970s to early 1980s), when few major industrialized countries outside of Asia were performing particularly well.

Piore and Sabel described one alternative to the crisis based in Fordist methods as a continued reliance on mass production techniques but with the extension of Keynesian-type macro-regulation to the international level, with the aim of increasing the purchasing power of consumers in underdeveloped economies. This would, in effect, build markets for mass produced goods, maintaining the competitive viability of large-scale, standardized production. Another alternative, one they found more compelling based on the evidence they assembled, is the spread of "flexible specialization." Flexibly specialized production is a partial return to a less rigid and more craft-based technological model characterized by a type of cooperative competition among smaller firms, the use of flexible manufacturing equipment and techniques to create greater agility and customization, and a greater reliance on social relationships and institutions (e.g., norms and trust) as a means of organizing transactions (Best 1990). To illustrate this model, they cited successful regional economies in Europe and the United States that are comprised of small, networked enterprises. They argued that small- and medium-sized firms (SMEs) in such regions had found ways to coordinate production and innovation in order to serve rapidly changing niche markets and out-compete large scale producers. The SMEs were also closely tied to their regions, unlike the branch plants of large multinational companies.[2]

Some viewed the regions where these firms are prevalent as models of development worthy of replication in other places. In the late 1980s and early 1990s, a significant share of the research activity in economic development focused on identifying and confirming Piore and Sabel's hypothesized shifts in the basic organization of firms and industries. The flexible specialization perspective fueled related literatures on the adoption of flexible manufacturing techniques, the link between industrial organization and agglomeration, and external economies in "new industrial districts" comprised largely of SMEs. New industrial districts, discussed in the following section, are modern versions of the 19th-century industrial districts described by Marshall (1890 [1910]). Practical applications of the ideas are found in modernization programs, the cultivation of industry clusters, and the organization and management of formal interfirm networks. The view that flexible specialization represented a certain route to competitiveness became so prevalent in the economic geography and regional development literatures in the 1980s and early 1990s that some characterized it as the "new orthodoxy" (Amin and Robins 1990).

In the latter half of the 1990s, research on flexible specialization shifted toward an examination of some of the potential negative impacts of flexible production regimes. Harrison's (1994) critique of labor practices in many prototypical industrial districts and subsequent researchers' examination of asymmetries of power between buyers and suppliers (often between large buyers and their smaller and

dependent subcontractors) helped spur more balanced inquiry into flexible specialization as a particular form of industrial-spatial organization. Cooperation among contracting firms does not necessarily imply an even playing field among partners. Thus, some firms may require development assistance of various kinds in order to remain competitive.[3] It became clear that the development practitioner interested in applying these ideas needs to develop a sophisticated understanding of not only markets and industries relevant to her region but also internal corporate strategy, interfirm business relationships, and the specifics of production technologies.

Territorial innovation models

Industrial districts are a type of territorial innovation model. Others are the French concept of innovative milieu, regional industry clusters (discussed in more detail in Chapter 9), and technopoles (Scott and Paul 1990). Territorial innovation models incorporate many of the locational dynamics explored in theories of regional innovation systems and flexible specialization.

The concept of the industrial district originates with Alfred Marshall's *Principles of Economics* (1890 [1910]). In his *Principles*, Marshall described the advantages smaller firms derive from locating in spatial proximity, in dense industrial complexes. The advantages are a function of dynamic external economies (see Chapter 9). As the local economy grows, so does the availability of inputs, the pool of skilled labor, and the volume of knowledge spillovers. Rabellotti (1995) characterizes the industrial district as a spatially concentrated cluster of sectorally specialized firms, with a strong set of forward and backward linkages, a common "cultural and social background linking economic agents and creating a behavioral code, sometimes explicit but often implicit," and a network of public and private supporting institutions (p. 31).

The industrial districts literature focuses foremost on examining certain dynamic regions for evidence of these characteristics. Although regions in northern Italy have received most of the attention, the number of case studies of other regions and countries is large. One can find studies of the usual suspects in the United States (e.g., Silicon Valley, Boston), as well as Asia and the developing world (Mexico, India, Brazil, to name a few).[4] These cases have played a strong role in motivating economic development strategies related to industry clusters in the United States and Europe (Rosenfeld 1995).

Early work defined industrial districts as places where the dominant industries employ flexible specialization methods *and* are highly competitive. Few studies identified specific characteristics of a flexibly specialized economy and then examined their incidence across a large cross-section of areas, an approach that might have turned up places that followed the pattern of flexible specialization yet performed poorly economically. Indeed, in a case study of Seattle, Gray et al. (1996) suggested that there are many regions in the United States with industrial structures and cultures that do not align with flexible specialization or industrial district archetypes and yet are economically resilient. In a particularly influential paper, Markusen (1996) broadened the definition of industrial districts, defining them as

"sticky places." Industrial districts as sticky places are regions that can attract and keep industrial activity over time despite the increased mobility of business. She provides a typology that describes the most common regional industrial structures: (1) the Marshallian, (2) the Italianate variant to the Marshallian, (3) the hub-and-spoke, (4) the satellite industrial platform, and (5) the state-anchored industrial district. The core features of each type are summarized in Table 8.1. Markusen found evidence of each type after examining a subset of dynamic metropolitan economies in the United States, Japan, Korea, and Brazil.

Markusen's typology implies that many of the characteristics of the traditional Fordist model remain relevant. For example, the hub-and-spoke district is dominated by one or two large, vertically integrated manufacturers (e.g., Boeing and Microsoft in Seattle) that arguably enjoy significant internal economies of scale. These firms have not spun off much of their production, even as their region and the world economy have grown. Clearly, there are still advantages associated with large scale. The lesson for the local economic developer is that while industrial

TABLE 8.1 A typology of five industrial districts

Marshallian	Business structure dominated by small, locally owned firms
Examples: Late 19th century Lancashire, Manchester, Sheffield, UK	Firms enjoy few internal scale economies Substantial local interindustry trade Long-term buyer-supplier contracts and business partnerships Few linkages with firms outside the region
Italianate	Characteristics of Marshallian plus:
Examples: Third Italy	Exchanges of personnel between buyers and suppliers common Cooperation between competitors to share information, risk Strong R&D, design function Strong role for government in regulation and boosterism
Hub-and-spoke	Business structure dominated by one or several, vertically integrated firms
Examples: Seattle; central New Jersey; Toyota City, Japan	Dominant firms focus is on global, not local, community Investment decisions, with global effects, made locally Dominant firms maintain strong external rather than internal linkages Internal economies of scale important
Satellite industrial platforms	Business structure dominated by large branch plants
Examples: Research Triangle, North Carolina; Kumamoto, Japan	Internal scale economies important Minimal local interindustry trade Key investment decisions made elsewhere Labor market external to the region
State-anchored districts	Business structure dominated by public sector institution(s)
Examples: Santa Fe; San Diego; Madison, Wisconsin	Local firms serve as suppliers to dominant institution(s) Low rates of turnover among local businesses Short-term contracts between institutions and suppliers Disproportionate shares of clerical and professional workers

Source: Adapted from Markusen (1996) Table 1. See source for full list of characteristics.

organization matters, the type of organization that is most successful in particular places and for particular industries and products varies. When designing ways to help local industry reduce costs, increase innovation, and become more productive, developers must not imagine that one type of business structure and organization is ideal.

Another influential analysis of territorial innovation is Saxenian's (1994) comparison of the high technology-oriented regions of Route 128 near Boston and Silicon Valley in California's San Francisco Bay Area. Studying those regions' structures in the 1980s and early 1990s, she described the former as a place dominated by vertically integrated and self-sufficient companies concerned with maintaining proprietary control over innovations and technology. This control orientation was manifested even in the spatial dimension; the companies along Route 128 are located on large, self-contained, and campus-like tracts of property. Few informal institutions existed where workers from different companies can mingle and exchange ideas. In contrast, the history of Silicon Valley is one of the independent, garage-based entrepreneurs. Even today, after these entrepreneurs have developed their own large companies and associated facilities, the business environment remains more informal and workers often move between employers, taking their accumulated knowledge and ideas with them. Again, the spatial environment plays a role. The sprawling development patterns of the South Bay area encourage the high degree of social networking that has become the region's hallmark. Saxenian concluded:

> Silicon Valley continues to reinvent itself as its specialized producers learn collectively and adjust to one another's needs through the shifting patterns of competition and collaboration. The separate and self-sufficient organizational structures of Route 128, in contrast, hinder adaptation by isolating the process of technological change within corporate boundaries.
>
> *(1994, p. 161)*

As it turns out, the Route 128 innovation economy substantially reinvented itself over subsequent decades, becoming the highly dynamic home of new industries in biotechnology, medical technologies, and other fields (Asheim and Gertler 2005; Best 2001). This raises the question of what factors influence the evolution of specific districts or innovation systems and also exposes the risks of reasoning drawn from a few highly selective regional examples.

Applications

Many local development applications and strategies are informed by regional innovation theories. At the first level of the flexibility hierarchy are initiatives designed to increase the adoption of advanced production machinery and techniques (including quality and workforce management) that permit greater flexibility in improving or modifying existing designs, introducing new ones, and maintaining quality.

Modernization policy may be less concerned with industrial organizational issues than with the basic factors that prevent firms from investing in equipment upgrades and adopting state of the art management practices. These factors include unavailability of investment capital, lack of expertise, low levels of workforce skill, and difficulties in getting new systems up and running properly. Nevertheless, advanced equipment and practices are crucial elements in achieving greater flexibility.

Many efforts to boost regional innovation focus on supporting industry clusters, a method of understanding and promoting key regional strengths popularized by Michael Porter's (1990) *Competitive Advantage of Nations* and less directly by Piore and Sabel (1984) and the related new industrial districts literature. Closely related to industry cluster strategies is the establishment of formal interfirm networks. In fact, clusters are essentially networks of producers, linked either through formal trading relationships or through shared factors or knowledge. We consider each of these areas of application first before turning to innovation systems failures, constructing regional advantage, and smart specialization frameworks that inform much of European regional innovation policies and practice.

Manufacturing modernization and networks

Federal and state policymakers in the United States and policymakers in Europe, Japan, and Korea, among other countries, have developed a variety of support programs intended to address barriers manufacturing firms face in upgrading their facilities with state-of-the-art production technology and practices. Initially, attention was focused primarily on the rates of adoption of production equipment, but workforce management, quality management, and buyer-supplier contracting practices have received attention as well. Much of the focus is centered on SMEs, on the basis that smaller firms face greater difficulties in obtaining access to, purchasing, and implementing advanced technologies and practices. In the United States, the federal government, through the National Institute of Standards and Technology (NIST), has partially funded a national manufacturing extension service (manufacturing extension partnership, or MEP) that is implemented by state and local government agencies, universities, and local nonprofits. The network of centers extends to all 50 states and Puerto Rico and includes hundreds of field offices. MEP centers essentially provide two broad kinds of business assistance: "brokerage" services that connect businesses and third-party service providers and direct assistance via field agents (Brandt et al. 2018; Poole and Buff 2018). Services may fall into the areas of quality assurance, production process improvements, information technologies, marketing, design, regulatory issues, engineering, and workforce development.

A key rationale for public intervention to support SMEs is evidence of persistent differences between small and large manufacturers in their levels of productivity, level of investment in research and development, and average wages (Wessner 2013). In an analysis of approaches to delivering services by MEP centers in the United States, Brandt et al. (2018) find that the most effective and enduring relationships

between businesses and the centers are developed when MEP personnel act as brokers attentive to supporting manufacturing networks that include manufacturers and third-party providers. High levels of trust between MEP personnel and businesses are associated with the latter maintaining an ongoing relationship with the center (Brandt et al. 2018, p. 296). This research highlights the potential positive role of government in supporting networked production through MEP agents who build sustained relationships with regional manufacturers.[5]

Industry clusters

Traditional economic development practice focuses on the needs of individual firms, in terms of assistance for locating sites, providing worker training, and constructing and maintaining infrastructure. Beginning in the 1990s, many cities and states began implementing industrial cluster strategies, which are essentially economic development initiatives targeted to groups of linked firms (see Chapters 1 and 9 for additional discussion).

Rosenfeld calls the policy interest in industry clusters "a radical departure from traditional economic development strategy, which, whether aimed at business development or business retention, is always applied firm by firm" (1995, p. 7). Cluster strategies recognize that the fortunes of individual businesses are in many ways defined collectively, given that they depend on common factors (inputs and labor), improvements in technology, and the growth of the economy as a whole. Clusters are also a departure from the standard neoclassical view of market economies, which emphasizes fierce competition between atomistic producers. Traditionally, cooperation has been viewed in terms of price fixing and collusion and was therefore considered detrimental to the overall performance of the economy. Clusters emphasize cooperation primarily around innovation, a recognition that knowledge spillovers help drive technological advance and ultimately economic growth.

In theory, clusters are a geographically concentrated group of firms that are essentially interdependent along one or more of the following dimensions: (1) presence in the same value chain, (2) important similarities in technology or workforce requirements, or (3) part of the same knowledge networks.[6] Clusters are also characterized by the presence of related institutions, such as educational institutions, business associations, or formal networks (Feser and Bergman 2000). If they are not, this is often the first point of attack for the local developer, who might try to set up dedicated training programs in community colleges, establish a business advisory group to study ways to identify and solve problems jointly, or look for possible synergies between industry and R&D activity occurring in nearby universities (also see discussion in Chapter 9). In practice, because of a paucity of good data on local value chain linkages as well as a lack of agreement regarding how best to identify clusters for the purposes of policy, clusters are often poorly defined as regional industrial specializations. Moreover, little attempt is made to understand the social, cultural, and political factors and context that influence cluster success.

Feser (1998) identifies two types of cluster policy applications: (1) those that attempt to build particular clusters as an explicit goal of policy (cluster-specific strategies), and (2) those that use cluster concepts as a method to improve the implementation of standard or traditional development programs and initiatives (cluster-informed strategies). An example of the former is an attempt by a community to nurture a specific cluster identified by public officials and business leaders as an existing or emerging specialization. Such policies may include both demand-side and supply-side elements, as public sector attempts to stimulate demand for the various related outputs of the cluster (perhaps achieved through changes in regulation, focused government purchasing practices, or targeted consumer information programs) are coupled with programs designed to improve the competitiveness of cluster firms (e.g., technology adoption, business assistance, networks, etc.).

An example of cluster-informed strategies is the use of industry cluster analysis (the identification of different clusters and their member firms in given regions) to better focus modernization strategies. For example, local developers might seek to improve the adoption of advanced, flexible production technologies among regional manufacturers by focusing assistance and information provision on large, regional end-market producers. To the degree that technologies tend to diffuse backward through production chains, such producers may influence upstream suppliers and subcontractors to adopt compatible machinery and techniques. Information sharing within the cluster (e.g., through informal networking) may also help diffuse technologies even between firms not formally linked in the production chain. This is an example of how cluster policy as a way of implementing flexible production ideas may serve to leverage scarce development resources.

Redressing innovation system failures

An important element in innovation systems theory is the concept of a system failure that might be redressed through public intervention of some sort. Many different taxonomies of innovation systems failures exist (Asheim et al. 2019), but one of the most influential is that of Woolthuis et al. (2005). The authors describe four types of failure: (1) infrastructural development failures, such as transportation, communication, and energy systems that require public investment given their large-scale and public good features; (2) institutional failures, including inadequate laws, regulations and standards (so called "hard" institutions), and norms, values, and culture ("soft" institutions) that do not foster the kind of ease of transactions and trust in effective networks; (3) interaction failures, where networks may be either too weak and thus little supportive of knowledge exchange and learning or too strong and prone to contributing to shared myopia; and (4) capabilities failures, related to firms' capacity to create, access, and absorb knowledge. Systems failures taxonomies give regional policymakers and economic development planners a framework for diagnosing weaknesses in

industrial ecosystems that may be restraining interactive learning and associated innovation activity.

Constructing regional advantage and smart specialization

As noted earlier, regional innovation systems are not simply characteristic of economies dominated by high-technology industries. In fact, all industries undertake innovation of different kinds, a concept captured in the differentiated industrial knowledge base perspective outlined by Asheim and Gertler (2005) and Asheim et al. (2017). The idea is that different industries are characterized by different knowledge bases. The innovation activity of traditional high-technology industries such as biotechnology or information technology often draws most heavily on "analytical" forms of knowledge, characterized by formal models, concepts, and findings that are codifiable (e.g., in scientific publications), technologies that lend themselves to patenting, and licensing. Analytical knowledge is heavily science-based, and thus relationships with universities are important. Innovation in the industry as a whole is often driven by new firm formation via spin-offs from existing businesses. It is analytical knowledge—and the unique forms of interaction that give rise to it—that underpins well-known technology-based innovation hubs like Silicon Valley.

Other industries, particularly those in manufacturing, draw more heavily on "synthetic" knowledge. Synthetic knowledge is engineering-based, it arises often from new combinations of existing knowledge, it is heavily driven by practical problem solving, it is less subject to codification and therefore relies more on the exchange of tacit knowledge, and university-industry links matter but principally through applied research and development rather than basic science. A third kind of knowledge is "symbolic," based in artistry, design, and aesthetics. The innovation base of cultural industries, such as major media producers, is symbolic knowledge, which is also characterized more by its tacit features and for which social and cultural context and understanding are paramount. According to Asheim et al. (2019, p. 40), "all knowledge types can be the basis for industries pursuing an innovation-based competition."

The recognition that all industries may compete on the basis of innovation, and that the source and nature of that innovation varies, highlights the importance of customized regional innovation support strategies. The constructing regional advantage approach of Asheim et al. (2011) and the smart specialization model adopted under the European Union's regional cohesion policy (McCann and Ortega-Argilés 2011) share similarities in the guidance they offer development practitioners. Under constructing regional advantage, the aim is to tailor interventions to the specific knowledge bases dominant in a region's industry mix, with attention to "platform strategies" that stimulate knowledge flows across industries. The intent is to facilitate the evolution of industries toward a higher level of innovation and novel combinations of knowledge that open up new product opportunities or markets. In this way, economic development policy and practice seek to

shape the development path of the region toward a higher level of competitiveness. With smart specialization, one might build a local customized strategy that is widely shared among stakeholders, including analysis of the regional context and potential for innovation, development of inclusive governance, and development of a shared vision and priority setting for the region. Both the constructing regional advantage and smart specialization approaches underscore that there is no ideal-type intervention, such as supporting science-based R&D or university-industry linkages.

Elaborations and criticisms

Any production technology involves the direct physical combination of materials, labor power, and equipment to manufacture goods, as well as the coordination of relationships. These relationships may be internal to the firm (such as between different functions, e.g., production and R&D) or extend outside the firm (relationships with suppliers of intermediate goods and capital equipment, or with customers or competitors). Because different production technologies combine factors and manage relationships differently, they also have different implications for geography and spatial relationships. The debate over Fordist versus flexible manufacturing essentially constitutes a debate over trends in industrial organization and their impact on the development prospects of particular regions. The debate is carried on at a fairly abstract level; clearly it is a simplification to reduce all production technology to two general paradigms. Nevertheless, the flexible specialization approach has succeeded in making industrial organization a central concern in economic development. Local developers benefit from thinking not only about the basic locational needs of industry (quality labor, infrastructure, regulation, and taxes) but also about ways local firms can increase innovativeness, quality, and flexibility through their adoption of advanced process technologies, their R&D activities, and the ways they choose to manage linkages with suppliers and customers.

Machines, intrafirm systems, interfirm systems

Early writing on flexible production focused on broad shifts in technology, that is, the question of whether the most competitive businesses are, in fact, replacing the standardized production-oriented technologies with new, more flexible technologies. But what is flexibility? Gertler identified a "hierarchy of flexibility stretching from the individual machine on the shop (or office) floor to the very basis of organization within the economy and the society in which it is embedded" (1988, p. 420).[7]

At the first level of the hierarchy is flexibility in production machinery. New types of capital equipment that take advantage of computer technology allow producers to re-program rather than completely re-tool as they introduce qualitative changes in products or even wholly new products. The result is that plants are becoming obsolescent at a slower rate. Perhaps, more importantly, it is becoming

easier for companies to introduce variations in product to meet niche markets, a type of customized mass production. In some cases, this means the time from plant set-up for a new product and actual production is reduced; in other cases, plants are able to vary products significantly in real time. The study of the rates at which firms were adopting new technologies was especially common in the 1990s. Governments administered surveys designed to gauge the degree to which producers were incorporating new technologies, with the results informing manufacturing extension programs and other modernization efforts designed to diffuse new technologies throughout the economy.

Individual pieces of flexible machinery do not operate in a vacuum. The second level of the "flexibility hierarchy" involves the combination of machinery and business functions into an integrated system within the firm, drawing on tools and techniques in computer-integrated manufacturing, computer-aided design, computer-aided engineering, robotics and autonomous systems, material handling systems, and networks linking procurement, design, and production. Flexibility in production is also improved through relationships with outside suppliers and customers. It is through the linkages between firms that spatial implications become manifest. Firms may use just-in-time scheduling and delivery systems to reduce inventory costs and interfirm computer networks to manage this process through the electronic exchange of data related to design specifications and order delivery.

The third level of the flexibility hierarchy is strategy and management within and among firms. Contracts negotiated between buyers and suppliers, and the management of related transactions, are tied to the general strategy on which a given firm chooses to compete. Flexible specialization theorists such as Piore and Sabel (1984) argued the days of mass markets of consumers with undifferentiated tastes were ending and that firms must increasingly specialize in niche markets. Firms can serve niche markets better by working closely with suppliers, perhaps even outsourcing a greater share of the production of a given good, to produce a greater variety of goods in smaller quantities. The need for continuous innovation also dictates coordination with suppliers. Successful implementation of this strategy may require longer-term, stable relationships with business partners rather than the arms-length, least-cost type of transactions presumably common in large-scale manufacturing. The strategy suggests that smaller firms will be able to compete more effectively than ever before with larger firms. The greater the degree to which firms outsource production, the more apparent is the fact that one firm's competitiveness depends crucially on its partners' competitiveness.

Crucial to the success of flexibly specialized firms are cultural and social norms that foster trust between contracting parties.[8] The means by which contracts are governed is important. Trust-based transactions were found to be particularly apparent in industrial districts in northern Italy, where long-standing familial ties, a close meshing of business and social relationships, and the sense of community that these dynamics engender are common. The economic structure of northern Italy became a model that development analysts attempted to export to other places. The major difficulty with such efforts, however, was that the economic and social

structures go hand in hand. Exporting a social structure, embedded as it is in local context and history, is a near impossible task, even if it is considered desirable.

Transactions costs and regional industrial organization

Transactions costs theory focuses on the factors that determine whether a firm chooses to produce a certain good itself or instead contracts with another firm to produce the good (Coase 1937; Williamson 1975; Williamson 1985). Businesses have a choice of organizing production through the market (e.g., outsourcing inputs) or internal hierarchies (establishing its own division for the manufacture of the input). The firm's choice depends on the costs of the transactions associated with each alternative. In conditions where there is a high degree of uncertainty in terms of the type, quantity, or quality of inputs required, firms might choose to produce that good internally. Alternatively, when intermediate inputs are standardized, the firm may find it cost-effective to use the market (other firms) as its source. The study of transactions costs is the study of the conditions under which one alternative is better than the other. Clearly, the superstructure of laws, regulations, and social norms that govern market activities are a critical element. Firms may choose one course of action in one country that would be extremely costly in another. To a more limited degree, this situation may also exist across regions in the same country. Although we have cast this discussion in terms of manufactured inputs, it may also be applied to other types of factor requirements.

Scott (1986, 1988, 1992) applied the modern theory of transactions costs to the analysis of regional industrial organization, drawing on the division-of-labor framework of Stigler (1951). As alluded to previously, one can think of a firm as composed of several distinct functions: production, administration, management, research and development, and so on. (Robinson 1931). The activities of the typical firm may be further subdivided within each of the broad functional areas. For example, some firms may produce in-house a large share of their needed manufactured inputs. When this is the case, the firm effectively produces multiple products, some for final markets and some for intermediate markets, for which the only customer may be itself. The cost-minimizing scale (level of output) of production of each good may vary significantly. For example, it may cost a firm less to subcontract duplicating and printing services to outside companies than it does to maintain its own printing office. Print shops, by serving a larger customer base, are able to attain economies of scale that the individual firm cannot. The same may be true with certain manufactured inputs or other business functions.

In a relatively less developed region or economy, and/or where formal or informal institutions governing relationships are weak, the typical firm may have to produce most of its own inputs and handle most of its basic functions in-house. The market may not be large enough to support other companies focused exclusively on duplicating and printing, booking travel, managing secretarial tasks, conducting R&D, or producing intermediate inputs of various kinds. Or, transactions costs in managing relationships may be too high. This problem is typical of nascent

economies in many parts of the world. However, as the market expands with economic growth and as institutions strengthen, the establishment and survival of specialized firms becomes viable. The original firm therefore gains the option of spinning off many of its internal activities as long as it is cost-effective to do so. Adam Smith described the advantages of division of labor internal to the enterprise in terms of a pin factory, where the firm reduces costs by specializing tasks (one worker makes the pin shaft, another the head, a third joins the two, etc.). But with the growth of the market and the growing sophistication and stability of institutions, the internal division of labor may be converted to an external one; tasks may be spread among multiple firms. This idea was originally outlined in a rigorous fashion by Stigler (1951) based on Young's (1928) discussion of the link between the division of labor and economic growth.

As the degree of global competition increases, making it more difficult for firms to predict demand, and as savvy consumers seek more customized, higher quality goods, firms may achieve more flexibility by spinning off in-house functions and relying to a greater degree on contract suppliers. But to maintain a high standard of quality and a continuous process of innovation, businesses must work closely with their partners, not simply place orders for given quantities of goods but to have them delivered at stated times with agreed-upon rates of defectiveness. Proximity becomes increasingly important because it facilitates the face-to-face contact needed for mutual, interactive learning.

Link to cumulative growth

To the degree that firms in a value chain benefit from locating in proximity, this idea has clear implications for regional growth. The possibilities for a finer division of labor are improved as a metropolitan area grows in size and sophistication regarding infrastructure and institutions. Enterprises in the large and growing region enjoy advantages vis-à-vis those in smaller or rural areas. As a result, industries in large, growing places are able to increase their competitive edge, thus spurring more growth. This is, in effect, a cumulative causation argument consistent with spatial polarization models, post-Keynesian and new endogenous growth theories, and new trade theory. At issue is to what degree the forces encouraging agglomeration by firms (e.g., the importance of proximity for ensuring flexibility in production between linked firms, face-to-face interaction, etc.) outweigh sweeping general improvements in technology and infrastructure that would seem to encourage (or at least permit) greater spatial dispersion (e.g., advances in telecommunications technologies).

Researchers have sought to understand the offsetting effects different means of organization and technologies may have on concentration and dispersion by studying whether just-in-time inventory and delivery systems (JIT) lead to tighter colocation of suppliers and their customer firms. JIT attempts to improve the quality of final goods by using smaller batch runs that permit the quicker identification of problems in the production process. Not only are defects and errors determined

more rapidly but their costly and disruptive consequences are limited. The system also minimizes inventory as suppliers ship goods to the end-market producer with greater frequency rather than intermittently and in large quantities. The objective is to approximate, to the extent possible, a continuous manufacturing process throughout the entire production chain. As noted by McCann and Fingleton (1996, p. 494), "it is necessary for the customer firm to have individual shipments of goods delivered in exactly the size and frequency it requires, otherwise its internal production operations may become hampered."

The nature of JIT suggests that coordination and transportation costs may be significant enough to necessitate closer proximity between firms adopting the system. And, if such a technique became widespread in the manufacturing sector, we might expect to observe a general re-agglomeration or clustering of industry. One particularly rigorous test of these propositions was undertaken by McCann and Fingleton (1996), who found tighter spatial linkages following JIT adoption among a small sample of Scottish electronics firms.[9]

Summary

Regional innovation theories are consistent with a general trend in regional development thought toward a focus on industrial organization and structure, interindustry linkages, and externalities and agglomeration economies. Theories of concentration and diffusion (growth poles, unbalanced growth, cumulative causation, core-periphery), new growth and trade theory, and entrepreneurship and innovation theories all focus to one degree or another on the way work is organized and managed between and within firms. This organization, in turn, has implications for spatial development patterns, generally through its influence on spatial externalities (spillovers) and innovation. This is a stark contrast to economic base, neoclassical growth, and neoclassical trade theory. In economic base theory, the focus is on macroeconomic aggregates (basic versus non-basic employment), while neoclassical theories analyze the workings of the price mechanism in a world of constant returns and atomistic producers. Regional innovation theories imply neither an export-focused nor hands-off approach, but one which attempts to build the capacity of firms in a given region to continuously innovate, learn, and adapt to rapidly changing economic circumstances.

Discussion Questions

1 Regional innovation theories consider production equipment, methods of organizing production, and worker management strategies. Development strategies aimed at increasing firms' adoption of advanced production equipment are common. But should local developers also attempt to improve the adoption of improved workforce management techniques? How might such a strategy be pursued?

2 Identify several benefits available to enterprises through formal interfirm networks.
3 Are there any ways that the local political context might influence the means by which regional firms organize production? Is the national political context likely to be the biggest influence on production organization?
4 How does the dominant industrial culture of an area (e.g., energy in Houston, automobiles in Detroit, computers in the San Francisco Bay area) influence the competitiveness of local producers in the dominant sectors? In what ways might the influence be different for firms in other sectors?
5 The adoption of flexible production technologies does not ensure that firms will continuously innovate and develop new products. Are there ways that local developers can influence firms' propensity to innovate?
6 Is there such a thing as cooperative competition? That is, how might highly competitive firms also seek ways to collaborate?

Notes

1 The literature on innovation models is vast. See Fagerberg et al. 2005.
2 The question of whether flexible specialization would replace Fordism as a dominant mode of organizing production generated a spirited debate, where early adherents to Piore and Sabel's thesis were actually bolder in their predictions about outcomes than the original authors themselves. See Holmes (1986), Scott and Storper (1987), Schoenberger (1988), Gertler (1988, 1993), Amin and Robins (1990), Martin (1990), and Sayer (1990).
3 For example, some flexible manufacturing technologies, such as just-in-time (JIT) sourcing, imply contracting practices that tie suppliers closely to their customers. Under JIT, large assemblers may opt to maintain longer-term relationships with a few key suppliers rather than purchase components from a larger number of competing firms. The small group of select suppliers are favored, but they are also dependent if they are discouraged from selling to multiple producers (as research has shown is sometimes the case). This may have important implications for regions with particular industry and firm structures. A region dominated by small- and medium-sized firms may appear to fit the profile of the Marshallian industrial district from a cursory point of view. But if those firms are suppliers serving non-local firms, the flexible production model of continuous innovation, networking, and information sharing may mean less for explaining regional fortunes than the decisions of one or a few large final market (and often multinational) companies.
4 See also Harrison (1992).
5 One source defines a network as "a form of associative behavior among firms that helps expand their markets, increase their value-added or productivity, [and] stimulate learning [to] improve their long-term market position" (Bosworth and Rosenfeld 1993, p. 19). Firms in a given network may or may not serve similar markets or be members of the same product chain. Boswell and Rosenfeld describe three basic types of networks. Vertical networks consist of firms at different stages of the production chain or in the same markets that form an association to engage in joint marketing or share information regarding production or product development. Horizontal networks are made up of firms that share similar technology or service needs, whether or not they are in the same product chain. In practice, the organizational structure of the networks varies significantly, as does the degree of formality involved. A third type of network is a knowledge network, made up of firms with few commonalities in terms of product chain or market that band together to share information regarding business practices. These firms meet to identify and solve common problems, exchange information, and stimulate continuous learning

and improvement. The knowledge network is effectively a special type of the horizontal network.

6 Clusters are typically defined as establishments in related industries that are linked in some way (e.g., through buyer-supplier relationships) and that tend to co-locate in geographic space. In a test of spatial and economic clustering, Feser and Sweeney (2000) found evidence that linked firms (particularly those in technology-oriented sectors) actually do have a greater propensity to cluster geographically. In earlier work, Sweeney and Feser (1998) tested whether small, single establishments have an "above average" tendency to co-locate, a key postulate of many flexible production theories. That study found evidence of spatial clustering by establishments employing between 10 and 50 workers; no spatial clustering was found for the very smallest or larger (over 50 workers) plants.

7 It should be noted that although much of the flexible production literature focuses on small firms and often customized or batch producers, large mass producers may also adopt flexible manufacturing techniques. In fact, some evidence suggests that the highest rates of adoption of flexible techniques and practices are among larger producers (Bergman and Feser 1999).

8 This is often described as the concept of "embeddedness" (see Granovetter 1985; Harrison 1992; Asheim 1996). Ettlinger (1994, pp. 161–162) argues:

> Critical ingredients of long-term localized development, regarding both productivity and social welfare, include a production system and set of social relations suited to partnership principles of cooperation and collaboration, appropriate organization of local interests to achieve consensus, and finally, an active local government that articulates the needs of workers and firms through both supply-side policy (education, training, service provision) and indirect relations with the private sector through incentives that influence competitive firm behavior amid competing production systems in the global economy.

9 The strong comeback many downtowns and other denser employment centers have made across the United States and Canada may provide additional evidence about the value of proximity. Chapter 9 provides thorough coverage of this topic.

9

THEORIES OF AGGLOMERATION

This chapter explores how agglomeration relates to economic development. Agglomeration is a tendency for items to group together spatially or physically. In economic development, we are interested in the agglomeration propensities and observed agglomeration patterns of firms, workers, related organizations and institutions, and economic activity. Agglomeration economies refer to the benefits and costs that come about from agglomeration: from people, firms, and economic activities locating near to one another.

The benefits and costs of agglomeration are called by different names in different literatures. "Spillovers" is often the term of choice in economics, whereas geographers prefer "interdependencies." External economies or externalities are spillovers that occur outside firm boundaries and are not compensated; agglomeration benefits (or costs) are positive (or negative) externalities. Categories of agglomeration economies also receive multiple designations, such as market versus non-market spillovers, which are labelled as traded versus untraded interdependencies in geography; compensated versus uncompensated spillovers; and pecuniary (or market-transacted) versus technological (non-market) externalities. Amid this wash of vocabulary, we mainly will employ "agglomeration economies" as our term of choice.

Why did we place consideration of agglomeration and its role in economic development as the last chapter devoted to a particular theory or cohesive set of theories? Agglomeration is a fundamental phenomenon, providing some of the underpinnings and mechanisms for other economic development forces, including the subjects of the previous two chapters, entrepreneurship and innovation. Moreover, as with entrepreneurship, agglomeration delivers a link between the concepts of economic growth and development. By positioning the discussion of agglomeration theories and its applications here, we draw upon earlier portions of the text in relating linkages and explaining applications with reference to other theories of economic development.

Theories

We first present the factors that generate agglomeration economies. We then discuss their articulation in industrial districts, central place theory, and industrial clusters, within each of which space and place are of primary importance.

Sources of agglomeration economies

Agglomeration is one of the prominent explanations for the origin of cities (also see cumulative causation theory in Chapter 6). In some sense, cities are defined by proximity; it is precisely the density of habitation and human activity that distinguishes urban from non-urban regions (Glaeser and Gottlieb 2009). In societies in which businesses, workers, and organizations make individual choices about where to locate, cities must present some kind of advantage in order to arise and persist (Duranton and Puga 2004).[1] Understanding and distinguishing the sources of urban advantage enables economic developers to anticipate and act upon regional advantages, to develop policy and strategies in order to support or enhance local economic desirability, and to assist businesses and individuals to take advantage of the benefits of agglomeration.

Alfred Marshall receives credit as one of the first to identify and explain benefits that proximity of location and spatial density provide to economic actors. Marshall (1890 [1910]) identified three major sources of agglomeration economies that accrue to businesses that locate near to each other. The first is specialized inputs. The larger an industry is locally, the more aggregate demand it generates for its inputs, and the more feasible and efficient it is for suppliers to specialize in producing the inputs for that industry. In addition, concentrated demand or purchasing power is a powerful factor impelling local suppliers to cater to the particular needs of that industry. Consequently, agglomerated industries enjoy both greater access to and lower cost of inputs tailored to their production activities.

Labor pooling is the second of the Marshallian agglomeration economies. A spatial concentration of businesses with similar or complementary labor needs creates both sizable demand for and supply of qualified labor. This large labor market increases job opportunities for workers with specialized skills and improves the chances of achieving a high-quality match between employee skills and employer requirements. Employee turnover is less problematic for employers, as large labor pools reduce the time and effort needed to recruit suitably skilled individuals or train new workers.

Finally, Marshall recognized knowledge spillovers across firms as an important benefit generated through agglomeration (Chapter 7). Where many firms are engaged in similar or complementary activities, great potential exists for useful exchanges of information and expertise, whether intentional or via indirect channels such as employees switching jobs. This circulation of knowledge and know-how can spur innovation, increase learning and productive exploitation of information, and ultimately speed technological progress (Cohen and Levinthal

1989; Aghion and Jaravel 2015). Marshall's famous description of the mechanism of knowledge spillovers is that where a particular industry concentrates, "mysteries of the trade become no mysteries; but are as it were in the air" (1890 [1910], IV.x.3, p. 271). In other words, the precise means by which knowledge flows among businesses may not be evident, yet information is bound to diffuse among agglomerated firms. Knowledge spillovers produce benefits at the scale of individual inventors and innovators as well as for firms and industries (Lucas 1988; Moretti 2019).

Marshall's conception of agglomeration economies has proven remarkably durable. Subsequent theoretical and empirical work on the subject has served to clarify the original three Marshallian sources of agglomeration economies and extend the list of sources (Feser 1998a). Ohlin (1933) and Hoover (1937) usefully distinguished agglomeration economies arising because of localization from agglomeration economies due to urbanization. Localization economies are the advantages that accrue to co-located firms operating in the same economic market, such as within one specific industry, whereas urbanization economies are the benefits gained by all types of firms agglomerated in one location. Marshall's three kinds of agglomeration economies operate predominantly as localization economies. Examples of urbanization economies include mass transportation infrastructure, reduced transportation costs from shorter average distances, wholesaling and storage facilities, general producer and business services, and ready access to higher levels of government (Isard 1956; Lichtenberg 1960; Carlino 1978). General supports for entrepreneurship, such as the availability of shared space, networks of active and potential entrepreneurs, and opportunities to obtain experienced mentorship, tend to be related to the size of a place and so may be considered to be urbanization economies as well (Chapter 7). Because urbanization economies of agglomeration arise from unspecified (though diverse) patterns of growth yet provide pathways to new types of economic opportunities, they comprise an important bridge between the processes of economic growth and economic development (Chapter 2).

On the opposite side of the customer-supplier relationship, demand or customer pooling denotes the advantages that businesses realize by locating in proximity to potential customers (Feser 2002). Demand pooling may arise from locating near to either a large quantity of potential purchasers or a small number of discrete customers that represents a substantial amount of total demand. Robinson (1931) differentiated between mobile and immobile knowledge spillovers, arguing that the latter do not diffuse across space or do so only sluggishly and with great difficulty, perhaps due to a tacit characteristic that is not easily codified. Another distinction separates static agglomeration economies that are short term and typically reversible from dynamic agglomeration economies, which are advantages requiring relatively long periods of time to achieve, such as heightened technological learning (Glaeser et al. 1992; Harrison et al. 1996b).[2] In terms of rationales for the existence of cities, agglomeration economies may be enjoyed by consumers as well as producers, providing incentives for residential clustering (Jacobs 1961; Fujita and Thisse 2002).[3] Scholars in various disciplines continue to refine and explore the sources of

agglomeration economies in various settings and contexts (e.g., Koster et al. 2019; Yin et al. 2019).

Agglomeration may generate costs or disadvantages alongside benefits. Some of the most widely described and researched kinds of agglomeration costs are those that arise generally from urbanization and therefore are labelled urbanization diseconomies. Examples include congestion and its attendant drawbacks and irritations (traffic, crowding, queuing, etc., resulting in inconvenience and time spent), pollution, and opportunities for rent-seeking (Strange 2008).[4] In parallel, localization diseconomies are those costs associated with spatial groupings of similar firms, such as competition for specialized inputs elevating factor prices and increased opportunities for labor poaching.[5]

One of the major debates in the literature on agglomeration economies concerns the kind of configuration of firms and industries that is most advantageous for generating and capturing benefits from knowledge spillovers. The first two of Marshall's agglomeration economies, labor pooling and specialized inputs, unambiguously favor agglomerations of businesses that are engaged in similar production processes or that share similar supply needs. But whereas Marshall also conceived of knowledge spilling across businesses and workers engaged within a particular trade or production process, Jacobs (1969) instead highlighted the possibility of cross-fertilization of ideas across diverse industries. She stressed such cross-industry knowledge spillovers as being a crucial ingredient for innovation and dynamism in local economies. (See the following Criticisms and Elaborations section in this chapter for more discussion of Jacobs' ideas.) This notion of "Jacobs externalities," that knowledge spillovers that occur across industries benefit firms, and in the aggregate produce advantages for regions, has been tested repeatedly against Marshall's concept of intra-industry knowledge spillovers. The latter often is referred to as "Marshall-Arrow-Romer externalities" or "MAR externalities" to credit the influential formalizations of the economic benefits of knowledge presented by Arrow (1962) and Romer (1986).

A plethora of studies investigate the impacts of Marshall-Arrow-Romer versus Jacobs knowledge spillover externalities. Evaluated en masse, these analyses do not produce a satisfying answer to the question of the relative influence of these two types of agglomeration economies. Whether empirical research shows that economic performance is more closely linked to the potential for Marshall-Arrow-Romer externalities or for Jacobs externalities appears to depend on numerous research design factors, including the type of indicator or measure used for each type of agglomeration economy, the industrial sector, the particular outcome (e.g., economic growth, productivity, innovation), the geographic scale, and the level of industry detail examined (de Groot et al. 2016; Beaudry and Schiffauerova 2009; McCann and van Oort 2009; Melo et al. 2009). This research does, however, support the existence and importance of both types of agglomeration economies across a wide range of geographic settings and methodologies.

The idea of related variety attempts to achieve a balance between the extremes of Marshall-Arrow-Romer and Jacobs externalities (Frenken et al. 2007).

Cross-industry knowledge spillovers are important, but not all pairs of industries are equal in this regard. The agglomeration economies that are best positioned to transpire, or to be of lasting economic benefit, arise between industries that possess some degree of similarity or relationship. Empirical analysis of related variety exhibits some promise in revealing the features of industrial composition—that is, the kinds of industrial diversity—that best produce Jacobs externalities, but is constrained by data limitations, particularly industrial and patent classification systems (Content and Frenken 2016). Although the research remains unsettled, the variety of potential sources of agglomeration economies offers economic developers many avenues for thinking about the specific advantages of their regional economies.

Industrial districts

After more than 125 years, Marshall's conception of agglomeration economies still is heavily referenced and applied to understand the activities and advantages of spatial groupings of firms. The kind of business agglomeration that Marshall envisioned and characterized is a collection of small, locally owned firms located near to each other, producing goods for export, and operating in a fashion largely separated from the rest of the world. This Marshallian industrial district contrasts with other varieties of business agglomerations that nevertheless share the fundamental feature of gaining economic benefits from co-location. Markusen (1996), for example, lists four additional types of industrial districts (Italianate, hub-and-spoke, satellite industrial platforms, and state-anchored) that she defines according to their organizational, structural, and transactional characteristics, factors that derive in part from how firms take advantage of the potential benefits of agglomeration (Chapter 8). Clark et al. (2010) extend Markusen's approach by classifying agglomerations based on the characteristics of their innovation systems, distinguishing them according to their industrial diversity, organizational structure, and patenting rates.

The notion of flexible specialization, described as an alternative to the Fordist or mass production-focused arrangement of industrial organization, is predicated on agglomeration economies as well (Piore and Sabel 1984) (see discussion in Chapter 8). Agglomeration economies, derived from the spatial concentration of firms and other industrial actors within a specialized economic niche, are what enable small and nimble businesses to compete effectively in the larger marketplace (Storper and Christopherson 1987). Shared information, networking, innovation, and problem-solving constitute an intentional form of knowledge spillovers. The efficient use of large-scale inputs such as expensive equipment or transportation infrastructure or the support of workforce training through cooperative arrangements among numerous small enterprises demonstrates intentional construction of the specialized inputs type of agglomeration economies. "New industrial districts" research in the 1990s focused on investigating the locational and organizational characteristics of regions thought to exhibit some or all of the features of flexible specialization (Park and Markusen 1995). The name ascribed to this branch of the literature underscores its origin in Marshall's description of industrial districts, and

especially the central role of agglomeration economies (Storper 1995; Feser 1998a; Raco 1999).

Central place theory

Moving from the scale of an individual city to systems of cities, agglomeration economies supply the logic underpinning central place theory along with related ways of conceptualizing urban hierarchies. Formulated by geographers to explain an observed association between the size and rank-order of urban areas, central place theory models the system of urban areas by considering the efficient spatial range of distribution of consumption goods and services (Christaller 1966).[6] Consumer products for which there is frequent, consistent demand can be provided in many "low order" locations, sustaining numerous small urban areas that collectively serve a widespread population. Commodities for which demand is relatively rare require a comparatively large spatial extent in order to assemble a sufficient quantity of consumers for efficient provision; the supply of such "higher order" goods and services congregates in and enlarges a select set of urban areas. Thus, the city hierarchy consists of a small number of large urban areas supplying a wide variety of both frequently and infrequently demanded consumer goods and services, a greater number of middle-sized urban areas offering an abridged range of consumption items, and many small urban areas offering only the most fundamental and commonplace consumer goods and services.

Although not typically described in this way, agglomeration economies provide the crucial rationales for central place theory. Each category of consumer item is associated with a spatial market area of sufficient breadth to support an efficient scale of production, an outcome arising as a logical consequence of demand pooling. The producers of higher-order goods, rather than distributing themselves across many smaller cities, choose to locate together in order to generate and take advantage of the urbanization economies of large cities, including the Jacobs-type knowledge spillovers prompted by industrial diversity. Consumers, also realizing urbanization economies, including multipurpose shopping, tend to prefer these more sizable locations, thereby enlarging markets and further enhancing the lure of larger urban areas (Fujita and Thisse 2002). The aggregation across all goods and services in the economy yields the observed inverse relationship between the size of cities and the frequency of cities of that magnitude within the urban system.

Central place theory applies most neatly to the distribution of market towns of varying sizes across otherwise primarily undifferentiated regions, and the underlying agglomeration economy rationale holds best for relatively closed systems, in which localized transportation dominates. Long-distance trade and travel, multi-locational firms, and intangible products and services that do not require a particular location of delivery erode the advantages of demand pooling. Yet related concepts of urban diversity and importance that give rise to more complex understandings of urban hierarchy are also based, at least in part, on the logic of agglomeration economies. Leading locations within the global urban hierarchy, such as described by Sassen

(1991) and Castells (2000) among others, are typified by company headquarters or other dimensions of command and control for industry and government. The existence of these higher-order places is predicated on the presence of specialized businesses that facilitate or direct flows of information and financial resources. Such businesses choose to locate where they can gather sufficient demand for their specialized products and have access to robust transportation and telecommunications infrastructure, following the agglomeration economies of customer pooling and urbanization economies, respectively.

Industrial clusters

An industrial cluster is a group of companies, institutions, and other economic actors that are both interconnected functionally and located in geographic proximity (Porter 2000). The functional connections within clusters may be generated by different types of linkages, such as supply and purchase relationships, similarities in production technologies (including the usage of public assets), or shared labor and/or knowledge needs. The required proximity of actors within clusters may be reflected at various spatial scales, ranging from tightly constrained local areas to quite expansive regions or even nations, depending on how distance and geography impact the functional interrelationships (Feser 1998b).

The role of industrial clusters in economic development draws primarily from the comparative advantages that clusters bring to constituent firms and organizations. Porter's (1990) influential "diamond model" of competitiveness delineated four categories of advantage arising from cluster membership: factor conditions, demand conditions, related and supporting industries, and firm- and regional-level structure.[7] At the regional scale, the first three categories relate very closely to Marshall's agglomeration economies.[8] Factor conditions refer to the accessibility and cost of inputs into production, including material resources, human resources (i.e., labor), knowledge resources, and infrastructure. Demand conditions reflect to the nature and composition as well as the size of the customer base, which adds some differentiation to the concept of demand pooling. Advantages from related and supporting industries are those generated by localized relationships with intermediate suppliers and purchasers. Structure, the fourth category of Porter's model, adds the influence of inter-organizational strategy and rivalry. Competition boosts competitiveness by compelling companies to develop and maintain their distinct strengths and capabilities, to innovate, and to continually seek improvement, activities that themselves benefit from clustering (i.e., dynamic agglomeration economies). Examples include frequent interactions with customers and competitors that can reveal changing consumer preferences and knowledge spillovers within clusters that provide early information about rapidly advancing technologies or industry-specific trends (Pike et al. 2017).

The idea of industrial clusters is akin to several of the notions described earlier in this chapter, resting on much the same explanations of economic advantage derived from agglomeration economies. The concepts defining industrial clusters have long

existed in various semblances, stretching at least as far back as Marshall's industrial districts, and with strong similarities to the aspatial growth poles of Perroux (1950b) and Chinitz's (1961) description of regional inter-sectoral dependences, among many other notions (Motoyama 2008; Smit 2010). Indeed, one might question what industrial clusters add to previous understandings in regional economic development. One answer is that clusters provide a mechanism for grouping firms, industries, and other actors based on the types and extent of the advantages they gain from agglomeration. Although not theoretically unique, the concept of industrial clusters is understandable and adaptable, and it urges an orientation toward external competitiveness (Motoyama 2008).

A second response might emphasize the addition of industrial organization to the consideration of agglomeration economy advantages. While not deriving directly from agglomeration, regional competitive circumstances are determined by the locational patterns of firms and are an important driver of firm behavior and outcomes (Beaudry and Schiffauerova 2009; Drucker 2015). Moreover, industrial organization at the regional scale may impact economic performance by affecting how businesses capture the benefits of agglomeration economies (Henderson 2003). The empirical research on the topic concurs that a lack of local competition (i.e., excessive concentration within a regional industry) impairs productivity and other economic outcomes (Feser 2002; Drucker and Feser 2012; Drucker 2013; Li et al. 2019). The evidence is mixed, however, as to whether the effect is due to insufficiently competitive environments limiting the locally available advantages from agglomeration.

Michael Porter deserves considerable credit for the enduring popularity of industrial clusters in economic development. Although he did not originate the notion of industrial clusters, Porter coalesced the bundle of ideas that existed in several fields, such as geography, regional science, and economics, and translated them into the language and approach of business strategy. This interpretation rendered clusters an attractive and accessible framework for economic development professionals and policymakers seeking to cultivate or strengthen regional comparative advantages. Clusters fit well with the economic development approaches prevalent in the 1990s, both traditional and new. Entrepreneurship and human capital development strategies, which were rapidly gaining adherents at the time, can be advocated as supporting the labor- and knowledge-based linkages that tie many clusters together, as well as promoting dynamism and adaptability to strengthen competitiveness across the component industries and organizations of all clusters (Martin and Sunley 2003). Clusters offer a persuasive justification for industrial targeting—the long-standing practice of concentrating economic development effort and resources toward particular industries or economic sectors—in that a focus on enhancing sectors that possess local competitive advantages is likely to produce relatively high rates of return on public investment of resources (Voytek and Ledebur 1997).[9] Additionally, Porter elevated the visibility of cluster analysis through vigorous promotion, consulting, and illustrations of numerous cases. Since the late 1990s, industrial clusters have been an established and committed segment of mainstream local and regional economic development practice.

Applications

Economic developers armed with broad understandings of the sources of agglomeration economies are well-positioned to analyze their individual regions and assist companies to realize and take advantage of local agglomeration advantages. They may do so through actions ranging from providing information to having direct interaction with businesses. Campaigns to attract potentially relocating businesses—one of the most traditional of all economic development activities—may be helpfully structured around the advantages produced by local and regional agglomeration economies. (See Chapter 3 for a discussion of industrial recruitment strategy.) A general information campaign designed to be broadcast widely might concentrate on urbanization economies, features such as transportation infrastructure and the availability of diverse business services that appeal to a wide spectrum of firm types and industries. More targeted recruitment would be efficiently tailored to convey positive information regarding the specific advantages likely to entice narrower groupings, constellations of firms with similar needs or opportunities (i.e., localization economies). The latter approach often should prove more convincing to targeted organizations and, if successful, would further amplify the attractive agglomeration economies through adding the activities of the newly relocated businesses. Of course, developers need not restrict their marketing of agglomeration economies to businesses being recruited from outside the region. Local and startup companies also may learn about how to take advantage of resident opportunities through distribution of economic development materials and information.

A somewhat different type of economic development approach focuses on augmenting agglomeration economies through improving their operation. Encouraging more interactions among businesses and employees of different companies may intensify knowledge sharing, establish supportive mentoring relationships, maximize local interindustry linkages, and expedite efficient matching of employees and employers (see the following Criticisms and Elaborations section). Programs that can foster such interactions are nearly as diverse as economic development activities in general. From non-profit institutes that work to compile and disseminate best practices to recurrent or one-time networking events, the feature that distinguishes these strategies is the attempt to lower barriers to interaction or directly produce the interrelationships that lead to shared benefits from agglomeration.

More generally, theories of agglomeration serve to focus attention on spatial relationships, drawing closer links between urban economics and the fields of geography and urban planning. Urban economists generally concentrate their attention on widespread urban spatial patterns, such as transportation costs, land use allocation and development, and migration. Geographers, planners, and others interested in urban form and the built environment often stress perceptions of livability, enjoyment, safety, and aesthetics. Agglomeration economies occur in locations in which production, consumption, residence, transportation, recreation, social interaction, and governance all tend to take place in close proximity.

The spatial juxtaposition of diverse aspects of the urban environment creates recurrent competition and prompts consideration of interactions (Duranton and Puga 2004; Malizia and Chen 2019). The potential for conflict should motivate local economic developers to work with and support urban planners who are responsible for managing land use development and change and who normally act to mitigate conflicts in the urban environment.

Supporting and promoting industrial clusters is probably the most common local and regional economic development application of agglomeration economies. Clusters offer a ready framework for creating and administering policies designed to enhance the operation of agglomeration economies. Cluster policy typically begins with an analysis stage, which seeks to depict and categorize the components of one or more local or regional industrial clusters: the population of businesses and their sectoral structure, the types of connections among the firms and other relevant organizations, the stage of development, and their intraregional patterns of spatial location (Pike et al. 2017). With regard to development stages, clusters usefully may be classified as existing (growing, stable, or declining), emerging, or nascent (also called potential or latent) (Rosenfeld 1997).[10] The aim of the investigation is to reveal locally specific features of how the clusters operate, such as distinguishing aspects of the mixes of economic activities, functional gaps in the local networks of relationships, linkages across clusters, and how each of the clusters are evolving over time. Once the local clusters are mapped and evaluated, their distinctive traits and dynamic attributes guide the development of plans to enhance their agglomeration advantages or to redress observed vulnerabilities.[11] Strategies typically include efforts to reduce transaction costs, encourage communication, instigate and sustain selective collaborations, and establish various sorts of regional-level support systems (also see discussion in Chapter 8).

Industrial clusters also may be valuable as vehicles for implementing economic development policies (Waits 2000). The relationships and interdependencies within a cluster present potential channels for spreading the delivery of development initiatives. Conferences, working groups, standing networks, and other conventions of representatives of an industrial cluster may facilitate collaborative action by contributing to the process of shaping development programs and/or assisting in introducing and promoting them throughout the cluster membership. Even the preliminary step of recognizing a cluster as a focus of attention may provide significant motivation for private sector members to support economic development efforts.

Agglomeration policies grounded in the framework of industrial clusters characteristically are being directed toward a circumscribed assemblage of interrelated economic actors. As with industrial targeting, customization for a particular audience makes such efforts more likely to be efficient and effective. On the other hand, these policies are susceptible to practical issues associated with identifying and analyzing industrial clusters, as discussed in the following section.

Criticisms and elaborations

This section first describes criticisms of the agglomeration-related topics presented earlier and then explains some of the different ways in which these concepts and theories have been elaborated to offer additional insights regarding regional economic development.

Criticisms of agglomeration

Although agglomeration economies may seem to be notionally straightforward, they are remarkably difficult to study or analyze directly. Several of the key concepts involved are intangible or not easily measured, such as knowledge spillovers or labor skill requirements. The appropriate spatial units within which to observe and measure agglomeration economies may vary by their sources or the geographical setting (Cottineau et al. 2019). Agglomeration advantages often are evaluated relative to an unrealistic state characterized by the absence of all agglomeration, largely because there is no well-defined alternative counterfactual situation. Perhaps most important is that the benefits that economic entities capture from agglomeration usually are not distinguishable observationally from other factors that impact economic performance. Most empirical research avoids this problem by gauging the *potential* for agglomeration benefits rather than their realization and relating them to outcomes, such as prices, wages, and various facets of business performance. Potential benefits can be estimated based on measures of theoretically identified sources of agglomeration economies (Richardson 1974). Even so, appropriate data regarding some agglomeration economy sources, particularly knowledge creation and spillovers, are notoriously rare.

The usual distinctions among types of agglomeration economies may not be consistently helpful in guiding local economic development practice. The commonly applied division between localization and urbanization economies does not rely on any strong underlying theoretical distinction. Rather, it is convenient as a basis on which to structure empirical analysis. The partition between within-industry (localization) and across-industry (urbanization) interactions will fluctuate according to the classification scheme and level of aggregation by which those industries or sectors are defined. Yet the proper scale of industrial aggregation is not clear. An industry sector defined at too aggregate a level combines establishments that generate and experience agglomeration economies in different fashions and to different degrees, whereas a sector constructed too narrowly excludes businesses similar enough to interact with each other to produce localization benefits (Moomaw 1998). Typical industrial classification systems, such as the North American Industrial Classification System (NAICS), are based principally on the similarity of primary products, a criterion that is not necessarily congruent with the production technology, labor needs, or input requirements that lead to agglomeration economies. The demarcations between industries also determine the separation of Marshall-Arrow-Romer (own-industry) from Jacobs (industrial diversity)

knowledge spillover agglomeration economies, concepts that themselves reasonably may diverge across industries or economic sectors. Similarly, the boundaries between static and dynamic agglomeration economies and even between the producer and consumer sides of urbanization advantages are mutable and depend on the specific categorizations of economic actors and time scales.

Variable spatial processes further complicate agglomeration economy classification (Martin 1999a). It is not the proximity to other businesses that directly benefits firms but the cost reductions, spillovers of knowledge, and other interactions that are enabled by spatial groupings of businesses. Therefore, the appropriate geographic scales at which to operationalize and measure concepts such as urbanization and localization economies ought to vary across locations, industries, and even firms (e.g., Feser 2001; Rosenthal and Strange 2003; Drucker and Feser 2012).

These issues lead to the valid caution that understandings of agglomeration economies frequently are dependent on the context and on the analytical choices made. Imprecision in defining and appraising different kinds of agglomeration economies can yield ambiguity and confusion in application, and therefore economic developers should be thorough and as clear as possible in elucidating policy justifications that rest on agglomeration economies (Parr 2002a).

Criticisms of clusters

Critiques of industrial clusters come from both theoretical and practical standpoints. Because the underlying ideas have amassed over time from varied historical theories sourced from many disciplines, detractors judge the notion of an industrial cluster to be vague and even "chaotic," difficult to pin down in order to apply in practice (Gordon and McCann 2000; Martin and Sunley 2003). The concept of an industrial cluster has accumulated many related but distinct meanings, with differences in the various types of relationships that link members, the treatment and extent of geographic proximity, whether linkages among actors must contain an element of purposefulness or may arise unintentionally from independent decision-making, and numerous other, often subtle, distinctions.

Industrial clusters, like agglomeration economies, may relate to various spatial scales, levels of classification and aggregation, and degrees of competition versus cooperation. There is no threshold density of businesses or interactions that has been established or that is accepted consistently as sufficient to define an industrial cluster. The boundaries between cluster members and non-members, and among the entities that comprise multiple clusters, are indistinct and shift across applications. Multiple connections among industrial clusters and diverse kinds of agglomeration economies yield ambiguous and potentially contradictory implications for how industrial clusters function and relate to different levels of governance, and therefore for constructing appropriate and effective economic development policies (Duranton 2011; Pike et al. 2017; Motoyama 2008).

Porter's conception of industrial clusters never was intended to resolve the imprecisions of the notion of industrial clusters. In describing and industriously

promoting a generic vision of industrial clusters, Porter aimed to develop a brand, rather than distinguish an intellectually rigorous concept. He succeeded in designing an extremely versatile product that can be applied to the widest possible range of communities of various sizes, locations, and economic circumstances (Martin and Sunley 2003).

The principle of near-universal applicability is reflected in the practice of cluster analysis and economic development policy. With industrial clusters as an expected framework for economic development policymaking, analysts and developers encounter pressure to uncover clusters worthy of attention and support in every region. Too often, the clusters are predetermined, set by the desire to follow the latest vogue. If industrial clusters' histories are not included in the analysis, current conditions erroneously may be equated with the factors that propelled early cluster development (Motoyama 2008). Tautological reasoning is common as well: analysts frequently identify industrial clusters according to the gains that firms receive from agglomeration while simultaneously explaining the existence of the cluster according to those same beneficial agglomeration economies (Feser and Luger 2003). These issues have resulted in dubious development objectives such as large numbers of locations focusing on the same clusters (e.g., information and communication technologies in the late 1990s and biotechnology in the 2000s) while neglecting unique or niche specializations more likely to flourish in competitive economic environments. It may even be the case that industrial cluster development is sufficiently idiosyncratic, path-dependent, and region-specific that developers should rethink the practice of directing economic development resources toward particular industrial clusters (Feldman and Francis 2004). Instead, it may be more worthwhile to focus on general underlying conditions and factors beneficial to a wide range of industries and sectors and to spend time better understanding the economic history of the region.

Successful cluster development strategies—those that achieve their aims of promoting the growth, productivity, or interconnectedness of local economic clusters—carry risks of substantial negative consequences (Rosenfeld 2002). Productivity improvements may detract from policy goals such as increasing employment or retaining the local anchoring of businesses. Policies to boost industrial clusters suggest the marginalization of other economic sectors, with many businesses and residents excluded from the benefits of economic development. At the interregional scale, the widespread adoption of cluster strategies may have the effect of advancing those places that already possess strong industrial clusters at the expense of areas with fewer or weaker clusters, thus exacerbating inequities in development.

This multitude of criticisms is not fatal to the application of industrial clusters in economic development. On a pragmatic level, clusters are securely entrenched in practice—they are here to stay. If applied suitably, the industrial cluster framework can be a powerful tool for identifying agglomeration economy advantages and for guiding industrial targeting approaches. Cluster analysis may lead to crucial support for an emerging or fledgling cluster or convince a location lacking existing healthy

industrial clusters to connect to, and thereby strengthen, clusters in neighboring regions.

Feser and Luger (2003) build from the notion of industrial clusters as valuable for the process of economic development to propose treating clusters as sources of information. Instead of considering cluster analysis to be a method for revealing the best or "correct" targets for economic development attention, Feser and Luger suggest treating the valuable information obtained through examination of local industrial clusters as the primary objective: the different types of interrelationships that connect firms and industries, potential strengths and weaknesses of the regional economic structure, and the development implications of local development goals and values. As mentioned earlier, cluster linkages offer a pathway for economic development implementation, and cluster members are potential program advocates or champions. Informing practice in these ways may improve the effectiveness of economic development more than strategies intended to enhance clusters.

Agglomeration mechanisms

As an alternative to delineating the sources of agglomeration economies, urban economists have explored the fundamental mechanisms through which agglomeration economies occur. Duranton and Puga (2004) classify the theoretical microfoundations of agglomeration economies into three types: sharing, matching, and learning.[12] Sharing mechanisms are those in which indivisible infrastructure, facilities, or services are supported and used jointly by multiple economic actors. Such indivisible (or "lumpy") assets encompass many of the items described earlier as sources of agglomeration benefits, including industry-specific specialized inputs, mass transportation systems, wholesaling and storage facilities, shared entrepreneurial space, and government facilities and services. Matching mechanisms (also known as sorting mechanisms) are those by which agglomeration increases the probability of a match being made, enhances the quality of matches, or does both. Labor and demand pooling agglomeration advantages result from improved matching between employers and employees in the labor market and between demand and supply in consumer markets, respectively. Finally, learning refers to the processes of creation, diffusion, and absorption of knowledge. Localized trust and social capital in general might be categorized as forms of learning as well (Andersson et al. 2016). These three types of mechanisms cut across the categorizations of the sources of agglomeration economies described earlier, such as localization versus urbanization or dynamic versus static.

The new economic geography is a noteworthy branch of economics that is predicated on agglomeration economies derived from sharing mechanisms. Launched by Krugman (1991a, 1991b), new economic geography theorizes and develops mathematical representations of how location choices and the siting of production lead to patterns of geographic concentration, with shared transportation costs and other agglomeration economies generating productivity gains, increasing returns to scale, and spatial clustering.[13] Although the subfield has been criticized for

reworking ideas from other disciplines and relying on heavily stylized and unrealistic models, it has produced or rediscovered insights into assorted urban phenomena and interregional interactions, including trade, migration, and divergent development paths (David 1999; Martin 1999a). New economic geography introduced spatial considerations into mainstream economics (or perhaps inserted them more successfully than earlier attempts), and in so doing has expanded exchanges among economics, geographers, and regional scientists (Martin 1999b; Goodchild et al. 2000; Brakman and Garretsen 2003; Brakman et al. 2009; Martin 2010).

Focusing on the microeconomic mechanisms serves to emphasize process understandings of how agglomeration economies occur. Insights arise from recognizing the key actors involved and the interactions among them that produce gains or losses that are not directly traded or compensated in the marketplace.[14] Economic developers may consider the mechanisms of agglomeration economies to be another viable layer for analyzing regional attractiveness or for evaluating possible efforts to help firms generate and benefit from local agglomeration. This perspective also makes the scale and scope issues described earlier less mysterious. There is every reason to expect that essentially dissimilar mechanisms would operate at varying spatial and temporal scales and be impacted differently by degrees of similarity among industries (Duranton and Kerr 2018).

Jacobs and city development

Jane Jacobs penned some of the most original insights weaving together the fields of economic development and urban planning.[15] *The Economy of Cities* (1969) and *Cities and the Wealth of Nations* (1984) present her ideas about work and production as they occur in cities.[16] She portrays cities as the predominant sites of innovation, and innovation as a primary rationale for cities. Contradicting the conventional wisdom that increased agricultural productivity was a precondition for significant urbanization, Jacobs (1969) asserted that the rise of cities preceded and obliged improvements in agricultural productivity and technology, thereby enabling additional urban growth. The importance of Jacobs' assertion lies not in its historical accuracy (which is debatable) but in its perception that essential characteristics of cities, including agglomeration economies and networks of trade, stimulate the processes of innovation and economic development (Smith 2014).[17]

Through comparing the English cities of Manchester and Birmingham, Jacobs (1969) made a case for continual innovation as the key to adaptability and long-term economy resiliency. In the nineteenth century, Manchester was an efficient powerhouse of textile production and Birmingham was a city of small shopkeepers. Yet 100 years later Manchester was stagnating, incapable of adjusting to changes in textile markets and unable to compensate for lost work. Birmingham had become a thriving city, supported by its flexibility, variety of skills, capacity for improvisation, and resulting generation of new products. Jacobs' argument is that diverse economic places (cities) foster ideas that lead to new products, new economic activity, and wealth creation.

Jacobs' view of innovation is much like an evolutionary form of social learning, in contrast to Schumpeter's revolutionary episodes (Chapter 7).[18] Incremental improvisation is compelled by the need to overcome economic challenges and over time becomes embodied in new firms that gradually expand to form new industries or industrial sectors. Economic development is more likely to derive from such accumulation and combination of small-scale innovations than from narrowly focused routine specialization.[19] Industrial diversity supports this process through knowledge spillovers, and innovation in turn enriches diversity. Cities can grow by replacing imports with local products that are cheaper or better (i.e., higher quality, expanded functionality, more attuned to local preferences) (Jacobs 1984). Import replacement expands local markets, diversifies the employment base, drives improvements in local technology and producer services, expands local capital, and eventually forms the basis of new exporting industries.[20] Older forms of work and industries that are diminished in value may relocate to peripheral areas. The overall economic development process is cyclical, following "chain reactions"; economic development occurs in spurts.

Jacobs presents a coherent and dynamic theory of how economic development occurs in cities, but developers interested in applying her ideas may face resistance. Jacobs' view of economic development via import replacement is a lengthy process that involves steady guidance and alters the established economic order. This contradicts pervasive political and budgetary perceptions of economic development as a way to achieve quick and inexpensive fixes for short-term problems such as high unemployment or a shrinking tax base. Developers with the latitude to engage in long-term economic development approaches may benefit from tracking and benchmarking their locations against regions with similar compositions and functional specializations, paying attention to economic trends and practices in areas with the potential to undergo similar transformations.

Florida and the creative class

Richard Florida and his depiction of the creative class have had an outsized influence on local development practice in the current century. Florida's books (2002, 2005, 2008, 2010, 2017) draw on the theory of flexible specialization (Chapter 8) and a mélange of his and others' ideas about innovation and learning regions to connect the concept of creativity to agglomeration economies and the evolution of cities and local economies. The essential message conveyed to economic development practice is to broaden the dominant perspective beyond firms, industries, and clusters, to focus on people and the characteristics of place.

Unlike most factors of production that are exhausted as they are used to create output, the application of knowledge does not deplete its store. Creativity in particular is a form of knowledge that can be fostered and enhanced by sharing among a wide variety of people and actors. Florida perceives creativity not as an intrinsically individual enterprise but as one that is magnified by social interaction and so may be augmented through formal education and work experience—in

other words, through the learning mechanism of agglomeration economies. He argues that creativity is maximized where people and economic activity are concentrated in space, a conclusion mirroring the implication of knowledge spillovers considered earlier.

Florida distinguishes the broader creative class, accounting for approximately a third of all jobs in the U.S. economy, from the much smaller "super creative" core, which is comprised most notably of computer scientists, natural scientists and engineers, artists, musicians, and marketers. He recognizes the mutual attraction between creative people and certain types of places, which results in "thick" labor markets of specialized talent (i.e., labor pooling). Florida (2002) originally articulated the factors powering regional growth via the creative class as the "three Ts": technology, talent, and tolerance. Whereas the importance of technology and talent was accepted in formulations of regional growth already (Chapter 5), tolerance added a socio-cultural factor that generally was overlooked.[21] Creative people often are immigrants, ethnic or racial minorities, or social non-conformists who feel more welcome and comfortable in permissive or non-judgmental environments. Tolerant cities with universities, ample urban amenities (culture, arts, entertainment, etc.), and safe environments will emerge as the most competitive regional economies, according to Florida. When members of the creative class migrate to particular places, they add to diversity and promote broadmindedness. Universities may function as "talent magnets and aggregators," though the presence of higher education institutions is not by itself sufficient (Florida 2014, p. 200).

Florida's inferences have been debated from the outset, perhaps indicating their originality and certainly reflecting their widespread influence. One line of criticism questions whether creativity as a concept is worth distinguishing from human capital. Markusen (2006) argues that Florida's creative occupations simply serve as a proxy for educational attainment. The empirical evidence is mixed: the creative class sometimes explains economic development outcomes better than more traditional measures of human capital yet often does not explain them as well (e.g., Faggian et al. 2017; Marrocu and Paci 2013; Marrocu and Paci 2012; Hoyman and Faricy 2009; Donegan et al. 2008; Sands and Reese 2008; McGranahan and Wojan 2007; Rausch and Negrey 2006).

A second shortcoming of Florida's exposition is that, despite labelling the super creative core, he evaluates the creative class primarily as an internally homogeneous group, contending that places that attract and organize creative occupations will be the most competitive. Developers ought to work to entice and support creative workers, frequently by leveraging place-based amenities that cater to lifestyle preferences. Critics observe that artists, musicians, engineers, authors, architects, and professors tend to share few interests, behaviors, and lifestyle characteristics in common (Markusen 2006; Kratke 2010). The qualities that make specific amenities desirable reflect consumer tastes, income levels, household composition, and life cycle stages, as much as or more than occupations (Phelps 2010; Lawton et al. 2013; Van Holm 2014).

Creative class theory is simplistic in its ahistorical formulation and narrow focus on individuals as the sole locus and source of creativity. Concentrations of creative workers in large cities may have caused significant economic outcomes in the 21st century, but Florida fails to address why and how such cities arose in the first place (Storper and Scott 2009). Especially in his earlier work, beyond recognizing that creativity may be liberated or enriched through workplace interactions, Florida devotes almost no attention to firms or industries, and disregards their importance as generators of innovation, urban growth, and economic development (Storper 2013). Although the creative class may consist of eclectic occupation groups, the composition of occupations in a city is far from random; the occupational mix is shaped by the local production regime. Thus, the current industry mix and evolution of specializations that follow from the industrial legacy of the city matter. The agglomeration economies supplied by the city environment help to determine the productivity and success of firms and entrepreneurs along with creative workers.

Following much criticism (e.g., Leslie and Catungal 2012; Donegan and Lowe 2008; Parker 2008; Shearmur 2007; Peck 2005), Florida's more recent works attempt to come to terms with inequalities and the major structural changes occurring in the space economy. Florida (2010), considering spatial polarization in the post-recession U.S. economy, reaches the sober admission that creative place-making strategies alone cannot save smaller post-industrial cities or rural areas. Florida (2014) adds a fourth "T" to his framework, territorial assets, to account for space more explicitly. His most recent book *The new urban crisis* (2017) is devoted to the topic of intra-metropolitan inequality and the phenomenon of places experiencing creative class economic success adjoining larger areas of poverty and disadvantage. Cities with large shares of the creative class are among the most unequal and segregated in the United States. Such locations typically exhibit the highest costs of living, the least affordable housing, and extreme levels of segregation by income and/or race. Lower income households regularly are priced out of the local markets. Moreover, as inequality in the distributions of income and wealth are increasing, so are metropolitan areas diverging in growth and competitiveness. Because the highest value-added, most innovative-intensive industries often achieve their maximum performance in urban locations, these inequalities may undermine the urban revival that is critical to overall national competitiveness.

For the past 20 years, creative class theory probably has been misapplied more commonly than it has been properly applied. Both the ideas of and the prescriptions drawn from creative class theory are relatively simple, and align with other, more thoroughly evaluated, economic development approaches, such as investments in human capital, entrepreneurship, central city revitalization, the arts, and cultural amenities (Peck 2005). Certainly, many place-based strategies and projects designed to attend to the "people climate" in addition to business climate have been justified in large part as attempts to attract the creative class. Local economic developers and especially downtown development advocates have embraced these plans. Yet many locations latched on to efforts to lure the creative class that offered little chance of success. Numerous places, first across the United States (including

small and mid-size Rust Belt locations) and then throughout the world, many of them exhorted by local visits from Florida, adopted creative class attraction strategies to little or no avail (Peck 2005; MacGillis 2009). Urban amenities typically are insufficient enticements in comparison to fundamental problems, such as poor schools, safety concerns, inadequate public services, and limited job prospects. Even cities that witnessed substantial downtown redevelopment and revival frequently bore declines in other, more residential neighborhoods. Furthermore, too many creative class projects have been undifferentiated, fashioned hurriedly and with insufficient attention to local qualities and assets. Building on existing advantages (e.g., affordable housing, ample water supply, or legacy cultural amenities in the U.S. Midwest) could have produced strategies tailored for individual cities and more likely to achieve their objectives.[22]

Discussion questions

1 What sorts of economic advantages could a city offer to resident firms that are due to its population size?
2 How do the industries in your area tend to interact with their local suppliers and customers? Which kinds of interactions take place more often and which kinds less often? Considering these different kinds of supplier and customer interactions, which may help businesses to improve their practices?
3 What roles can the public sector play regarding different kinds of agglomeration economies? How might government intervention either enhance or hamper the mechanisms of agglomeration economies?
4 Is achieving greater industrial or economic diversity a worthwhile objective to aspire to in your region? How might you be able to advance that objective, given the existing mix of industries?
5 How might the pursuit of industrial diversity contradict efforts to enhance local comparative advantage? Conversely, how could the two approaches be complementary parts of a local economic development agenda?
6 Which industry clusters exist in your region? For each of these clusters, what types of linkages connect the constituent industries and businesses?
7 What kinds of agglomeration economies are important to local clusters? Do some local clusters depend more on some types and other clusters on different agglomeration economies?
8 Is it better to allocate limited economic development resources to supporting a large, locally entrenched industrial cluster experiencing decline or toward attempts to develop new or emerging clusters? What types of information and analysis would help you to determine the answer?
9 How do creative industries differ from creative occupations as part of the regional economy? How would economic development strategies centered on creative industries differ from those focused on creative individuals?
10 What issues may arise if strategies to attract the creative class based on urban amenities produce intraregional migration to the central portions of the city

from the city's residential neighborhoods and from surrounding suburban locations?

11 Should people belonging to the majority of the working population that is not considered part of the creative class be encouraged to apply creativity in their work? How can they be so encouraged?

12 What kinds of economic development strategies may achieve greater societal tolerance?

Notes

1 There are numerous explanations for the emergence of cities, such as to be able to store and distribute surplus agricultural production efficiently, to strengthen or simplify common defense, to stage the prosecution of conflicts, and to permit rulers to manage and control resources (Schoenberger 2008; Taylor 2012). Some cities have their origins in local natural resources or amenities (Glaeser and Gottlieb 2009). Although these and other possible reasons may be linked to distinct and often contested historical interpretations, they do not inherently contradict contemporary urban economics understandings of cities as providing market efficiencies.

2 Several further conceptual divisions and types of agglomeration economies have been suggested, such as agglomeration economies of scope (Parr 2004, based on Goldstein and Gronberg 1984) and activity-complex economies (Parr 2002b), but these have not garnered widespread recognition or application in empirical research.

3 Examples include information exchange, access to the variety of consumer goods and services supported by a larger population, personal and cultural interactions, public safety ("eyes on the street"), and the production of societal behavioral norms.

4 Rent-seeking is the practice of attempting to gain income or wealth from the activities of others without any reciprocal productive contribution or compensation.

5 High factor prices due to localized competition should be a short-run phenomenon, unless the particular inputs are difficult to produce or transport (for instance, a natural resource that is in short supply). Over time, aggregate demand encourages entry of specialized suppliers into the input market, creating the agglomeration economy identified by Marshall.

6 For many years, beginning in the 1940s, regularities in the city-size distribution of nation-states were observed and recognized. The "rank-size rule" refers to the clear, positive association between the size of an urban area and its ordinal rank with respect to the size of all other urban areas. More precisely, the relationship between the logarithm of city size and the rank-order of cities was found to be approximately linear. The rank-size rule is an example of Zipf's law, which is a statement of the commonality of inverse frequency-rank relationships in the distributions of many types of data examined across the physical and social sciences (Ijiri and Simon 1977).

Rank-order city-size distributions were later described as log-normal city-size distributions, to contrast with primate city-size distributions. More developed countries, such as the United States, had a log-normal distribution—representing cities along the entire size range, with an increasing number of places as city size decreased. On the other hand, many less-developed countries exhibited a primate distribution—one large capital or port city, virtually no intermediate-sized cities, and many small cities. These *ad hoc* observations led to empirical tests of the relationship between level of economic development and distribution of city size, but no clear relationship was revealed, perhaps because the research analyzed nation-states rather than true systems of cities (Vapnarsky 1969). For example, all Commonwealth countries and Great Britain together have a combined city-size distribution that is much closer to log-normal than is the distribution of any single one of the constituent countries.

7 "Diamond" refers to a four-vertex diagram Porter fashioned to illustrate the categories of advantage (1990, p. 258).
8 Although Porter (1990) originally delineated clusters and the four types of associated competitive advantages at the level of nations and international competition, his subsequent work (Porter 1998, 2000) readily adapted the concepts to the regional scale, where the gains from geographic concentration are key to competitiveness.
9 Thompson offers more rigorous approaches to industrial targeting than those derived from clusters (Chapter 10).
10 As might be expected, it is much more difficult and uncertain to identify emerging, and especially nascent, clusters than existing ones. See the Criticisms and Elaborations section of this chapter.
11 Other than being organized around the membership of an industrial cluster, this approach is very similar to the application of product cycle theory (Chapter 6).
12 Micro-foundations refer to economic theories based on the decisions and behaviors of individual economic agents, such as consumers or firms.
13 Krugman received the 2008 Nobel Memorial Prize in Economic Sciences for this work.
14 Behrens et al. (2014) consider selection to be an additional explanation for urban advantages beyond agglomeration. Selection may occur within the labor market, as individuals with superior skills or talent seek the greater returns available in larger cities, or for business location and survival, as the stouter competition of larger markets drives out less productive firms. They also note natural advantage as relevant to early urban development but not as a source of advantage for mature cities.
15 Jacobs achieved a lasting effect on both fields, despite possessing no formal credentials in either discipline, nor even a college degree.
16 Her earlier text, *The Death and Life of Great American Cities* (1961), was a treatise on the inherent productivity of city life that condemned modernist architecture and city planning practice in the 1950s.
17 See also discussion and references in note 1.
18 Jacobs was less optimistic than Schumpeter with respect to the developmental outcomes of "creative destruction." Unless government protected emerging industries and the entrepreneurs who owned them, existing elites would remain dominant, innovation would stall, and stagnation would result. She also took issue with Marx's view that class conflict eventually would undermine the capitalist system. Jacobs perceived labor and capital as likely allies with shared interests in protecting markets and jobs. The more probable conflict is between those who own and control the existing economic base and upstarts expanding into new areas of work.
19 The empirical evidence on this point is mixed, though much of the existing research relates specifically to the knowledge spillover source of agglomeration economies and utilizes performance measures that arguably reflect economic growth more than development.
20 To Jacobs, import replacement is quite different from import substitution. Import substitution occurs when a commodity that was previously imported is produced locally, with no necessary modification of the product or production process. Import substitution may reduce interregional trade as the city becomes more self-sufficient, whereas import replacement can increase exporting.
21 Tolerance as a factor supporting creativity does not originate with Florida. The idea that cities offer anonymity, which permits creative expression, stretches back to Emile Durkheim (1893 [1997]) and others.
22 Florida continues to offer useful suggestions to economic developers through the website CityLab (formerly The Atlantic Cities). For example, he identifies "6 rules" to improve economic development practice: say no to incentives, invest in local clusters and ecosystems, work closely with anchors, leverage talent, foster inclusive quality of place, and make equity and inclusion a priority (CityLab, February 26, 2019).

10

FROM ECONOMIC DEVELOPMENT THEORIES TO STRATEGIES

This final chapter has four sections. We begin with Wilbur Thompson, whose life work was to understand and offer policies to improve urban and regional economies. Thompson formulated important insights about economic development over a period of five decades. Next, we present Enrico Moretti's analysis of regional inequality, one of the most pressing economic development problems in the United States. Third, we offer a general strategic framework for economic development that offers an alternative to economic growth strategies. We primarily draw on Thompson's and Moretti's synthetic treatments of theory. Finally, we briefly discuss economic development at the intraregional level where, instead of competition, we advocate cooperation based on each metropolitan subarea's economic niche.

Thompson's contributions

Thompson provides one of the best examples of theoretically informed strategic thinking. His book titled *A Preface to Urban Economics* (1965) is much more than an introduction to what was then a new field; it now stands as a seminal work in interregional and intraregional theory and policy. Two decades later with his son, Phillip, he extended these ideas to incorporate an "occupational-functional" dimension that offered another way to understand regional economies (Thompson and Thompson 1987). After publication of the 2000 U.S. census, Thompson (2008) conducted an extensive empirical analysis of decennial data from 1950 to reconsider his thinking. He examined all metropolitan areas, all nonmetropolitan counties, and the central cities within them organized by states.[1] Thompson continued to refine and revise his analysis until his death in 2008.

As previously noted, economic development practice in the United States is primarily concerned with achieving economic growth in specific localities. Applying

Thompson's robust and eclectic insights offers enormous opportunities to expand and enrich local economic development practice in many useful ways.

Thompson (1965) brings together concepts of economic base, linkages, product cycle, entrepreneurship, and the importance of institutions (oligopolies and labor unions) in economic development. His model is primarily demand-driven and sensitive to the distribution of resources within the economy, but he recognizes key factors on the supply side, such as entrepreneurship. He argues that economic base theory (and the economic base model) provides a useful way to understand the local economy if we are concerned with near-term economic growth. The theory is consistent with Keynesian short-run analysis and is especially useful for estimating business cycle impacts. In the near term, the industry mix, particularly among exporting industries, determines the rate of growth. Exporters influence the entire local economy through linkages that transmit multiplier effects.

However, economic developers, city planners, and others concerned with long-term change must look elsewhere for appropriate theory. To understand the local development process, the competitiveness of the local economy must be examined over decades and compared to other areas.[2] In the long term, urban growth leads to larger markets and more interaction within industrial complexes and clusters, which include technology-linked companies with buyer-supplier relationships. Growth and linkages attract producers that can realize external economies. Furthermore, larger markets attract more sophisticated business and professional services and require additional public services. Echoing Blumenfeld's (1955) thesis about the importance of city-building activities (Chapter 3), Thompson explains that urban institutions facilitate adaption to external forces and support locally initiated change. Thus, as time moves on and the area grows, local activity comes to the fore as the prime mover and catalyst of further development.

Development supports the interactive process of invention, to innovation, and commercialization. It leads to higher levels of welfare in terms of (1) income level, (2) income stability, and (3) income distribution. Here Thompson defines economic development in welfare economics terms rather than as jobs, investment, or the expansion of the tax base—the pillars of current economic development practice. The income *level* is a function of the skill and power of local organizations. Skill refers to the ability of local producers to create and market new or income-elastic products successfully. Power refers to oligopolies that use size and collusion to garner market share and labor unions that bargain for a fair share of productivity gains. High wages in the oligopoly sector "roll out" to increase hourly earnings throughout the local labor market.

Income *stability* depends on several factors. Places that specialize in producer durables tend to be most unstable because large investment expenditures are at times not in sync with consumption expenditures. During downturns, places with older establishments are more susceptible to cutbacks and closings. City size is associated with stability, because as size increases, the economic base of the city tends to be more diverse and therefore more stable.

Large places are in the best position to enjoy stable growth over time, because their export base contains a mix of new and income-elastic products as well as mature and inelastic ones ("breadth"). Size also bestows the capability to support innovation, which is needed to change industry mix for long-term viability ("depth"). Anticipating new ideas in evolutionary geography ascendant in the 2000s (Boschma and Martin 2010), Thompson (1968, p. 53) offers an insightful and invaluable statement about why breadth and depth make a local economy competitive:

> The economic base of the larger metropolitan area is, then, the creativity of its universities and research parks, the sophistication of its engineering firms and financial institutions, the persuasiveness of its public relations and advertising agencies, the flexibility of its transportation networks and utility systems, and all the other dimensions of infrastructure that facilitate the quick and orderly transfer from old dying [economic] bases to new growing ones. A diversified set of current exports (breadth) softens the shock of exogenous change, while a rich infrastructure (depth) facilitates the adjustment to change by providing the socioeconomic institutions and physical facilities needed to initiate new enterprises, transfer capital from old to new forms, and retrain labor.[3]

As for income *distribution*, economic growth occurs in localities where the industries export new products or income-elastic products. Greater demand begets greater supply, which requires higher workforce participation rates and puts upward pressure on wages and other costs. As the wage roll-out effect continues to operate, demand growth reduces income inequality by employing marginal workers. Gradually, the area may attract low-income in-migrants seeking job opportunities, and the local level of unemployment may increase as a result.

With respect to the factors of production, Thompson argues that larger urban areas not only have advantages in labor force and immobile capital but in entrepreneurship as well. Often natural resource endowments give rise to a city at a particular location. These conditions are continually modified by the changing built environment that satisfies workers and, more importantly, attracts entrepreneurs. These compelling advantages led Thompson to hypothesize the "urban size ratchet" effect that results in sustained advantages for larger cities (1965, pp. 21–24). Cities are the locations where entrepreneurship and immobile capital combine to achieve growth.[4]

Using concepts from shift-share analysis and industry (not product) life cycles, Thompson presents the relative importance of industry mix and regional share in large versus small cities. Large metropolitan centers spin off industries to smaller peripheral areas. Large cities can grow above the national average by capturing new products while spinning off routine work. Smaller cities are more volatile, winning or losing routinized production. The former become high-wage, high-skill places

where labor unions are prominent; the latter are low-wage, low-skill, unorganized smaller cities. He articulates the filtering-down dynamic in the following way:

> The larger, more sophisticated urban economies can continue to earn high wage rates only by continually performing the more difficult work. Consequently, they must always be prepared to pick up new work in the early stages of the learning curve—inventing, innovating, rationalizing, and then spinning off the work when it becomes routine. In its early stages, an industry also generates high local incomes by establishing an early lead on competition. The quasi-rents of an early lead are in part lost to the local economy, as dividends to widely dispersed stockholders, but in part retained as high wage rates, especially if strong unions can exploit the temporarily high ability to pay. It would seem, then, that the larger industrial centers as well as the smaller areas must run to stand still (at the national average growth rate); but the larger areas do run for higher stakes.
>
> In order to develop, it seems that the smaller, less favored urban area must attract each successive industry a little earlier in the industry's life cycle, while it still has substantial job-forming potential and, more important, while higher-skill work is required. Only by upgrading the labor force on the job and generating the higher incomes hence the fiscal capacity needed to finance better schools, can the area hope to break out of its underdevelopment trap. By moving up the learning curve to greater challenge and down the growth curve toward higher growth rates for a given industry, an area can encourage the tight and demanding type of local labor market that will keep the better young adults home, lure good new ones in, and upgrade the less able ones.
>
> *(Thompson 1968, pp. 56–57)*

Thompson recognizes that the overall impacts of these processes are not easily determined much less achieved. Positive and negative feedback represent countervailing effects on local growth and change. Equilibrium and disequilibrium forces are reflected in the struggle between market power and overpriced labor. Positive versus negative outcomes are also the result of timing and history (path dependence). With the growing pool of potential locations around the world, the competition faced by smaller regions in the United States has continued to increase over time.

The occupational-functional dimension

Wilbur and Phillip Thompson (1987) argue that industrial targeting, the recruitment of large firms in attractive industries that are feasible given local resources, needs to examine another dimension. Specifically, the approach is one-sided unless coupled with an occupational-functional focus that defines an area's "appropriate work." The functional specialization that shapes the local industry mix reveals what

the place makes, for example, a textile city or financial center. The occupational-functional dimension identifies what the place does, that is, the type of work that is most prevalent. Thus, a factory town offers much different work than a college town or a state capital or a headquarter city. The Thompsons developed a matrix with industry groups as columns and occupational groups as rows that they used for in-depth analysis of local economies.

Five occupational specializations represent different types of work and suggest ways to achieve competitive advantage: routine production, precision production, research and development, headquarters administration, and entrepreneurship.[5] One locality may have strength in more than one area but rarely in more than two areas. The occupational-functional dimension can be used to indicate where among the cities in the urban system, new work (product innovation) is most likely to occur and where existing work can be done most efficiently.

Development occurs as localities change skill levels and occupation mix over time, which change functional specializations and, gradually, the basis of competitiveness. However, in the near term, the obvious strategy is to leverage existing occupational strengths, be they routine production, precision production, R&D, central administration, or entrepreneurship. At headquarter locations, dominant companies may promote innovation through internal investments in new products or through skillful acquisition of patents and young growing companies.[6]

With creative and efficient firms and individuals, the local economy can change specializations and continue to enjoy a viable export sector. Thompson argued that the local-basic dichotomy in economic base theory should be broadened to a trichotomy in order to understand more fully the role of the non-basic sector. Thompson distinguishes developmental services from routine distributive services in addition to basic industries. In the near term, the city's economic base is its export goods and demand-driven services sectors; in the long term, the city's economic base depends on the availability and quality of its supply-responsive developmental services. These services include sound educational systems, diverse health services, rich cultural activities, and the range of sophisticated business and professional services that can sustain the creation of new products and new business enterprises.[7]

Thompson's contributions offer an unusually sophisticated understanding of local economic development. Near-term changes in the urban area's industry mix provide the basis for understanding economic growth. Typically, growth leads to more employment and aggregate income, larger tax base, and higher property values. Gauging the structural change that occurs over the long term explains the more complex process of economic development. In addition to continued economic growth, localities sustaining economic development should be able to experience improvements in per capita income levels with less unemployment and instability. Although economic growth and economic development are related processes, development is more profound and fundamental. Economic development leads to and sustains competitiveness; competitiveness in turn results in economic growth.

Reflections on regional theory and policy

Through an extensive empirical analysis of regional census data from 1950 to 2000, Thompson (2008) reconsidered his thinking about urban and regional economic growth and development and related urban policy based on a data-driven approach. This unpublished manuscript with 1,494 single-spaced pages covers the broad scope of A Preface to Urban Economics. . . . The following commentary is highly selective, focusing only on topics relevant to the far narrower scope of this book.[8]

Economic growth can be measured year by year, but economic development should be examined over decades. It is an "intergenerational process." The local economy is "a growing, aging and renewing stock of capital." Thompson called this process "aging in space." Thus 50 years, in this instance 1950 to 2000, is an appropriate, perhaps minimum, time frame given amortization and replacement cycles of private capital and public infrastructure. Importantly, skill development leading to good jobs over the long term is far more important than "job creation" (any and all jobs) or "raw growth."

In his empirical analysis of metropolitan areas, Thompson assessed whether growth over time led to development. He compared population growth to median family income to make this assessment and found "only scattered evidence" of a significant relationship. He also compared population growth to both income growth and the poverty rate, finding no significant relationships. Thompson also correlated the level of and change in family income with the level of and change in poverty rate and found that strong inverse relationships became increasingly weaker over the decades. He thought greater structural unemployment and workers formerly in manufacturing dropping out of the labor force could partly explain this trend.

Next, Thompson examined one result of growth: increases in city size. Larger size is associated modestly with higher family income but more strongly with a richer occupation mix, better-educated employees, higher female labor force participation, and larger local markets. The diseconomies of size are underscored and analyzed fully in his intra-urban analysis in Book Two. Moreover, the largest metropolitan areas can develop further with only modest rates of growth because of absolute increases in population and employment. Furthermore, the highest-paying jobs reside there, and the large amount of job attrition provides opportunities for younger workers. Perhaps the most important local market is the large labor market. With greater size comes wider occupational choices, more competition among employers, and greater stability among other benefits (Chapter 9).

Thompson is well known for recognizing the benefits of oligopolies in manufacturing and the associated labor unions as vehicles to higher wages and stable employment. He notes another benefit—the resources to build prominent public universities in these areas (the original Big Ten). As manufacturing employment has declined over time, the educational requirements of manufacturing jobs have increased. Metropolitan areas retaining manufacturing have workforces that are

better educated, with more female participation. If homeownership rates are relatively high, these skilled workers are more likely to stay in place during downturns.

The last three chapters of Book One (Chapters 9–11) contain in-depth treatments of his favorite themes: the strength of developmental services that foster long-term economic development, the metrics and logic of more sophisticated industrial targeting, the occupational-functional approach to foster local economic development, and the five paths based on what places do (versus what they make). Thompson provides considerable detail about how to apply the occupational-function approach in Chapter 11. He then considers each occupation-based function separately in Chapter 12 and provides extensive guidance about how to treat the occupation-function in each case. These two chapters (175 pages) contain more new material than any other chapters in Book One.

Instead of competing for industries either on a targeted or an untargeted basis, Thompson argues for applying occupational-functional analysis because it leads to policies that build local comparative advantage. He sees this approach as positive sum rather than zero sum. Instead of industrial targeting, Thompson makes a cogent case for occupational adaptability as the basis for long-term development in noting that many professional and skilled occupations can find employment across many industries, both declining and growing. Building on existing occupational clusters may be more viable than building on industrial clusters. He adds the caveat that, to be successful, the place must embrace "both scholarship and entrepreneurship—a love of learning and a manageable fear of change."

In examining the five alternatives in Chapter 12, all but entrepreneurship build directly on industrial specializations and the existing economic base. Central administration, R&D, and precision production have substantial potential to evolve the economic base and improve local economic development. However, places dominated by routine production have a lower level of development. These places should prioritize employment opportunities and defer the objective of higher incomes.

Entrepreneurship is a special type of occupational strength because no metropolitan economy can claim entrepreneurial energy alone as its economic base. This strength is best thought of as complementary to one of the others. Entrepreneurship can be primarily gap-filling, fleshing out distributive services, or more innovative by augmenting developmental services. These entrepreneurial companies may become major service exporters. In a supportive institutional context, entrepreneurship can foster growth companies that renew or replace existing export sectors (Chapter 7).

For all five occupational functions, Thompson envisions "occupational ladders" as the vehicle for skill development and the path to higher income as workers move from lower- to higher-level jobs.[9] Ideally, workers could move, with appropriate continuing education and training, from low-skilled to semi-skilled jobs and from these jobs to professional work. Within most metropolitan areas, such occupational ladders are not complete. In Chapter 17, he argues for state-level policy to integrate occupational ladders across cities, suburbs, and rural areas.

Strategic applications and criticisms

Clearly, the goals articulated by Thompson are not mainstream in economic development practice. Most jurisdictions designate jobs and investment (tax base) as their primary development goals. Where can one find a jurisdiction primarily committed to increasing per capita income, reducing income inequality, and lessening income instability? Beyond job growth, localities seem willing to embrace the goal of greater economic diversity, presumably as a way to experience greater stability. Furthermore, growing income inequality has become so widespread in recent years that it is very hard to ignore it in economic development circles. Even narrowly focused developers recognize the negative impacts that grossly unequal distributions of income and wealth have on aggregate demand. Increasing labor's share of income or wealth to stimulate demand has become an economic growth strategy. We take up the spatial aspects of inequality in the next section.

Thompson believed that local economic developers informed by his ideas and framework would be able to address competently the major problems and opportunities facing their locality. Developers would examine both the evolution of the locality's industry mix and its occupational-functional mix over the past 50 years (or longer). From this analysis, they would gain a deeper understanding of the evolution of what their place currently makes (the dominant industries) and more importantly what it does (the primary occupations). Armed with this in-depth knowledge, developers may be able to craft long-term development strategies that identify alternative avenues for movement up the learning curve to higher levels of personal income and skill. The strategies could suggest ways to change what local firms do, for example, from routine production to precision production, and how to overcome impediments to further development, for example, by resolving education or infrastructure problems. Local economic developers would logically focus on developmental services. Increasing the quality and diversity of these services should promote more innovation in larger metropolitan areas and higher productivity in areas specialized the production of standardized goods and services.

Thompson's conceptualizations through 1990 are colored by his long tenure at Wayne State University in Detroit, his experience with Midwestern cities, and his deep knowledge of the U.S. economy in the 1950s and early 1960s. He did not foresee the dramatic decline of manufacturing in the United States. Nor did he anticipate the rapid pace of branch manufacturing migration from the "industrial hospices" in the South to countries where wages were far lower and environmental standards less restrictive. The loss of manufacturing production and employment and the rise of service industries have not followed the logic of sector theory (Chapter 3). Most economic developers would like to help fashion an economic base that includes viable traded sectors (exporters) that are also high value-added sectors. They would value developmental services that promoted innovation. Fewer metropolitan areas that have knowledge-driven, talent-centered economies should remain competitive accounting for a growing share of future GDP. Many smaller metropolitan areas currently engaged in routine production are more likely

to fulfill back office or local service functions that have few positive spillovers. The service-oriented economy is generally low-wage; service industries are unlikely to boost tax revenues significantly. Tighter labor markets may encourage labor-replacing technology rather than higher wages or the upgrading of workforce skills. Outmigration may be more likely than sustained growth.

Thompson's more optimistic scenario depends heavily on effective targeting and on the ability of labor unions to achieve increases in labor's share of productivity gains. The growing divide between increasing labor productivity and stagnant real wages since the late 1970s underscores the reduction in the power of labor versus capital. Indeed, the direct connection between marginal productivity and wages conveniently assumed in neoclassical economic theory ignores the well-demonstrated historical fact that wage increases depend on the ability of labor to exercise power. In general, Thompson's approach may be better suited to metropolitan economies located in countries like Canada that are more socially oriented than pro-big business and more democratic than plutocratic.

Wilbur Thompson was a part of the Greatest Generation. He grew up during the Great Depression and died at the outset of the Great Recession. Throughout his long productive career, he formulated original creative ideas that could make the market economy work better for all Americans, notwithstanding the powerful local growth machine's obsession with "raw growth."

Moretti's Great Divergence

How can regional development theories help us better understand the contemporary problems that economic development practitioners and policymakers struggle with today? We choose to focus on one important issue: the growing regional divide between the have and have-not metropolitan areas in the United States. Economist Enrico Moretti refers to this phenomenon as the "Great Divergence." In his 2013 book, *The New Geography of Jobs*, Moretti argues that the shrinking U.S. middle class and the growing rift between rich and poor *households* are also very much the story of the widening gulf between rich and poor *regions*. Counted among the rich are the nation's leading innovation centers, including Silicon Valley and San Francisco, Boston, Seattle, and smaller areas like Austin and Raleigh-Durham. In three decades from 1980 to 2010, the relatively small number of leading "brain hubs" have amassed more and more of the nation's income and wealth, while former industrial giants and many second-tier cities continue to sink farther behind. This interregional income and wealth divide is linked to stark differences in quality of life: divergent rates of educational attainment, divorce, and mortality, not to mention growing ideological polarization and the associated rise of populism on both the right and the left.

Moretti presents no original theory of regional development to explain the Great Divergence. Instead he offers a concise and non-technical synthesis of concepts that underscores the importance of innovation and focuses on differences among regional labor markets in the United States.

The decline of U.S. manufacturing

Moretti considers the decline of domestic manufacturing as one of the key factors behind the Great Divergence. For most of the 20th century, productivity growth in manufacturing fueled rising incomes and the ascension of the American middle class. The initial location of an industry was often due to access to raw materials and low-cost transportation over major waterways. Once the industry gained a foothold in an area, powerful agglomeration forces set in, creating a self-reinforcing process of path dependence. The dominant external scale advantages associated with the industrial era were generally confined to industries mainly bound together through buyer-supplier transactions. Relatively specialized industrial complexes came to dominate the economies of particular regions. Well-known examples include the motor vehicles complex of the Greater Detroit region; photography in Rochester, New York; and armaments in Springfield, Massachusetts. As these products matured through the life cycle, standardization, automation, and cost considerations began dominating location decisions. Since labor and other key inputs are typically cheaper in less developed regions, the free movement of capital helped spread development to other areas, such as the Southeast United States. This spatial diffusion of regional development helped fuel interregional convergence, as predicted by neoclassical growth theory (Chapter 5).

By the late 1970s the U.S. economy began a structural shift away from material production, coinciding with the initial decline in the rate of interregional income convergence. The same cost pressures that first brought factories to less developed U.S. regions eventually led them offshore. In order to survive, the remaining stateside operations either had to automate intensively or pivot to high value-added niche product lines. New communications technologies, liberalized trade policies, and lower shipping costs accelerated this process by enabling firms to physically separate their operations by function: headquarters decoupled from back office operations, from R&D, and from production. The most knowledge- and interaction-intensive functions (corporate headquarters and R&D) concentrated in larger cities that became innovation hubs, while production and other support activities diffused across the globe, most notably to China, India, and Mexico.

The rise of the brain hubs

The other, and perhaps more dominant, force behind the Great Divergence is the ascension of the "New Economy," whereby innovation supplants manufacturing as the driving source of national productivity growth and wealth generation. It is also heavily polarizing, as the most knowledge-intensive industries and occupations have become heavily concentrated in a handful of urban centers, as noted earlier. Silicon Valley/San Jose is the best-known brain hub.

Moretti incorporates theories of external economies and agglomeration (Chapter 9) to explain the evolving uneven regional geography of innovation, invoking both demand-side (cumulative causation) and supply-side (endogenous) theories.

He also weaves in contemporary topics, such as innovation clusters, creative economies, and entrepreneurial ecosystems. He explains that innovation is particularly sensitive to spatial variations in human capital because nearly all value-added (and thus wealth) in this sector comes from ideas. Very little comes from low input costs or production efficiencies. Ideas spawn where smart and creative individuals interact, inspire, and learn from one another. Thus, innovation thrives on increasing returns stemming mainly from knowledge spillovers and labor-pooling externalities.[10] The need to recruit and retain creative talent is so critical that firms are willing to suffer the very high rents and pay well over prevailing industry wage standards to be where the action is.

Moretti draws heavily on economic base theory and its dynamic extensions (Chapter 3) to describe how growth in the innovation sector spreads to benefit other sectors. Applying economic base theory, Moretti divides the region's economy into traded (export-oriented or basic) and non-traded (local-oriented or non-basic) sectors. Productivity growth in the traded sectors is the primary source of wealth creation and income generation. However, most jobs reside in the non-tradable industries, which are more labor-intensive and less prone to productivity improvements.

Productivity growth in the tradable sector fuels job growth in the local non-tradable sector through multiplier effects. Moretti points out that innovation activities have far higher *local* multiplier effects than nearly all other sectors, including manufacturing. Despite being low-skilled, many jobs in non-tradable industries, like that of carpenters and waiters, are resistant to offshoring because they have to be performed close to where the service is provided (Manning 2004). Nor can they be easily automated, because they involve non-routine tasks, such as navigating crowded restaurant isles or building custom cabinets for oddly shaped closets (Autor et al. 2003; Goos and Manning 2007). Spread effects from the innovation sector drive local demand in non-tradable industries and local growth, whereas backwash effects increase the interregional divergence of wealth and job creation. Moretti points out that high-school degree holders in leading regions routinely make more than college-educated workers in lagging regions.

Place luck and policy options

Growth and agglomeration theory may help us understand the growing divergence of have and have-not regions in the New Economy, but they do not explain how the brain hubs of today got established in the first place.

Moretti's view is that it is largely place luck that determines the initial foundation for an innovation cluster.[11] As such, he offers little concrete advice for lagging regions hoping to reinvent themselves in the new economy. In fact, he is rather dismissive of most deliberate policy efforts to establish a brain hub. Consider research universities as one possible catalyst. Clearly, many of today's rising innovation hubs are in areas with leading research institutions. Yet, Moretti sees this as neither a necessary nor sufficient condition for establishing a brain hub, pointing to

the many counterexamples of places, such as St. Louis, Missouri, that have leading universities but no viable hub. Instead, the spark more likely comes from the entrepreneurial actions of academic mega-stars who just happen to have worked for that particular institution at the time of their big breakthrough (Zucker et al. 1998). Universities play a secondary role as a talent magnet and provider of ecosystem services, but innovation is essentially a game of numbers and luck, with emphasis on the latter. While the prospect of spawning a cluster may seemingly validate university efforts at luring academic stars through promises of high pay, superior facilities, and deep-pocketed research endowments, Moretti sees this strategy as difficult to sustain. Even if it were successful at generating innovations, the benefits would not likely "spill-over" without a fertile ecosystem outside of the university, which he sees as critical for transforming university inventions to regional gains.

> Universities are most effective at shaping a local economy when they are part of a larger ecosystem of innovative activity, one that includes a thick market for specialized labor and specialized intermediate services. Once a cluster is established, colleges and universities play an important role in fostering its growth, often becoming a key part of the ecosystem that supports it and makes it successful.
>
> *(p. 197)*

Moretti is likewise critical of conventional place-making approaches to luring human capital, such as the creative economies and creative cities approaches commonly associated with Richard Florida (Florida 2002, 2005).[12] This perspective views developing the arts, culture, entertainment, and other forms of lifestyle amenities as the key to attracting innovative people. These innovators will, in turn, create businesses and attract firms seeking talented human capital. Moretti certainly recognizes the magnetic lure of talent but argues that creative-cities approaches ultimately have confused effect with cause; artisans and other creative workers flock to the wealth created by successful innovators, not the other way around. It would be difficult to create an innovation cluster purely by first attracting artisans or boasting of an area's superior quality of life. Moretti points out that there are lots of beautiful places with attractive amenities, but few have evolved into brain hubs.[13]

Moretti also argues against the use of locational incentives to lure businesses. He contends that while "big push" development strategies may indeed help a place out of the poverty trap, the United States lacks the political will to support areas to the point where they can sustain themselves. Government also has a poor track record in picking the right sectors. However, Moretti is more amenable to place-based incentive programs, such as the Clinton-era Empowerment Zones program, that target incentives while supporting workforce development initiatives and neighborhood revitalization efforts that can generate positive social externalities.

It is somewhat ironic for a book focused on exposing the ills from the inequitable spatial concentration of wealth that Moretti favors approaches that would encourage *even more* out-migration from impoverished areas. He recognizes that

migration is highly selective and therefore heavily stacked against less developed areas due to the growing need to satisfy the professional ambitions of dual-career households and the specific preferences of the highly educated (Costa and Kahn 2000). Nevertheless, a policy targeted to increasing mobility among the poor and the unemployed would ultimately benefit underdeveloped areas by easing pressures caused by concentrations of poverty.[14]

In conclusion, Moretti draws from many theories presented in previous chapters: economic base (traded and non-traded sectors and multiplier effects), comparative advantage (pp. 33–34), modern growth theory (human capital focused), cumulative concentration and diffusion of development, product life cycles, creative destruction (pp. 148–149), and agglomeration theory. He relies most heavily on his background as a labor economist and concepts related to innovation theories (Chapter 8), including entrepreneurial ecosystems and creative economies.

Strategic economic development framework

Throughout this book, we have drawn distinctions between economic growth, getting bigger in the near term, and economic development, getting better in the long term. To promote economic development, Thompson treated as his tripartite objective higher levels, more stability, and fairer distribution of household income. Rather than households, we focus, like Moretti, on the structure of the metropolitan economy. Our objective is to provide a strategic framework that will help economic developers facilitate local economic development built upon their assessment of the regional economy.

To capture the competitive differences among labor market areas, the strategic framework offers four meta-level goals, which are attributes that reflect the area's capacity for long-term economic development. These attributes are the product of past decisions and events which in turn represent fundamental differences in the capabilities of individuals and firms to compete in the global economy. The existing industrial structure, occupational strengths, private capital stock, public infrastructure, political culture, and many other features of the local economy are given. When local economic developers choose preferred development strategies, they should recognize that their choices are conditioned by this economic reality.

We present three of these meta-level goals in pairs, where each pair represents two ends of one continuum. Pursing either end could promote local economic development, but trying to pursue both simultaneously is less likely to succeed.

The most basic questions relate to comparative and competitive advantage (Chapter 4). What role(s) does a region play in the larger economic system? How have its industrial sectors evolved over the past 30–50 years? Because regional competitiveness depends on the viability of industrial specializations in the evolving economic base (Chapter 3), we identify *functional specialization* as the first meta goal. At one extreme of the continuum are regions with multiple specializations (breath). At the other extreme are regions with one or very few well-resourced specializations (depth). Regional economies with multiple specializations may be

more flexible and stable. Narrowly specialized regions may be more competitive, especially in the near term, due to focused attention buttressed by agglomeration economies. Either extreme may sustain highly productive firms or spawn innovative firms.

The second meta goal builds on Thompson's concern with the occupational strengths of the region (what its workforce does versus what its industries make). The region's current occupational strengths have evolved over many decades and cannot be radically changed in the near term. This meta goal is not one continuum. Instead, it identifies four different strengths that build on the skills, talents, and tacit knowledge of the workforce: (1) administrative centers, (2) production centers, (3) consumption centers, and (4) R&D centers. Administrative centers tend to combine command and control functions with expertise in finance. Production centers are extremely varied: some generate standard products, whereas others offer cutting-edge products or services. Consumption centers may serve only the local population aging in place or offer hospitality facilities and entertainment that attract tourists and retirees. R&D centers are often associated with research universities or major health facilities. These include Moretti's "innovation hubs" or "brain hubs," with Silicon Valley as his prototypical example. He might argue that innovation hubs will outperform the other types of centers since they are service sector-oriented, research-driven, and knowledge-based. We argue that it is more important to leverage whichever occupational strength exists in the region, since regions within each category will vary in their ability to attract and benefit from investment.[15]

The third meta goal relates to the economic power of companies in the region. Companies wielding a dominant position within the region tend to detract from performance and long-term development. But local companies that exert monopoly or oligopoly power in national or global markets may benefit the home region. Growing entrepreneurial firms may eventually gain power and offer the same local advantages. In such regions, economic developers may want to find ways to help companies with market power remain dominant. They may also want to assist local entrepreneurial firms whose aim is to displace established companies located elsewhere. In other regions, existing companies, both large and small, may face external competition that presses them to remain lean and innovative. Local economic developers should find ways to customize the local business climate to support these companies. They should enhance the entrepreneurial ecosystem to assist nimble, disruptive upstarts.

A fourth meta goal pertains to how firms in the region respond to adversity or opportunity. Here we contrast resistance to resilience. Resistant firms can withstand externally generated stress ("take a punch") and do so for relatively long periods of time. Resilient firms can react to external stress effectively and can seize opportunities quickly. In the context of recessions, places with resistant firms tend to maintain employment levels longer and sustain less economic damage than regions with less resistant firms. On the other hand, places with resilient firms recover more quickly, regaining or exceeding former levels of employment, than

do regions with less resilient firms. Firms in most regions tend to be either more resistant or more resilient. Local economic developers should try to help resistant firms maintain existing strengths or help resilient firms pursue new opportunities.

When considering these four meta goals, the size of the region matters. Larger metropolitan areas are likely to have more functional specializations with high location quotients (more export sectors). However, they are also more likely to have larger shares of the national total for any sector. The sector's relative importance within the region and its absolute size are both important. For large regions, the meta goal for functional specialization could be broadened to support existing export sectors and gain a larger share of the national total for prominent industries. Larger places are also more likely to have nationally dominant companies and resistant firms. Larger labor market areas may also have the "thickness" to support growing entrepreneurial companies and more resilient firms.[16] They should have the resources needed to enhance agglomeration economies while mitigating diseconomies.

In conclusion, developers should find the four meta goals useful in framing relevant economic development strategies. They should think broadly about regional economic structure by considering important and emerging local companies as well as more aggregate industrial sectors. Local economic developers can fashion strategies to influence and hopefully improve regional outcomes.

Intraregional practice

Most economic development organizations embrace many strategies. Economic developers are asked to recruit industry, create small-enterprise networks, build incubator facilities, capitalize venture funds, promote tourism, attend to existing industries, cultivate entrepreneurial ecosystems, and encourage international exports—to mention some of the more popular ones. This shotgun approach to strategies is contrary to the message of this book. For local economic developers, the fundamental challenge is to arrive at strategies that are *uniquely* suited to their regional economy and the local jurisdictions within it.[17]

Considerable competition exists among local economic developers hired by different jurisdictions that are part of the same labor market area. Unfortunately, this competition frequently drives development professionals to pursue similar strategies and to target the same existing industries or prospects, which often reduces everyone's effectiveness. Just as the theories presented in this book are intended to reduce *inter*regional competition among economic developers by helping them understand the unique features of their labor market area, they can also help to reduce *intra*regional competition. When job creation is the central concern, region-wide cooperation should be attractive, since employment opportunities within one labor market area become available to all. On the other hand, the goal of tax base expansion may foster competition among local jurisdictions. The advantages of regional tax base sharing are obvious in this regard, but the practice is politically difficult.

How can more cooperation be accomplished? First, economic developers from the same labor market area can meet and, together, arrive at a common understanding of their region. Second, these developers can analyze the variations in the economic landscape across local jurisdictions, with an eye toward understanding the interrelationships and interdependencies among them. This, in turn, will allow local developers to particularize strategies to their jurisdictions that remain sensible at the labor market level. For example, the largest jurisdiction or a strategically located smaller jurisdiction may offer the amenities attractive to specialized service firms, while other jurisdictions may be able to provide the affordable industrial space sought by cost-conscious manufacturing, distribution, or service firms. Still other areas may offer residential development to accommodate the growing workforce. Local economic activity that serves household demand would be prominent in these jurisdictions.

Conclusions

This book presents insights about economic growth and economic development deduced from regional theories. Most economic developers will be able to construct an eclectic understanding of economic development by drawing on these theories selectively. A carefully formulated synthesis of theories can serve an important purpose, but the developer can also realize useful insights from applying each theory separately. By exploring each theoretical perspective carefully and fully, while at the same time being mindful of the specific theoretical questions and empirical problems the perspective is attempting to address, the developer is more likely to discover insights that clarify the process and possibilities of local economic development. If different theories support the same development strategies, the priority of these strategies may be elevated as a result.

As argued in Part I, without theory, the economic developer pursues politically expedient strategies with professionally accepted techniques but has no way to build a defensible basis for independent action. With theory, the developer can first understand the threats and opportunities facing the regional economy and then fashion unique strategies that address its strengths and weaknesses. Instead of politics dictating potentially inferior development efforts, economically significant strategies may be adapted to meet political realities. In this sense, a good understanding of theory will enhance the economic developer's creativity and ability to design effective solutions to local economic problems.

With a real understanding of the local economic development process, economic developers may be able to promote their region's competitiveness by facilitating better work and new work (long-term development), not just more work (near-term growth), and build the region's necessary physical, business, labor, and political infrastructure in the process. They can work to improve the overall milieu of the area as well as target efforts to specific firms, workers, industries, or subareas. The key to success depends on how and from where the economic developer derives specific strategies and programs. In places where strategies rationalize

existing programs, techniques, and political expediencies, success will depend more on luck than on skill or effort. In cities and regions where strategies flow from deep insights into the structure and function of the local economy, economic development efforts stand a far greater chance of success.

With our focus on labor market areas and metropolitan regions, we have made limited reference to primary sectors, like agriculture or mining, or more generally to natural resources. Clearly, the economic base of the global economy continues to rest heavily on the unsustainable consumption of natural resources, and especially the extraction and utilization of fossil fuels, primarily coal, petroleum, and natural gas. Climate science demonstrates clearly that this foundation is not sustainable. An economy built on renewable sources of energy that uses natural resources sustainably is the only viable pathway for the global economy (Masson-Delmotte et al. 2019).

Although abandoning the carbon-based economy may appear daunting, we should remember that combining collective and private action has led to extraordinary innovations and technologies over the years, which has led to major shifts in industrial organization, political and social norms and practices, and the distribution of wealth among people and places (Mazzucato 2013). The internet, which offers open access to almost limitless business and consumer markets at virtually no cost, is one example of public-private action.

Certainly, concerted and bold actions are needed to find tangible and impactful mitigation solutions to the environmental challenge, but they are within reach in terms of technical, social, and economic feasibility (Hoegh-Guildberg et al. 2019). Bozeman (2007), Mazzucato (2018), (Coenen et al. 2015), and other emerging work that critically examines the concept of *value* challenges all economic development participants to think not just about which strategies in terms of *what* and *how* but also in terms of three more basic concepts. The first is *direction*—the future we want as a society. The second is *legitimacy*—the reasons we want that future and who decides. The third is *responsibility*—the parties who must participate to get us there (Uyarra et al. 2019, p. 2362). We are optimistic that local economic development practitioners, informed by positive and normative theory and implementing well-designed strategies customized to the needs and potential of the regions they serve, will make their own significant contributions to shaping a global economy that is environmentally sustainable and more just in its distributions of income and wealth.[18]

Notes

1 In a letter to Malizia dated September 24, 2004, Thompson parenthetically describes this work as "an act of sheer madness." He wrote almost 636,000 words, which translates into a published book of over 2,000 pages.
2 Thompson considers all aspects of development in comparative terms. Indicators of development are always comparative either across regions or over time in one place.
3 The concepts of breadth and depth appear to be consistent with Shapero's (1981) argument about the capacity for local economies to create new work in response to external change. Breadth is a short-hand term for the diversity of the economic base, which is

the presence of multiple specializations. Depth appears to support the economy's ability to change, or, in Shapero's terms, to demonstrate resilience.

The only deficiency in the statement is the assumption that city size appears to function as a causal factor. More likely, size is correlated with or is the outcome of more basic growth and development factors such as functional specializations or resistance/resilience. See the discussion of city size in Chapter 9.

4 Thompson seems to exaggerate the advantages of city size *per se* and to underestimate the importance of large corporate organizations that tend to be headquartered in the largest cities. Other theorists recognize the major influence of large multi-locational firms, for example, Pred (1976), Markusen (1985), and Malecki (1997).

5 Rosabeth Moss Kanter (1995) presents a compatible but less structured argument about attaining competitiveness in the global economy. Cities, she describes, as "thinkers," are essentially R&D-oriented places. "Makers" are places that focus on precision production in either manufacturing or service industries. Other cities are "traders" that focus on international finance and communication. For trade-oriented cities, Kantor has combined the historical competitive advantage of port cities—as physical and commercial breaks in transportation—with their current role in the urban hierarchy as headquarter cities. Although advantaged by trade-oriented infrastructure, these places currently function as administrative/command and control centers.

6 Corporate centers are dense with headquarters, money-center financial institutions, advanced business services, and professional workers. They tend to have hub airports, good air travel connections, and advanced telecommunications, which enhances corporate control.

7 Thompson does not identify developmental services precisely. The following NAICS codes are examples of industries engaged in largely developmental service activities in contrast to routine or consumer-oriented service. The NAICS codes are 4541, Electronic shopping and mail-order houses; 481, Air transportation; 485, Transit and ground passenger transportation; 51, Information—the entire sector, which includes electronic and non-electronic publishing and broadcasting, motion pictures and telecommunication; 52, Finance and insurance, which includes mortgage bankers, security brokers, surety insurance, and miscellaneous investing; 54, Professional, scientific and technical services; 55, Management of companies and enterprises; 6113, Colleges, universities, and professional schools; 6114, Business schools and computer and management training; 6115, Technical and trade schools; 6221, General medical and surgical hospitals; 711, Performing arts and spectator sports; 712, Museums and historical sites; 713, Amusement, gambling, and recreational industries; 722, Food services and drinking places; and 7211, Traveler accommodations. Alternatively, one can examine major occupation groups to find groups of workers delivering developmental services, for example, 15, Computer and mathematical; 17, Architecture and engineering; and 19, Life, physical and social science.

8 Book One discusses urban and regional analysis and policy. Book Two focuses on intra-urban analysis and policy. Each book is subdivided into three major parts. Book One has eleven chapters. Book Two adds ten more.

9 Similar ideas are fleshed out in Nelson and Wolf-Powers (2010) and Lowe and Wolf-Powers (2017). See also Markusen (2004).

10 Moretti does mention proximity to intermediate goods and services as well as access to venture capital (which he equates to supportive entrepreneurial ecosystems) as further benefits of agglomeration, but clearly Moretti sees human capital as the major factor driving location decisions in the innovation sector.

11 See Reese and Ye (2011) for a discussion of the debate about place luck versus policy.

12 Florida's work is more thoroughly discussed in Chapter 9.

13 Moretti does not address the intraregional scale, such as whether it would make sense to concentrate innovative activities in one city neighborhood or "innovation district." While this would not create a new regional hub immediately, it might be an effective

means of concentrating existing innovators that eventually foments a self-sustaining cluster.

14 Moretti does not consider all possible downsides, such as those stemming from severing social and communal ties, the high opportunity costs of providing infrastructure in declining places, exacerbated cost pressures and displacement in growing areas, as well as the option value of having a variety of healthy and vibrant communities (Bolton 1992, 2007).

15 On the other hand, Atkinson et al. (2019) call for significant public investment in eight to ten existing metropolitan areas to make them "growth centers" (see Chapter 6) in order to counter the growing concentration of high-tech employment in the existing brain hubs.

16 In an empirical analysis of employment in U.S. metropolitan areas before, during, and after the Great Recession, we found that larger metropolitan areas were more likely to be both more resistant and more resilient.

17 They can fine-tune their strategies by talking with economic developers in comparable labor market areas, that is, in areas that have a similar economic location in the global economy.

18 More fundamental changes in the guiding principles and measurement of value in U.S. capitalism are necessary. What if value for all stakeholders (employees, customers, suppliers, the public, as well as the natural environment) trumped shareholder value? What if the focus on economic efficiency was subordinated to the objective of economic resilience? What if the public good value of locality, place, and community was taken seriously in national policy and public investment decisions? Unorthodox economic scholars like Mazzucato (2018) and more mainstream economists such as Banerjee and Duflo 2019) and Rajan (2019) are contributing to thinking along these lines that is long overdue.

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APPENDIX

Economic thought

It is useful to present economic thought in its historical context for three primary reasons. First, here we find the written products of scholars arguing about the realities of economic life. The arguments began in earnest in the 18th century and continue today. These give-and-take arguments cannot be learned by studying economics from textbooks. Second, thought and practice continually interact. By understanding economic thought historically, the reader can correlate concepts and arguments to the major historical events of the period. Ideas are formulated to explain changes in economic life, and, to some extent, economic life is shaped by the accepted economic doctrines of the time. Third and most importantly, old economic ideas are still used to explain economic development currently. See Heilbroner (1972, 1988) and Galbraith (1987).

The outline of economic thought shown in Figure A.1 presents the general flow of ideas over the past 300 years. We begin with mercantile and physiocratic thought because these ideas form the basis of certain long-standing arguments about economic development in the United States and Canada, although modern economists no longer use them. Adam Smith, David Ricardo, and J.S. Mills, writing in that order and building on earlier work, present the first complete treatment of classical economics (political economy). The critics of classicism include both supporters of capitalism, like the Marginalists and Leon Walras, and dissenters in Karl Marx and the Socialists. Next, Alfred Marshall consolidates classical thought with the theory of supply and demand. Over the next several decades, many others, including J.M. Keynes, broaden and deepen economic theory. These ideas are synthesized in modern micro- and macroeconomics, which continue to grow with the support of mathematics and econometrics.

Neoclassical critics have generally objected to the formalism and level of abstraction in modern economics. Critiques of the institutionalist and Austrians have waned, while critiques of post-Keynesian and Radical economics have continued. New ideas have arisen, such as supply-side economics during the 1970s, when "stagflation" challenged Keynesian policies.[1]

Unlike neoclassical theory's concern for equilibrium or steady-state growth, the major objective of classical thought is to understand the evolution of the economic system over the long term.[2] Classical thought is particularly relevant to development economics, a subfield that emerged after World War II (Arndt 1981). Development economics tries to grasp the evolution of the economy in terms of economic growth and structural change and draws theories from the body of economic thought portrayed in Figure A.1.

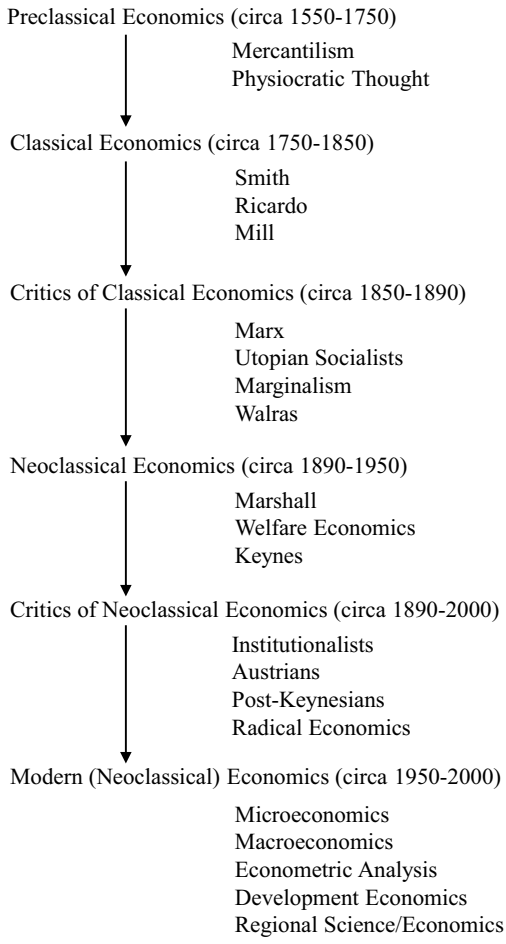

FIGURE A.1 Historical overview of economic thought

Until recently, economic thought has largely neglected the spatial dimension of structural change. It was economists on the European Continent who examined geography taking up issues of space, regions, and urbanization. The theory of location was almost entirely developed by German and central European economists from about 1820 through 1940. Isard (1956) synthesized this work, which subsequently spawned the subfields of regional science and regional economics.

The theories in Part II draw from different schools of thought. Economic base theory (Chapter 3) is compatible with Keynesian theory. Staple theory (Chapter 3) is a regional application in the spirit of institutional economics that emphasizes legacy and path dependence. Neoclassical trade and growth theories (Chapters 4–5) flow most directly from mainstream neoclassical economics as applied in development economics. Perroux, Myrdal, and Hirschman (Chapter 6) were early critics of mainstream development economics and had their ideas incorporated into formulations of regional economics. Product cycle theory (Chapter 6) is an interesting combination of neoclassical theory and location theory. Schumpeter's theory of entrepreneurship and regional innovation theories (Chapters 7–8) draw from the Austrian and Neoclassical schools. Agglomeration theories (Chapter 9) build on Marshall's ideas about external economies. Radical and Marxist theories provide the inspiration for many modern critiques of traditional development.

The remainder of this Appendix is devoted to explanations and applications of economic thought that should help clarify the way many people *think* about local economic development. This thought is presented in approximate historical order.[3]

Mercantile thought

Mercantilism is not a theory of economic development but rather a diverse set of ideas about the economic development process and government's role in that process. Mercantile thought was prominent in Western Europe for several hundred years until the middle of the 18th century. Although many ideas were poorly defined and inconsistently applied, mercantilism has continued to appeal. Perhaps its appeal stems from the fact that mercantilists were men of business and practical affairs. Though insightful, they were certainly not theoretically inclined.

Mercantile thought made the pursuit of wealth respectable, a radical departure from the Catholic Church's view of commerce. Mercantilism helped elevate the secular power of the state at the expense of religious influence. Mercantile thought was most prominent in England, which became the dominant European power during the 17th and 18th centuries.

Mercantilists believed that nation-states should achieve and retain a favorable balance of trade. When merchandise exports were greater than merchandise imports, foreigners would pay their trade-related debts in the form of gold or other precious metals, which accumulated in the national treasury and enabled state spending. Thus, rulers of the nation-state and the merchant class were natural allies. The merchant class helped provide the funds needed by the nation-state to increase its power to consolidate the national territory, colonize peripheral areas,

or wage war. The international trading companies, in turn, received state protection and favorable government policies, and the merchants got rich in the process.

Mercantilists argued that, with effective state intervention, growth in the foreign trade and export manufacturing sectors would result in the accumulation of public and private wealth. They ignored domestic demand and the difficulties of structural change, instead focusing on the exchange of goods for money. Mercantilists proposed and debated far-reaching interventions to support foreign trade: navigation laws, tariffs on imports, direct export promotion, state-protected trading monopolies, product monopolies (patents), transportation, and other infrastructure investment, to name a few.

Mercantilists believed in the strategic importance of commerce and industry, preferably controlled by relatively large companies. Aggregate production could be increased by expanding the labor force through immigration and natural increase, as well as by using better machinery and higher skilled labor. Sufficient money supply would keep interest rates low and encourage domestic industrial growth by stimulating the demand for labor and other inputs. The growth process would increase the surplus available for foreign trade when (1) resources were used productively, (2) agriculture provided cheap wage goods, and (3) wages remained low at subsistence levels. National power would increase with the growth of output and population as well as with the accumulation of money wealth.

Applications of mercantilism

Mercantile ideas continue to have broad appeal because they appear sensible and connected to economic reality. Indeed, people who believe that politics dominates economics are especially attracted to mercantile thinking. Regional economists have extensively studied the influence of federal and state policies on regional development. Markusen (1986) traced the regional influences of defense spending. Others have looked at the political economy of U.S. trade (Noponen, Graham, and Markusen 1993). Certainly, economic developers need to be aware of the local impacts of state and federal policies and expenditures.

State and local public officials and economic developers often embrace an ideology or a strategic orientation consistent with mercantilism. Many developers support the process of economic growth, which leads to more aggregate output, jobs, and tax base. Like the mercantilists, many developers believe that interventions should be pro-business and intended to support and facilitate business plans. Importantly, they consider large oligopolistic companies in the export base sector as the most important because they bring revenues into the region. However, economic history teaches that oligopolies are frequently undermined and that when competition rules across sectors of the economy, higher levels of consumer well-being often result.

The mercantile idea that a favorable balance of trade is essential for economic prosperity has misled economic developers more than any other. This misconception leads many developers to concentrate on making money rather than on

increasing productivity. Although a favorable balance of trade can help sustain local growth, so can internally focused exchange. Yet many developers are keen on increasing the locality's trade surplus. Most believe in export promotion, primarily by attracting export industries to the locality, and import substitution to reduce income leakages, which may be the most popular development strategies in the United States.

This mercantile misconception can be corrected, as follows: regions and nations need to sell products in international markets in order to buy products in these markets without incurring ever-increasing debt. But accumulated funds from trade do not *per se* indicate wealth or prosperity. Rather, prosperity and wealth come from the productive deployment of local resources. A favorable balance of trade can indicate economic strength, but it simply means that the value of exports exceeds the value of imports. This favorable balance will continue as long as local companies are able to compete successfully in external markets. The presence of strong (efficient, adaptive, and innovative) companies is what *causes* economic growth; net exports is simply an *indicator* of growth.

Physiocratic thought

The Physiocrats represented the first true school of economic thought. Writing in the 18th century, they proposed a reasonably coherent and consistent body of ideas about the political economy of France. Decidedly anti-mercantilist and ardently laissez faire in spirit, the Physiocrats tried to show objectively how different parts of the economy interrelate and how value is created and circulated. Although Adam Smith and the classical economists rejected many of their tenets, they set a high standard for economic thinking that continued to challenge the classical economists.

France's largely agricultural economy was suffering, and landowners and peasants were burdened by heavy taxes and harmful government policies. With an enlightened French monarchy, the Physiocrats wanted to preserve and reform the French agricultural system, save the landed aristocracy that owned it, and reduce the excesses of the court. They opposed the imposition of mercantile policies on the French economy and the growing influence of merchants and the manufacturing sector. Their appeals for economic reform proved to be inadequate; the French Revolution ultimately swept away the privileged classes and led to the restructuring of the French economy.

Physiocrats believed that all wealth came from nature, embodied in land and natural resources. Agriculture and other resource-based activities, therefore, created wealth; all other forms of economic activity merely circulated wealth. The productive classes included landowners and agricultural managers. They considered merchants, professionals, artisans, manufacturers, and bureaucrats to be unproductive classes. The labor class was dependent on these other classes for employment and was either productive or unproductive, depending on their type of employment.

Physiocrats, inspired by rationalism and natural law, supported property rights and free trade. Except for national defense, any intervention on the part of the state was suspect. Government intervention to further mercantile interests was ardently opposed. Government revenues, needed for a limited number of activities, were to be raised by direct, single taxes on the agricultural surplus, which was the income of the productive classes. By simplifying the tax system, the size of government could be reduced more easily.

The Physiocrats devised an ingenious accounting framework to underscore their position on productivity. This framework is often viewed as the forerunner to input-output economics. The *tableau economique* (attributed to Francois Quesnay) attempted to measure "net product" or surplus. The table was used to show how the net product circulated through the economy. After compensation of the productive classes who worked the land, the net product belonged to the aristocracy.

The physiocratic conception of value directly opposed the mercantile definition of wealth and focus on trade. Physiocrats argued that trade added no value but merely circulated commodities. Nor did manufacturing add value, since industrial labor simply worked on materials originally from the land. Economic progress could be achieved only by increasing agricultural production and the agricultural surplus. Thus, agriculture, not manufacturing, was the strategically important sector.[4] Income per capita could grow by allocating sufficient capital to agriculture, by allowing competition and free trade, especially of agricultural products, and by serving the growing domestic market. In contrast to mercantilism, exports and balance of payments, colonies, and expansionary population policies were not important.

Applications of physiocratic thought

One enduring, useful idea from the Physiocrats is their focus on connections. Not only are different regional economic activities interdependent but regional economies themselves are interconnected. Input-output analysis is a framework for tracking important linkages through commodity flows. The concept of linkage is important for economic developers. The analysis of linkage helps explain how the regional economy connects to the larger system and how local sectors support that connection.

Although economic developers do not accept the physiocratic conception of value, many believe in the distinction between productive and unproductive economic activity. Basic economic activities, namely, manufacturing, extraction (mining, forestry, fisheries), and agriculture, are wealth creators. Other forms of economic activities merely circulate wealth. This idea is wrong; any economic activity that satisfies consumer wants and needs creates value.

More generally, economic developers should not favor any sector or set of firms on *a priori* grounds. For example, one should not choose basic activity over local activity, manufacturing over services, large firms over small firms (or the reverse). None is inherently superior. The theories presented in Part II identify firms with

strategic importance. These firms have high multipliers; provide good jobs; offer developmental services; export income-elastic products; and consist of efficient, adaptive, or innovative firms.

Physiocratic thought is strongly identified with the economic interests of local property owners just as mercantilists favor merchants and industrialists. They often support less government regulation of business and defend economic freedom and property rights. Many believe that taxes on businesses income and wealth should be minimal. Whether consciously or not, many economic developers support the economic interests of groups that directly benefit from aggregate economic growth.

Classical economics

The famous Scottish moral philosopher Adam Smith presented the first complete treatise on "political economy," what became known as classical economic thought in *The Wealth of Nations* (1776 [1937]). This book built upon an ethical system developed in his earlier work, *The Theory of Moral Sentiments* (1759 [1976]). As a moral philosopher concerned with human happiness and well-being, Smith presented the moral sentiments that would restrain narcissistic human tendencies. The sentiments of sympathy and need for social approval, he argued, would balance self-love and provide the moral basis for economic affairs. With this moral and ethical framework in place, his "simple system of natural liberty" would harmonize individuals' self-interest with the public interest and keep competition humane.

Smith defends the competitive capitalistic system as an efficient way to achieve secular progress. The "invisible hand" of the market leads to natural prices and just compensation of labor, land, and capital. The cooperative efforts of labor produce useful goods whether employed on farms or in factories. It is natural for people to specialize in what they can do well and trade for what they need. This division of labor increases productivity. Specialization, which the size of the market ultimately limits, increases the size of the pie, and competition insures that consumers can purchase at a reasonable price the commodities for which they are willing to pay. He argues that the nation prospers under this system of natural liberty as long as proper moral sentiments are embedded in the culture.

Smith's factors of production also represent social classes—land (property owners), labor (workers), and capital (business owners). He was especially concerned about the well-being of workers who had lost their economic security that was tied to the land in the transition from feudalism to capitalism.

Smith poses new definitions of value and wealth, where value is created neither from accumulated money nor from agricultural surplus but from productivity, that is, the ability to combine labor, land, capital, and other inputs efficiently to produce greater output. The continual division of labor increases wealth, which leads to more specialization and trade. Free trade not only assures the best allocative outcomes but also increases the size of the market, which stimulates further specialization and division of labor.

Although known for his support of laissez-faire competition and free trade, Smith articulated important roles for government, much larger than the Physiocrats would have accepted. In addition to enforcing the legal framework for contracts and private property, the government should regulate, tax, and spend in the public interest. Regulation is justified when the social costs of private activity exceed the private costs (negative externalities). Public production is necessary when the social benefits exceed private benefits such that no rational private producer would provide the good or service.

Smith devotes considerable attention to criticizing mercantilism. He considered mercantile thought to be fraud that businessmen perpetrated on the public. He demonstrates why the accumulation of money is not the wealth of the nation. He rails against the monopolistic trading practices of the Mercantilists. His thinking ultimately contradicted the mercantile view of trade, which was conventional wisdom in his day.

Smith was more favorably disposed to the Physiocrats. He shared their views about productive and unproductive classes and the existence of natural order. Yet there were sharp and important differences: natural liberty resided in the people, not some enlightened despot, and value came from human effort more than from the gifts of nature.

Smith presented a creative and readable work that influenced economists over the next century. He distinguished his basic tenets from mercantile and physiocratic thought and considered competitive capitalism to be the best path to long-term development. Smith's concern for economic development in England remained the major focus of subsequent classical economists.

The most important classical thinkers after Smith were David Ricardo, Thomas Malthus, J.-B. Say, and J.S. Mill, who tried to develop a series of laws describing the natural order of capitalist development. Ricardo focused on income distribution and foreign trade. He formulated two important contributions: comparative advantage and diminishing returns. His concept of comparative advantage was developed to explain specialization and commodity trade between countries. (Chapter 4 covers trade theory.) Ricardo was the first to see that specialization could lead to diminishing returns. In his pessimistic scenario, which contrasts to Smith's optimistic growth model, the economy eventually stagnates as landowners become the dominant class. His scenario underestimates the ways in which technological progress and substitution can overcome diminishing returns. Figure A.2, adapted from Dome (1994), neatly portrays the contrasting classical views of economic growth formulated by Smith (expansion of market, increase in profits) and Ricardo (decrease in profits).

Malthus is best known for his work on the influence of population increase, where he presented the most cogent classical statement on the limits of economic growth. He argued that the rate of national economic growth depends on the relationship between population growth and the growth of capital stock. Current debates about economic growth, population increase, natural resource constraints, environmental deterioration, and climate change began with Malthus.

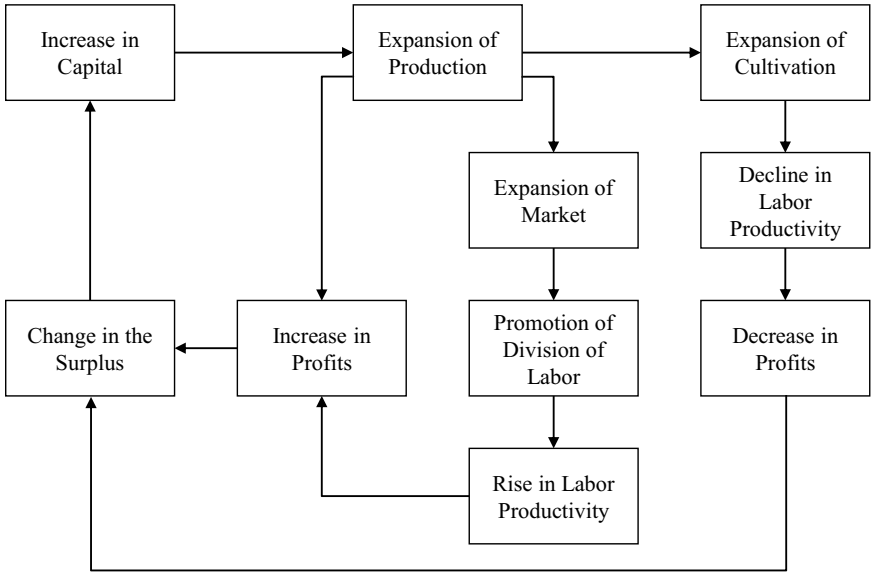

FIGURE A.2 Classical economic growth process

Say, who transformed Smith's ideas to textbook format for French language readers, made several contributions in the process. He is best known for Say's Law, which argues that markets should neither have excess supply nor have excess demand because the compensation of factors producing supply provides the demand for that output.

J.S. Mill wrote the leading English language treatise on economics in the latter part of the 19th century. He synthesized and contributed to classical thought and incorporated social justice issues raised by socialist critics of capitalist development. Mill became an advocate of population policy (encouraging emigration), land for the poor, public education, and even women's rights. He correctly thought that these measures would reduce population growth and elevate the living standards of workers above the subsistence level (Dorfman 1991).[5] Mill's ideas seem especially relevant currently with the unprecedented concentration of income and wealth, socially and geographically.

Applications of classical thought

Classical economists developed economic concepts that contemporary developers can use, especially to counter mercantile and physiocratic thought that many still accept. Perhaps they believe economic thinkers, long dead and largely discredited, because these ideas serve their narrow economic interests.

Although modern economics has developed beyond Smith and other classical economists, certain classical tenets remain quite relevant for clear thinking about

economic development. Smith, for example, would want developers to focus on competitive firms, want government to support competition, strongly advocate for greater specialization to serve viable local and external markets, and encourage regions to build on their specializations to sustain productivity growth. He would also advocate trade to satisfy local demand, with more exporting and importing, rather than less.

Classical economists would not be supportive of economic developers and politicians who narrowly focused on local growth and job creation, which would tend to support narrow business and property interests. Classical economists were primarily interested in near-term efficiency, long-term productivity gains, consumer satisfaction, and the wealth creation process. Economic developers who embrace these ideas would promote broader community interests.

Smith's attention to the moral basis of capitalism is especially relevant. In our increasingly mobile, information rich, and technologically sophisticated society, it is difficult to find and sustain meaningful community life. Yet without meaningful communities of people who respect one another, their social experiences are not likely to support the sentiments of sympathy and approbation. Although people may behave with regard for others who live in their neighborhood, the most positive sentiment many seem to be able to muster for others is tolerance. In the absence of Smith's moral sentiments, economic activities and political affairs have become less ethical and, all too frequently, illegal. The rise of shareholder value as the singular corporate value defends these unethical activities as necessary to maximize near-term profits.

Marx

Classical economists were primarily concerned with understanding the evolution and dynamics of capitalist development. In this sense, Karl Marx was a classical economist. He drew directly on Ricardo, both in substance (value theory) and in method. Yet Marx was a broad social thinker more than a political economist. He attempted to synthesize and build upon Hegel's historical method, physiocratic thought, and socialist ideas.

Marx presented his version of "scientific socialism" to demonstrate how and why capitalist development would ultimately fail. Although his theory was inconsistent and incomplete, he had powerful insights about long-term development. He argued that (1) capitalist development is inherently unstable, (2) internal contradictions would cause the collapse of capitalism, and the subsequent rise of socialism, and (3) technological progress would delay this collapse.

Marxist political economy consists of historical, holistic, and synoptic thinking intended to understand how conflict leads to change and flux. In other words, one must study the larger economic system in order to understand development in one place and examine the political and social sphere in addition to the economic sphere in order to understand the economy. This holistic perspective encourages the search for connections between social institutions and production. Its historical

perspective forces us to address the question: how did things get the way they are? One must study real people and events over the relevant time period to understand the region's economic history.

Marxist theory is built on dialectical laws.[6] In Marxist theory, human nature is unfolding or continually changing; human beings are becoming and, therefore, human nature is dynamic. Instead of serving as the point of departure for a mediated theory of human action, Marx's theory has been interpreted as a closed system of thought driven by technological determinism which has led to its misuse and abuse.

Marx's major work, *Capital* (1867 [1967]), is a study of *alienation* under the capitalist mode of production. Alienation is an unnatural separation or division that exists in all areas of economic life under capitalism because producers are separated from the means of production. Unequal power relations make things (objects or concepts) more important than people which results in and is sustained by class society.

At the root of this analysis is Marx's definition of social classes. Marx uses economic functions to determine class position in keeping with the classical approach (land, labor, and capital refer to three distinct social groups). The upper class owns the means of production; the working class comprises employees who own little beyond housing and personal property. The managerial class runs private and public organizations in the interest of the upper class. The proprietor class represents small business. The managerial and proprietor classes own some productive assets but much less than the upper class. Finally, the unemployed own very little and probably have negative net worth (Bottomore 1966).

Through technological progress, capitalism can create more wealth and productive capacity than any previous mode of production in human history. Greater efficiency and labor-saving technologies, however, generate overproduction and unemployment, leading to increasingly severe economic crises.[7] These realization and liquidation crises eventually doom the system.[8]

In summary, Marxist theory treats the relations of production as basic units of analysis. The definition of economic development is broadly conceived as the reduction (and eventual elimination) of alienation. At its core, Marxist thinking is based on the 18th-century assumption that human beings can improve as a species, and therefore its view of secular progress and human nature is quite optimistic. If, on the other hand, we are terminally uncivilized brutes, always requiring authority to keep the peace, then the Marxist believes that we will perpetually suffer alienation from our products, our tools, our natural environment, and one another.[9]

Applications of Marxist thought

Economic developers are expected to be savvy about the politics of their community in order to facilitate positive changes in the economy. They can use Marxist thought to identify the individuals occupying leadership roles in the largest organizations headquartered in the region. They should recognize the channels and

extent to which these individuals exercise political leadership. The objective here is not to discover some "ruling class" that uses democratic structures to impose its singular will on the populace. Rather, the analysis should help developers determine the strength of business influence in local governance and the relative difficulty involved in implementing any economic development strategy.

The presence of a coherent influential class varies from region to region. In some communities, the political system is quite open, and the process is very pluralistic and democratic. Elsewhere, political discourse and processes are tightly controlled. Economic developers need to learn quickly the kind of environment in which they are working. Neither extreme insures favorable outcomes, however. In more pluralistic places, it is easy to raise issues, discuss alternatives, and mobilize enthusiasm for various development strategies. Yet it may be impossible to reach agreement on an overall strategy or mobilize enough resources to implement that strategy. In less pluralistic places, power is sufficiently concentrated to take effective action and mobilize resources. But it may be impossible to convince the leadership of the need for change, or it may take too long to get their attention.[10]

Economic developers working in the United States will find few, if any, local actors who think about development from a Marxist perspective. Instead, the main application of Marxist thought is in linking what people say about development to what they do in terms of their class position. Marxist thinking can help developers be aware of the competing and conflicting economic interests in the locality and the groups that are influential in the political arena because of their control of capital. They should recognize that the strategies they support favor certain economic interests more than others, often those of business owners and managers.

In summary, economic developers can use early economic thought to understand the local thinking about economic development. The ideas of mercantilists and physiocrats are at the root of popular misperceptions about economic development. Classical thought can help correct these misperceptions while describing economic development in ways more likely to serve the public interest. Marxist thought should help developers see the connections between local views of economic development and the economic interests served by these views.

Neoclassical economic thought

The origins of neoclassical economics may be traced to the development of the concepts of marginal utility and marginal product and the subsequent focus on price determination in competitive markets (Blaug 1968). More generally, the reformulation of classical economic thought during the 19th century brought utilitarian ethics and mathematics to the treatment of economic relations. With the introduction of marginal analysis as a means of explaining the allocation of given quantities among competing uses, the emphasis thus turned from long-term growth to near-term equilibrium. Mathematical formalism was taken up most seriously by the Lausanne school, especially Walras, who formulated general economic equilibrium as a system of simultaneous equations. (The so-called Walrasian

auctioneer as a mechanism to achieve equilibrium in all product and factor markets is discussed in Chapter 7.)

Carl Menger and the Austrians contributed to marginal analysis with their subjective approach to utility and value, providing one counterpoint to the socialist thinking of the late 19th and early 20th centuries. Friedrich Hayek (1944) authored an influential treatise against central control and planning. The most lasting Austrian influence on regional development is through entrepreneurship theories, most notably Joseph Schumpeter's.

It was Alfred Marshall and his followers (Arthur Pigou, Edward Chamberlin, and John Hicks, for example) who reformulated classical economics most thoroughly and developed the topics now covered in standard microeconomics texts. Of critical importance was the development of comparative statics to analyze short-run and long-run equilibria. The theory of consumer demand, the theory of the firm, welfare economics, imperfect competition, and the influence of external economies were essential features of this developing neoclassical thought. Given a well-defined set of postulates and assumptions regarding economic behavior, early neoclassical economists aimed to show how the unimpeded operation of the market led to the maximization of aggregate social welfare. This would be achieved through the market determination of a set of prices that would yield complete market clearing throughout the economy (termed "general equilibrium"). The concept of space, or regional economies within a national economic system remains largely absent from mainstream neoclassical models (Blaug 1997), but this situation has been changing with recent analyses of imperfect competition, increasing returns, and growth and trade (Krugman 1997).

J.M. Keynes provided the major challenge to the neoclassical perspective. Keynesian thought based on economic aggregates (e.g., income, savings) eventually became macroeconomics (which now includes both Keynesisan and non-Keynesian models). His theory discredited the long-standing acceptance of Say's Law and provided a rationale for government intervention to influence aggregate demand and the money supply. Keynes' primary focus was on near-term business fluctuations and not long-term economic growth.

As with any intellectual paradigm, the neoclassical approach embodies certain values and assumed truths regarding economic behavior and the economic system. Hunt (1989) presents three that are often challenged by other approaches to the study of development. First, the neoclassical approach implies that economic inequality is a major source of incentive, although adherents to the neoclassical perspective have become concerned with finding ways to narrow inequality. Second, the neoclassical perspective attaches a very high value to individual freedom. Government regulation that reduces personal freedom is resisted. Third, neoclassical economists believe that the market is a much more efficient allocator of resources than the public sector, even though this commitment to the notion of *laissez faire* has not been vindicated by objective research (Toye 1987).

Economists working within the neoclassical tradition continue to make significant contributions to the analysis of underdeveloped economies, much of it

concerned with short-run questions of allocative efficiency. Many of these contributions include the notion of trade based on comparative advantage (Chapter 4), policy analysis, and cost-benefit analysis. The traditional neoclassical analysis of long-run economic growth has been extremely influential in the United States as a model of subnational development. Indeed, writing in 1973, regional economist Harry Richardson (1973, p. 22) asserted that "neoclassical models have dominated regional growth theory much as they have dominated growth theory in general." Although neoclassical growth theory ceased to dominate regional growth analysis in the 1980s and 1990s (particularly as the development of the theory stagnated within mainstream economics itself), it still contributed insights as well as generated useful research. With the advent of endogenous growth models, growth theory in the neoclassical tradition became one of the most important and promising areas of research and study in regional development (see Stough 1998, Bal and Nijkamp 1998, Krugman 1997).

Applications of neoclassical thought

The important applications of neoclassical thought are interregional trade theory (Chapter 4) and regional growth theory (Chapter 5). The former takes the microeconomic perspective whereas the latter takes the macroeconomic perspective.

Notes

1 This theory was embraced to justify federal tax cuts posed as the silver bullet that would solve all problems. Ample evidence exists that documents its failure to work in practice. See Atkinson (2006).

2 Meier (1984) distinguishes three types of thought used in development economics: analytical, radical, and historical. Analytical thought is most prominent and involves applications of neoclassical growth and trade theories. Radical theories, such as dependency theory, have been formulated with the realities of less developed countries in mind and are used to view development from the less developed country perspective. Historical theories, which include the work of Marx and Schumpeter, focus on long-term growth and change. In an earlier work, Meier's development theories are classical, Marxian, neoclassical, Schumpeterian, and post-Keynesian; see Gerald M. Meier and Robert E. Baldwin (1957). Herrick and Kindleberger (1983) devote two chapters to theories. In Chapter 2, they review growth theories from the classical, neoclassical, and post-Keynesian traditions. In Chapter 3, they present theories of economic development: neoclassical (Bauer and H.J. Johnson), structural disequilibrium (Chenery), and radical (Amin, Baran, Gunder Frank). See also Ranis and Schultz (1988) and Stern (1989).

3 The main sources used in this review are Rima (1991) and Spiegel (1983). Additional references include Bronfenbrenner (1979), Chong-Yah (1991), Dome (1994), Dorfman (1991), Heilbroner (1972, 1988), Hoselitz (1960), Friedmann and Weaver (1979), Galbraith (1987), Herrick and Kindleberger (1983), Landreth and Colandeer (1989), and Russell (1945). See also Dinc (2015).

4 Strategies to increase economic development often favor industrialization, specifically the growth of manufacturing. Manufacturing growth was limited by available inputs, most importantly, labor since the large majority of the population was engaged in agricultural production, often at the subsistence level. An increase in agricultural productivity was

needed to generate surplus wage-goods and surplus labor. This reasoning is consistent with sector theory presented in Chapter 3.

5 Rima (1991) presents a concise list of the laws developed by the classical economists, as follows: (1) the law of diminishing returns, (2) the law of population growth, (3) the law of wages, (4) the law of capital accumulation, (5) the law of rent, (6) the law of comparative advantage, (7) the law of value, (8) the quantity theory of money, and (9) the law of markets (1991, p. 189). Note that none of these laws account for technological change that Marx emphasized (Dorfman 1991).

6 Rather than try to describe these laws, it is more useful to illustrate one of them—the unity of opposites—as a way to explain Marxist theory more fully. Distinctions commonly made in traditional theory are unified by using the social relation as the unit of analysis. In traditional theory, facts are supposed to reflect what is given and values are said to represent what is desired. Yet these apparent opposites are actually not fundamentally different. Rather, as noted in Appendix 2.1, facts are made as the result of human action. Historical facts (data) are given; future facts (values) are produced as human intentions are realized.

The two-sided, reciprocal approach not only requires explanation of why things are different but why they are part of the same process. The dualist distinctions between employment and unemployment, affluence and poverty, or development and underdevelopment tell only half the story and the less important half at that. The more pressing question is: how do these aspects relate as part of the same process? Analysis of essential relations leads to the conclusion that some become employed or affluent, while others become unemployed or remain impoverished, or that some places become more developed as others become increasingly underdeveloped.

7 Realization crises and liquidation crises are described in Bronfenbrenner (1979), Chapter 5. In a closed system, the process of transforming money into commodities and commodities into money breaks down in the following ways. The amount of capital involved in production continues to rise as labor-saving technology is introduced. The rate of profit consequently falls. Eventually, a minimum rate of profit is reached that is too low to induce further investment. Capitalists hoard money, which results in underinvestment and a "liquidation" crisis, where money fails to be transformed into commodities.

Alternatively, capitalists can sustain an acceptable rate of profit by garnering more surplus from production. But the cost is the generation of greater unemployment. More unemployment reduces aggregate demand and leads to a "realization" crisis, where commodities fail to be transformed into money. Marx expected liquidation and realization crises to alternate as capitalists try to postpone the system's collapse. Capitalism suffers these crises, which become ever more serious, until revolution occurs.

8 The historical perspective can also be usefully applied to labor market relations in different regions of the world. This view is contrary to neoclassical theory, which assumes that all labor is paid its marginal product. Wages are *historically* determined and exogenous to labor markets, where supply and demand interact. At any point in time, the average laborer is compensated to the extent necessary to achieve generally expected and acceptable levels of living. These expectations are formed by workers' previous experience, comparisons to peer workers, and what is known about the experience of previous generations of workers. Far from being separate activities, workers' wage expectations are based on a direct connection between consumption and production. Workers seek employment in order to earn acceptable levels of living, and the levels of living experienced reinforce the need to work. Development occurs as levels of living gradually improve; expectations rise, compensation demands increase, demands are met with higher wages, and living levels improve. The different cultural experiences among workers in different parts of the world account for the existence of vastly different compensation for essentially the same work. Workers tend to get what they find acceptable regardless of their average or marginal productivity. Within the United States, more modest differences in expectation exist. Still, workers in small towns or rural areas

tend, especially in the South, to expect less than urban workers. Immigrants are usually willing to take jobs domestic workers shun. Neoclassical theorists have tried to explain away these differences by controlling differences in cost of living, educational levels, etc. between people or places. What is ignored and what is much more important are the differences in consumption. Workers with simple tastes and lifestyles cost employers less than sophisticated ones.

Social media now virtually connects people throughout the world. It is influencing attitudes and tastes, particularly among younger people. Over time, higher expectations will translate into demands for higher wages, which could change competitive advantage and influence international investment decisions dramatically.

9 For further discussion, see Ollman (1971).

10 Often, Tupelo, Mississippi, is cited as a place where the political leadership has mobilized for effective action in the interest of local economic development. It would be worthwhile to explain the proximate causes of success. See Holladay (1992) and Martin (1994).

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