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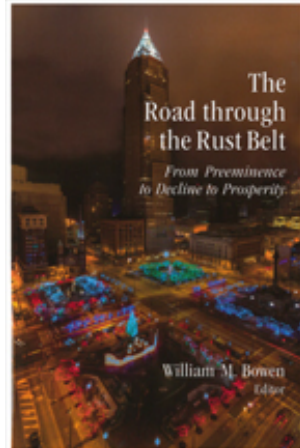
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# Barriers and Opportunities for Entrepreneurship in Older Industrial Regions

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# 9

## Barriers and Opportunities for Entrepreneurship in Older Industrial Regions

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*Manufacturing served as the main source of economic activity in many of the cities of the Midwest until its decline led to the creation of the term “Rust Belt.” While entrepreneurship offers the promise of economic growth, Midwest regions need assistance to foster a sustainable entrepreneurial ecosystem and launch new businesses.*

Postwar prosperity was built on the production of goods needed to satisfy pent-up demand from Americans, who wanted to improve their lives after World War II, and demand from Europe and Asia, where the populations were physically rebuilding their countries. This period of economic growth was concentrated in several leading industries—automobiles, steel, aluminum, tires, and chemicals—each with large dominant companies with significant market shares. The role of small businesses and entrepreneurship was diminished during the postwar decades; small companies were found to be less productive and innovative than larger corporations, and they offered lower wages. The industrial revolution of the early twentieth century, characterized as an entrepreneurial and individualistic era, had been replaced by an environment of large, structured, and hierarchical corporations. However, even with these developments, U.S. policy still tended to preserve small enterprises, and in 1953 Congress created the Small Business Administration. This policy was in stark contrast to Europe and the Soviet Union, which discouraged such ventures in order to focus on national industrial policies.

The recovery of Japan and Europe and the ensuing movement of labor to cheaper markets outside of the United States through globalization brought to an end the complete advantage the nation had enjoyed after World War II. Since the 1970s, the United States and its regions have been undergoing a dramatic transformation from manufacturing to knowledge- and information-based economies, shifting the focus from physical to human capital. By the 1980s, innovation and entrepreneurship emerged as the main components in the engine of economic growth, causing many scholars and policymakers to look to the factor of knowledge as a primary source of competitiveness. With this paradigm shift, national and regional decision makers needed to change public policy to ensure a more hospitable and nurturing environment for innovators and entrepreneurs.

This chapter links the assertion that entrepreneurship is associated with regional growth to the need for public policy that stimulates entrepreneurship in declining industrial areas. The discussion reviews some of the literature on the general role of innovation and entrepreneurship in economic growth, the barriers to entrepreneurship in older industrial regions, and the role that the nonprofit and public sectors play in accelerating entrepreneurship in these regions. Then examples are given of how private-sector-led organizations encourage the development of an entrepreneurial ecosystem and culture that could lead to economic growth in older industrial regions.

Entrepreneurship has been investigated as a potential means for economic growth throughout economic history. But with the recent framework of endogenous growth theory showing that technology advances lead to higher economic output, many people today are increasingly looking to entrepreneurs to facilitate these advances. In addition, some authors find that higher participation rates of entrepreneurial activity are strongly positively correlated with higher growth rates, even when establishment size and agglomeration effects are statistically controlled (Caree and Thurik 2010). Moreover, additional studies show that entrepreneurs are needed to bring new ideas to market because large existing firms do not have the capabilities to take advantage of the innovations that address market gaps (Audretsch, Bönte, and Keilbach 2008). With this concept in mind, it is important to ask what happens to regions that have been dependent on large firms throughout their recent economic history and that do not have the entrepreneurial culture to take advantage of innovations because individuals are risk averse.

These issues lead to the examination of the entrepreneurial makeup of lagging regions in the United States, specifically older industrial regions with a legacy of large and declining manufacturing firms. Much has been written about this topic in the literature for economic development practitioners, but little has been published in the academic literature. It is the hope that this chapter will begin to bridge the divide in order to provide adequate frameworks for practitioners implementing entrepreneurial policies, as well as to contribute to the academic literature on entrepreneurship and regional growth.

### **INNOVATION, ENTREPRENEURSHIP, AND ECONOMIC GROWTH**

There is a vast amount of academic literature on entrepreneurship and its ability to revitalize regions (Acs and Armington 2004; Audretsch and Keilbach 2004; Baptista and Preto 2011; Caree and Thurik 2010; Dejardin 2011; Fritsch and Schroeter 2011; Mueller 2007). The economic fundamentals of entrepreneurship stem from the building blocks that economists have put forward over the last 200 years. In the beginning, neoclassical economic growth was the only model, and it was based on the idea that development occurs through an increase in productivity, by making more goods in a given amount of time. As economists began to investigate this relationship, they found a phenomenon that was spurring growth but could not be explained by neoclassical theory (Lerner 2009). It was not until 1956, when Abramovitz examined gross output in the U.S. economy from 1870 to 1950, that it became evident that 85 percent of the growth experienced during this period was due to innovation and increased productivity (Abramovitz 1956; Lerner 2009). According to Lerner (2009), Abramovitz showed, “there are ultimately only two ways of increasing the output of an economy: 1) increasing the number of inputs that go into the productive process (e.g., by having workers employed until the age of sixty-seven, instead of retiring at sixty two) or 2) developing new ways to get more output from the same inputs” (p. 44). In other words, Abramovitz’s work indicated that it was the innovation and knowledge that transformed the economy, not traditional productivity increases.

Building on the work of Abramovitz, Solow (1956) found that economic growth is determined by the use of classical factors of production, especially capital and labor (Lerner 2009; Solow 1956). What Solow found was that “classical factors of production barely explained half the variance in national economic growth” (Stough, Desai, and Nijkamp 2011, p. 3).

Later in the 1980s, Romer (1988) and Lucas (1994) developed the endogenous growth theory, showing that innovation and technological progress have regional dimensions (Stough, Desai, and Nijkamp 2011), and may also be connected to entrepreneurship (Taylor 2008). Since knowledge and innovation are endogenous to the individual, entrepreneurship is a way in which there is a spillover of knowledge through commercialization (Thurik 2009). Stough, Desai, and Nijkamp (2011) state, “Only recently has the entrepreneur been envisioned as agent of regional economic growth” (p. 6). Through the entrepreneur as an individual actor, demonstration of innovation can take place and therefore build and spawn collective economic growth within regions. There has been a long tradition of examining the benefit of entrepreneurs as contributors to economic development, as in *The Theory of Economic Development* (Schumpeter 1934).

### **The Concept of Entrepreneurship**

Even with this extensive entrepreneurial literature, there are multiple ways of defining who is an entrepreneur and what is entrepreneurship. In addition, there are confounding definitions of how to measure and define entrepreneurship. McQuaid (2011) discusses the perplexing definitions of entrepreneurship. He finds that entrepreneurs as individuals are absent in the theory, and that there are five perspectives on entrepreneurship: 1) entrepreneurship as new business creation, 2) entrepreneurship as the role of the owner/manager of a small or medium-sized company, 3) entrepreneurship as an economic function to allocate resources and capitalize on opportunities, 4) entrepreneurship as a personal behavior of an individual in the quest of a prospect, and 5) characteristics of entrepreneurs. This chapter is based on McQuaid’s definition of entrepreneurship as new business creation, since a large amount of the literature focuses on business starts as entrepreneurship, and these provide a quantifiable metric.

The act of creating a new firm is risky for individuals because many times they leave behind the security and known career paths at existing companies. These factors make entrepreneurs unique. They do not only become engines of economic growth through their start-ups, but they facilitate knowledge growth by doing something that would not otherwise be accomplished (Audretsch, Bönte, and Keilbach 2008). Entrepreneurs are set apart from the common person by the act of taking risk in their ventures, and through this risk they enhance the economy by functioning to diffuse knowledge, innovation, and change (McQuaid 2011). “The reason for this positive assessment of entrepreneurial activity is the belief that entrepreneurship does not only create jobs and wealth for entrepreneurs but that there are substantial societal spill-over effects” (Rønning, Ljunggren, and Wiklund 2010, p. 195).

### **Spillover Effects**

The risk taken by entrepreneurs benefits not only themselves, but also society through knowledge spillovers. It is important to begin to understand these spillovers, because they are the vehicle through which entrepreneurial processes can take root. According to Harris (2011), spillovers were first identified by Marshall, Arrow, and Romer (and are thus known as MAR spillovers), and they stem from efforts to minimize transaction costs attributable to firms that collocate near other firms of similar nature, in an agglomeration effect. Harris (2011) shows that these spillovers are greatly related to industrial specialization.

Many articles have built on the Knowledge Spillover Theory of Entrepreneurship (Audretsch 1995), which shows that individuals start a new firm because they are not able to translate their new idea into a product within their current firm, and therefore they start their own firm; and the spillover of knowledge from the old firm to the new firm takes place. In addition, knowledge spillovers created outside the firm allow the entrepreneur to capitalize on opportunities (Acs et al. 2009). This theory has evolved to show that spillovers of interfirm and intrafirm knowledge are important agents in the regional economy. Audretsch and Lehmann (2005) demonstrate that the presence of young high-tech firms in close proximity to a university advances the knowledge capacity in the region.

Moreover, there is a significant amount of literature that links the entry of firms in the economy to positive regional growth within the United States (Acs and Armington 2004; Mueller 2007) and in international cities (Audretsch and Keilbach 2004; Baptista and Preto 2011; Dejardin 2011). It is these new companies, and the entrepreneurs that run them, that take on the risk. Lerner (2009) points out that large firms do not provide incentives to innovate, while new entities may choose riskier projects than established firms. Mueller (2007) examines the impact of entrepreneurship on growth and finds that existing firms do not fully take advantage of new knowledge and that innovative startups are more effective at capturing this knowledge.

Examining start-up rates in the United States and internationally demonstrates that they contribute to a more vibrant regional economy. In a path-breaking article, Acs and Armington (2004) study business birth rates in 394 local market areas and find that “higher rates of entrepreneurial activity were strongly associated with faster growth of local economies” (p. 924). Their results provide strong evidence of the importance of regional entrepreneurship in the United States. The solid positive association between entrepreneurship and economic growth points to the importance of looking at how entrepreneurship can help lagging regions, primarily in the Rust Belt, where manufacturing has been such a predominant industry sector. Moretti (2012) makes the argument that if the economic market were based solely around cost, then lagging regions would attract jobs because places like San Francisco would be hindered by their high costs. But he suggests that this is not the case, rather the opposite. It is a multitude of actors and agents within an ecosystem that helps commercialize knowledge into products (Fritsch 2011; Moretti 2012).

There have been a few academic articles written on entrepreneurship in the Great Lakes region. Using county-level data in Ohio, Acs, Plummer, and Sutter (2009) examine the role of new and incumbent firms in terms of translating “new knowledge (produced by research activities) into economic knowledge. This translation process has been referred to as the ‘knowledge filter’” (p. 994). They find that new firms are more able to pass through the knowledge filter, turning ideas into products. Additionally, Faberman (2002) analyzes Rust Belt metropolitan statistical areas (MSAs), looking at employment and wages from 1992 to 2000. He finds that high-growth MSAs tend to be comprised

of establishments that are larger and younger, while MSAs with low growth have establishments that are older and smaller. Faberman's results show a different entrepreneurial culture in the Rust Belt region.

## **BARRIERS TO ENTREPRENEURSHIP IN OLDER INDUSTRIAL REGIONS**

As we have shown, the economic literature reveals strong connections among technological progress, innovation, and growing economic wealth. The linkages are especially impressive when innovations include both scientific discoveries and incremental changes in the way manufacturers and service providers work. However, the literature is inconclusive on whether innovations have primarily been created by large or small companies. Anecdotal evidence suggests that the size of highly innovative companies may differ by industry. In some cases, the enabling processes—such as in biotechnology and the Internet—were developed at universities with federal funding, but it is the entrepreneur and his or her small company that saw the potential for commercialization.

### **The Regional Impact of Entrepreneurship**

A study conducted for the U.S. Small Business Administration (2005) finds that the most entrepreneurial regions in the nation experience greater growth in employment, wages, and productivity when compared with the least entrepreneurial regions. Moreover, that research noted that since innovation may be portable, by itself it is not sufficient for economic growth. Moreover entrepreneurship culture is place-based and can be influenced by local and regional policies. In other words, entrepreneurship enhances the regional economic impact of investments in innovations, and commercializing activities undertaken by local entrepreneurs are necessary to convert a region's innovation assets to long-term economic gain. This suggests that interventions aimed at increasing entrepreneurial activities, especially in regions where the birth rate of new start-ups is low, could contribute to increased economic growth.



The Regional Dashboard of Economic Indicators' framework, based on a study of 136 MSAs, suggests a positive relationship between entrepreneurship and growth in regional per-capita income, gross regional product, and productivity (Austrian, Yamoah, and Clouse 2009). This research compares the performance of Leading, Midwest, and northeast Ohio MSAs and monitors the economic performance of regions.<sup>1</sup> Austrian, Yamoah, and Clouse (2009) address the vitality of regions by including two entrepreneurship metrics (two of nine factors): 1) individual entrepreneurship, containing the percentage of self-employed among total employment and the share of business establishments with under 20 employees; and 2) business dynamics, encompassing the ratio of business openings and closings. The factor on individual entrepreneurship for the Midwest and northeast Ohio MSAs consistently ranks in the third and fourth quartiles from 2005 to 2007 (Austrian, Yamoah, and Clouse 2009). The business dynamics factor displays northeast Ohio MSAs solidly in the fourth quartile from 2005 to 2007, and the other Midwest MSAs scattered from the second quartile to the fourth. This study empirically illustrates that, in entrepreneurship metrics, localities in northeast Ohio and other Midwest regions lag behind the remainder of the cohort MSAs.

### **Regional Variations in Entrepreneurship**

Globally, the entrepreneurial environment varies among countries, and within the United States, it varies significantly across regions (Caree and Thurik 2010). Why has the Midwest Rust Belt region been slow in the creation of start-ups? The Midwest was known for its innovation and entrepreneurship in the first half of the twentieth century. As a result, many firms were established in the Midwest, and some grew to become among the country's largest corporations, primarily in manufacturing industries. These companies were able to mass-produce record numbers of goods by taking advantage of economies of scale, with very high levels of efficiency. The dominance of large manufacturing companies in the Midwest provided lifelong job opportunities to both low-skilled and high-skilled employees. As a result, economic and social norms did not encourage individuals to see entrepreneurship as a career option. Therefore, over the past several decades many in

the Midwest may have lost the spark, energy, and resources needed for innovation and entrepreneurship.

Several factors may have contributed to the relatively weak entrepreneurial environment in the Midwest during the second half of the twentieth century:

- the ability to get a job in large, established companies allowed individuals to have a comfortable standard of living;
- cultural and social norms did not favor postsecondary education since many manufacturing jobs available to high school graduates offered economic success;
- risk aversion discouraged potential entrepreneurs, employees, and the financial system from starting new companies (Booth 1986);
- culture in which one business failure was seen as an indication that an individual was not capable of starting a new firm, which prevented entrepreneurs from establishing additional companies;
- the lack of large numbers of start-ups and experienced entrepreneurs to encourage and assist future entrepreneurs;
- the difficulty of recruiting individuals, especially for leadership and professional positions, to work in start-ups when not many start-ups exist;
- the unwillingness of employees who work in large firms to leave their jobs for start-ups because of unfamiliarity with young companies and the higher risk of not being compensated;
- lack of a strong business support system for entrepreneurs, including banks, equity financing, and business services; and
- insufficient access to capital for start-ups in their different phases of development.

Access to capital is deemed by many to be one of the primary barriers to a successful start-up, and it merits more discussion. Generally, sources of financing for entrepreneurs include family and friends, owner equity, the Small Business Administration through its Small Business Innovation Research grant program, bank lending, angel investors, and venture capital. Traditionally, the wealth assembled and inherited in the

Midwest has been based on the success and profits of manufacturing companies. Many of the regions' affluent individuals have been less knowledgeable about the technologies being developed on the East and West Coasts, and thus, have been less inclined to become angel investors in these types of start-ups.

Angel investors are people who make investments from their own funds in private companies.<sup>2</sup> They not only provide an important source of early stage funding to start-ups, but they also provide value by having access to key stakeholders, offering strategic advice, providing operational assistance, and serving as confidants to entrepreneurs. Angels, individually or in groups, invest mainly in companies located in their region. Historically, Midwest regions had fewer angel investors than on the coasts, where angel groups grew organically as a result of a rich entrepreneurial ecosystem; in the Midwest, angel groups needed to be organized by either the public or the nonprofit sector. The relationship between angel investors and entrepreneurs is like "the chicken and the egg"; entrepreneurs need angel investors, but angel investors prefer to invest in companies that are located in a region with seasoned entrepreneurs, a relevant industrial base, strong universities, an entrepreneurship culture, and talent experienced with start-ups. Thus, in the Midwest region, the development of angel networks did not happen by market forces alone and required special policies or jump-starting.

Venture capital firms bring with them funds as well as knowledge and management expertise of how to grow start-up companies. However, being actively involved in the company's management or sitting on its board requires the venture capitalist to be in close proximity. As a result, an area has to achieve a critical mass in terms of deal volume before a venture capital firm will visit the region or locate a partner there. Even though some venture capital firms have opened offices in midwestern states and venture capital has started to flow to these regions, the industry has changed following the Great Recession. Venture capital is increasingly concentrated in a few industries and geographic regions, and it began funding companies in the latter phases on the continuum of seed money. In 2011, venture capital investments at the seed-funding stage in the United States declined about 48 percent over the prior year, and investments were concentrated in social media and software and less in biotechnology, genomics, and clean technology, par-

ticularly solar (Holstein 2012). Venture capital companies invest more in companies that do not require equipment or physical infrastructure so that the time to bring products to market is shorter. Consequently, with the early stage funding system in turmoil, the Midwest regions have suffered even more than the two coasts.

In addition, traditionally there has been imperfect information between banks and entrepreneurs when applying for credit, because entrepreneurs know the risk of their projects but banks do not (Stiglitz and Weiss 1981). This has been even more prevalent in the Midwest. The more such professionals become familiar with specific high-tech industries and early stage financing mechanisms, the better assistance and advice they can offer nascent entrepreneurs and financiers.

## **OLDER INDUSTRIAL REGIONS LAG BEHIND LEADING REGIONS IN ENTREPRENEURSHIP METRICS**

Older industrial regions are believed to lag behind leading regions in terms of entrepreneurship because of their legacy and historical costs. An investigation of entrepreneurship and innovation metrics reinforces this argument empirically.

Thompson and Walstad (2012) have created the State Entrepreneurship Index, which includes information on income of entrepreneurs, business formation, innovation, and the increase in the number of entrepreneurs. This research is a continuation of previous analysis conducted on the state of Nebraska (Thompson and Walstad 2012; Tran, Thompson, and Walstad 2011). To create the index, the authors combined five components: 1) percent growth in employer establishments, 2) percent growth in employer establishments per person, 3) establishment births per person, 4) patents per thousand persons, and 5) average income per nonfarm proprietor (Thompson and Walstad 2012).

Table 9.1 shows the State Entrepreneurship Index for states considered to be innovative coastal states and industrial states for the years 2008, 2010, and 2011. The overall index value reveals that the raw scores between groups of states differ. In 2011, Washington had the lowest index value among the innovative coastal states (1.38), which

**Table 9.1 State Entrepreneurship Index, 2008, 2010, and 2011**

	2008		2010		2011	
	Rank	Index value	Rank	Index value	Rank	Index value
Innovative coastal states						
California	4	1.81	6	1.77	3	2.39
Massachusetts	9	1.54	1	2.46	1	3.01
New Jersey	12	1.40	4	2.13	7	1.68
New York	1	2.04	3	2.24	4	2.23
Texas	34	0.82	11	1.61	8	1.61
Washington	3	1.88	2	2.38	13	1.38
Industrial states						
Illinois	11	1.42	12	1.60	9	1.59
Indiana	39	0.73	45	0.59	40	0.75
Michigan	33	0.93	42	0.62	49	0.10
Minnesota	23	1.14	24	1.12	5	1.79
Ohio	27	1.06	40	0.68	22	1.09
Pennsylvania	28	1.06	15	1.39	11	1.54
Wisconsin	38	0.73	34	0.90	18	1.19

SOURCE: Rankings produced by Thompson and Walstad (2012); Tran, Thompson, and Walstad (2011).

was higher than four of the Industrial States. In the cases of Indiana, Minnesota, Ohio, Pennsylvania, and Wisconsin, their 2011 index values were the best performance they have marked.

There is no doubt that the economic crisis hit hard in the industrial states, as seen in the entrepreneurial index data between 2008 and 2010. The Great Recession caused some of them to slide backwards; Michigan is an example. Ranking 33 in 2008, Michigan had an Entrepreneurial Index score of 0.93, but by 2011, it showed an index of 0.10 with a ranking of 49. In contrast, between 2010 and 2011, all of the industrial states, except for Michigan, improved their rankings. As shown later in the chapter, some of these states have intermediaries tasked with building regional entrepreneurial ecosystems, and they may have contributed to the observed rise in rankings. More than ever, continued efforts to increase economic development capacity through entrepreneurial facilitation are needed.

Evaluating all metrics in Table 9.1 shows that the industrial states lag behind innovative costal states for entrepreneurship and innovation indices. Illinois in 2008 and 2011 and Minnesota and Pennsylvania in 2011 are exceptions to the lagging midwestern trend. One might infer that this shows the importance of dedicated policies to overcome the barriers resulting from the legacy costs of older industrial regions. One way to accomplish this is through tax policy and tax incentives, and another is through the development of intermediaries in these regions to help facilitate entrepreneurship. The following two sections of the chapter will examine tax policies in states and best practice approaches that foster and enhance entrepreneurship in older industrial regions.

## **TAX POLICIES AFFECTING ENTREPRENEURSHIP**

In Chapter 11 of this book, David Elkins examines the overall role of taxation in entrepreneurial behavior. In regard to the Great Lakes region, Elkins concludes that policymakers must address the issue of high tax burdens and the low proportion of foreign born because these policy mechanisms spur entrepreneurship. In order to make the Great Lakes region more attractive to entrepreneurs, policymakers need to address the issue of high tax burdens (Elkins 2014). A study from the Goldwater Institute also shows that at a state level, a high percentage of taxes as a percentage of personal income lowers the rate of entrepreneurship (Slivinski 2012). This section presents a different aspect of taxation, as it looks specifically at state policies pertaining to investment tax credits targeted at enhancing investments in start-up companies.

States, like businesses, must remain competitive in luring investments so that entrepreneurs can obtain the early stage funding that is critical to facilitate business growth. Many states look to tax policy to help facilitate this investment since the environment for early stage lending has increasingly become risk averse.

Entrepreneurs looking for funding for their start-up companies face a different situation than existing small businesses; there is a heightened sense of risk on behalf of the investor, which in turns makes standard financing difficult for startups. As Keuschnigga and Nielsen (2002)

state, “Financing early stage businesses involves special problems and is fundamentally different from financing mature and well established companies. Because of the lack of collateral and the absence of any past track record, and due to their informational advantages, pioneering entrepreneurs often face severe difficulties in convincing banks to finance projects with potentially high returns but high risks as well” (pp. 175–176).

Investment tax credits are a policy instrument used to foster investment and risk capital within a state. An examination of early stage investment tax credits by states shows that 22 states offer tax incentives to investors (Table 9.2).<sup>3</sup> Many states established these policies in recent years; five states initiated these tax credits in 2010, with three more in 2011. The earliest enactment was by Maine in 1988. Tax credit policies vary by state, but most are not for the full investment amount. Generally, states reimburse 25–50 percent of the investment, and this amount may be subject to a cap.

## **THE ROLE NONPROFIT INTERMEDIARIES PLAY IN ACCELERATING ENTREPRENEURSHIP**

The shift from investment in physical capital to human and knowledge capital was not as seamless as the new growth theory implies. Despite investments in scientific research, many regions in the United States fell behind in economic growth, and not all of the newly created knowledge resulted in commercialized innovations. Many barriers prevent individuals from bringing their products to market. In order to overcome these hurdles, lagging regions need mechanisms and infrastructure to link ideas, knowledge, and creativity.

Four elements have contributed to the early lead in technology-based entrepreneurial activity on the East and West Coasts: 1) access to cutting-edge research, 2) access to early stage funding and venture capital, 3) a culture that encourages experimentation and risk taking versus looking down at failure, and 4) a national regulatory structure that enables firms to start up and enter new markets while making it possible for less-productive firms to exit (Council on Competitiveness 2007). Entrepreneurship is an activity that feeds on itself. In some parts

**Table 9.2 Early Stage Investment Tax Credits, by State**

	Name of tax credit	Credit (%)	Year established
Arizona	Arizona Angel Investor's Tax Credit	30–35	2007
Arkansas	Arkansas Equity Investment Tax Credit Incentive Program	33.3	2007
Connecticut	Connecticut Angel Investor Tax Credit	25	2012
Georgia	Georgia Angel Investor Tax Credit	35	2010
Illinois	The Angel Investment Tax Credit	25	2010
Indiana	Venture Capital Investment Tax Credit	20	2010
Iowa	Community-Based Seed Capital Funds	20	2011
Kansas	Angel Investor Tax Credit	50	2005
Louisiana	Angel Investor Tax Credit	35	2011
Maine	Maine Seed Capital Tax Credit Program	50–60	1988
Maryland	Biotechnology Investment Tax Credit	50	2005
Michigan	Michigan Small Business Investment Tax Credit	25	2003
Minnesota	Angel Tax Credit	25	2010
Nebraska	Nebraska Angel Investment Tax Credit Act	35–40	2011
New Mexico	Angel Investment Tax Credit	25	2007
North Carolina	Qualified Business Tax Credit Program	25	2002
North Dakota	Angel Fund Investment Credit	45	2003
Ohio	Technology Investment Tax Credit	25–30	1996
Rhode Island	Rhode Island Innovation Tax Credit	50	2006
Virginia	Virginia Qualified Equity and Subordinated Debt Investment Credit	50	2003
West Virginia	High Growth Business Investment Tax Credit	50	2004
Wisconsin	Wisconsin Angel Investor Tax Credit	25	2002

SOURCE: Individual state Web sites (accessed September 2012).

of the country, entrepreneurship developed organically, which may provide support to the view that capitalistic mechanisms offer the greatest promise of prosperity.

However, because of the economic history of other regions, such as those in the Midwest, and the barriers to entrepreneurship that have resulted from that legacy, these locations arguably need public tax dollars and philanthropic funding to “jump-start” the entrepreneurial ecosystem. Lerner (2002) highlights two arguments on why public investments in start-up companies are required: the certification hypothesis and the presence of R&D spillovers. Innovations and entrepreneur-



ship create knowledge spillovers that are critical to regional economic growth and benefit the public at large. Start-ups bring new products and services to the market and often create industries that result in a social benefit beyond the returns to the individual firms. These social advantages, which many times happen down the road, justify public investments in innovation and entrepreneurship: the social benefits are not accounted for in the market price of the new company and are often greater than the private return of the individual firm. The development of a vibrant entrepreneurial ecosystem requires a long-term horizon.

In recent years, several states and regions have implemented initiatives designed to accelerate the first three of the four elements listed above. These approaches have an important role in cultivating a network to stimulate entrepreneurship that has not developed naturally. The objectives of these initiatives, which were established through nonprofit organizations, are to promote and support innovative start-up companies by providing pre-seed funding, developing networks of angel investors, and connecting new companies with follow-on funding through either private equity and/or venture capital firms. Many of these programs also provide technical assistance and support by helping entrepreneurs develop business plans, connect to mentors, and find the talent to manage and grow their company.

Table 9.3 highlights three nonprofit entrepreneurial-intermediary organizations that promise to help fill the gap the market left behind. They are JumpStart Inc., located in Cleveland, Ohio; Innovation Works in Pittsburgh, Pennsylvania; and Ann Arbor SPARK, in Ann Arbor, Michigan.

JumpStart Inc. is tasked with increasing the economic impact and sustainability of northeast Ohio's diverse entrepreneurial ecosystem (JumpStart 2012). JumpStart delivers vital, focused resources to entrepreneurs and accelerates the growth of early stage businesses and ideas into venture-ready companies with the hope of transforming northeast Ohio into a nationally recognized area of entrepreneurship and innovation.

JumpStart was modeled after Innovation Works. The mission of Innovation Works is to increase growth in the technology economy of southwestern Pennsylvania through direct investments and business expertise, and its goals are to help hundreds of entrepreneurs, researchers, and small manufacturers create new markets through ideas and

innovations (Innovation Works 2012a). Innovation Works has a range of partners in government, business, investment, research, law, and academia.

Operating in another Rust Belt city, Ann Arbor SPARK is an intermediary in the greater Ann Arbor, Michigan, region aiming to advance innovation-based economic development. Ann Arbor SPARK has several goals: to be known as a “hot spot” for high-value, knowledge-intensive, and diverse talent; to build a unified region working together to achieve common economic objectives, without duplication of effort, utilizing the Open Source Economic Development concept; to be on a “short list” for site selectors and other influencers as a sought-after location; to be known as an innovation hub with access to funding and business creation/development support; to have national and international brand recognition; and to be recognized as one of the nation’s best regions for innovation-based business retention and growth through a proactive business development effort (Ann Arbor SPARK 2012a).

## CONCLUSION

As suggested, the transformation to knowledge-based economies has not occurred uniformly across the country. The academic literature offers plenty of evidence that innovation and entrepreneurship are strongly correlated to economic growth. Moreover, regions with high levels of research and development, patents, start-ups, and venture capital develop faster than other areas. The missing link for many regions is the component of entrepreneurship; it is the entrepreneur who brings fresh ideas forward, commercializes these innovations, and brings them to market.

Economic history and industry specialization differ among regions within the United States. In the 1970s, 1980s, and 1990s entrepreneurship developed organically on the East and West Coasts, while it stagnated in the Midwest. During the initial development of high-tech industries on the two coasts—especially of semiconductor, information technology, and bioscience companies—Midwest regions were still focusing on large, hierarchical, traditional manufacturing industries, and neither paying attention to the barriers to entrepreneurship nor

**Table 9.3 Nonprofit Intermediaries: JumpStart, Innovation Works, and Ann Arbor SPARK**

	JumpStart, Inc. Cleveland, Ohio	Innovation Works (IW) Pittsburgh, Pennsylvania	Ann Arbor SPARK Ann Arbor, Michigan
Mission and goals	Increase the economic impact and sustainability of northeast Ohio's entrepreneurial ecosystem.	Increase growth in the technology economy of southwestern Pennsylvania through direct investments and business expertise.	Advance innovation-based economic development in the greater Ann Arbor region.
Why established?	Established in 2003 by the region's civic, community, and philanthropic leaders to address the declining economy, employment losses, and lack of entrepreneurial growth.	Established in 2000 as part of the Benjamin Franklin Technology Partners to take Pittsburgh to where it was a century ago, when entrepreneurs came to start companies, find investors, and produce goods sold worldwide.	Created in 2005 by community leaders as a public-private partnership (business, government, and education) to meet the needs of innovation-based companies at every stage of development.
Services provided: entrepreneurial, business, and funding assistance	<ul style="list-style-type: none"> <li>• Providing one-on-one intensive assistance to entrepreneurs leading high-potential companies by experienced and successful entrepreneurs.</li> <li>• Establishing and achieving milestones of rapid growth.</li> <li>• Investing a minimum of \$250,000 in companies with breakthrough and protectable technologies in high-opportunity markets. The portfolio companies are located across the region, but must have</li> </ul>	<ul style="list-style-type: none"> <li>• Investing directly (through IW Seed Fund) in early stage technology companies focused on high-opportunity markets.</li> <li>• Assisting entrepreneurs in developing a business plan, researching market opportunities, and attracting investment capital.</li> <li>• Launching (in 2007) a business accelerator specializing in rapid product development and commercialization—AlphaLab. Offering a 20-week program to</li> </ul>	<ul style="list-style-type: none"> <li>• Providing business accelerator services that enable companies to move quickly through the initial stages of business (idea, business formation, proof of concept, marketability, and commercialization).</li> <li>• Providing SPARK Business Accelerator engagement to qualifying start-ups. Start-ups receive up to \$50,000 of consulting and business development services.</li> </ul>

- less than \$5 million in revenues.
  - Operating inclusion-specific programs for minority, women, and inner-city-based entrepreneurs offering intensive hands-on assistance, access to capital, and connection to first clients.
  - Helping accelerate the development of alternative energy efficiency technologies in universities, national labs, and companies. Also provides investments and business assistance to start and grow energy-related companies.
  - Providing manufacturing companies with up to \$50,000 to develop new technologies.
  - Operating the SPARK Regional Incubator Network, which includes two business incubators and one wet lab. Located in three different cities, the incubators offer physical space, business services, and business development guidance.
  - Administering several state-funded programs for start-up companies in Washtenaw County. Grants are available to companies from \$1,000 to \$10,000. Microloans are available for product development, commercialization, and hiring. Equity investments of up to \$250,000 are available through the Michigan Pre-Seed Capital Fund to fund product commercialization and growing the business.
- Services provided: talent attraction
- Matching entrepreneurial job seekers with opportunities in start-up companies (advertising for opportunities, screening applicants, and introducing candidates to the start-ups).
  - Training entrepreneurs on how to retain talent.
  - Assisting entrepreneurs to find the right talent.
  - Placing undergraduate engineering and MBA students as interns in early stage technology companies and manufacturers. More than half of the companies hired or planned to hire their interns.
  - Connecting start-ups seeking managerial and technical talent with job seekers.
  - SPARK created a job portal for high-value, knowledge-based positions, where job seekers and employers can post without charge.

**Table 9.3 (continued)**

	JumpStart, Inc. Cleveland, Ohio	Innovation Works (IW) Pittsburgh, Pennsylvania	Ann Arbor SPARK Ann Arbor, Michigan
	<ul style="list-style-type: none"> <li>• Guiding entrepreneurs in the development and management of their boards</li> </ul>		<ul style="list-style-type: none"> <li>• SPARK issues a weekly Talent Search newsletter, featuring new postings and career events.</li> </ul>
Services provided: other	<p>Mentoring</p> <ul style="list-style-type: none"> <li>• Program established in 2012 was created in partnership with MIT’s Venture Mentoring Service.</li> <li>• Mentors include founders and presidents of Fortune 500 companies, leaders of national high-tech companies, and venture capitalists.</li> </ul> <p>Marketing</p> <ul style="list-style-type: none"> <li>• Generating publicity and creating marketing materials for start-up companies.</li> <li>• Writing press releases and developing relations with media.</li> </ul> <p>IdeaCrossing</p> <ul style="list-style-type: none"> <li>• Developed and maintained by Jumpstart, the Web-based Idea Crossing connects and matches</li> </ul>	<p>University-related programs</p> <ul style="list-style-type: none"> <li>• Working with local universities to cultivate research ideas and help speed commercialization. Providing \$25,000 grants for technology validation, market research, prototype development, and evaluation of intellectual property.</li> <li>• Accelerating commercialization of technologies developed by local universities and small businesses through the i6 agile innovation system. The program, funded by a federal grant, was developed in 2010 by IW and Carnegie Mellon University. The system includes workshops, mentors, funding, and space.</li> </ul>	<p>Entrepreneurial education and training</p> <ul style="list-style-type: none"> <li>• Organizing a 2-day Entrepreneur Boot Camp, offering advice about entrepreneurs’ business model, management team, and market strategy.</li> <li>• Offering a full-day of training on how to start a business.</li> <li>• Providing one-on-one sessions with entrepreneurs.</li> <li>• Organizing monthly networking programs for entrepreneurs, investors, and others.</li> <li>• Offering a 9-session Business Law and Order Legal series.</li> <li>• Offering 10 monthly marketing sessions.</li> </ul>

entrepreneurs, investors, mentors,  
and providers of business services.

#### Network Resources

- Connecting entrepreneurs to the Entrepreneurial Network, which includes incubators and accelerators, seed funds and pre-seed funds, venture capital and angel funds, educators, advisors, and other service providers.

Types of industries  
served

- Health care
- Cleantech (advanced materials and advanced energy)
- Information technology
- Electronics
- Business and consumer products
- Advanced electronics
- Consumer electronics
- Enterprise software
- Network infrastructure
- Information technology
- Internet
- Robotics
- Sensors
- Advanced energy
- Biotech and pharmaceuticals
- Health information
- Life sciences
- Materials
- Medical devices
- Medical diagnosis
- Information technology
- Cleantech (advanced materials and advanced energy)
- Life sciences

**Table 9.3 (continued)**

	JumpStart, Inc. Cleveland, Ohio	Innovation Works (IW) Pittsburgh, Pennsylvania	Ann Arbor SPARK Ann Arbor, Michigan
Impact	<p>From inception in July 2004 through June 2012, JumpStart made 98 investments totaling over \$26 million in 65 companies. These companies created and retained 1,305 direct jobs, held 144 patents with additional 344 patents pending, and raised \$495 million in follow-up funding. The 2011 economic impacts of the companies assisted by JumpStart are: value of all goods and services produced in the region rose by \$220.5 million, value added rose by \$143.6 million, household income increased by \$89.4 million, and 12,640 jobs were created. Tax revenues increased by \$29.8 million, of which \$19.5 million was added to the federal government and \$10.3 million to state and local governments. JumpStart received awards from the State Science and Technology Institute, the International Economic Development Council, and the</p>	<p>From its inception, Innovation Works invested over \$50 million in 150 companies, which raised more than \$1.2 billion in follow-up financing. In 2011, IW invested \$4.9 million in companies that created and retained 454 high-skilled jobs. IW assisted its portfolio companies to attract \$218 million in follow-on investment from other sources. Many of the region's largest technology companies count IW among their earlier funders. AlphaLab assisted in the launching of 45 companies and was selected among the top 15 accelerators in the United States.</p>	<p>By the end of the fifth year managing the Michigan Pre-Seed Capital Fund, Ann Arbor SPARK has invested \$15 million in technology startups that are just prior to the commercialization phase. SPARK incubator graduated several companies that moved to other locations within the region and hired new employees. Between 2006 and 2011, companies assisted by SPARK created nearly 11,000 jobs and received \$1.3 billion in new follow-up investments. Ann Arbor was in the headlines of major media outlets. It received top rankings in job growth, education attainment, turnaround city within the Midwest, and among the best cities to find a job.</p>

Economic Development  
Administration of the U.S.  
Department of Commerce.  
JumpStart and its work were fea-  
tured in many national media out-  
lets, including *Parade Magazine*,  
the *Chronicle of Philanthropy*,  
*VentureBeat*, *Fast Company*, and the  
*New York Times*.

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SOURCE: Ann Arbor SPARK (2012); Austrian and Cloose (2012); Encyclopedia of Cleveland History (2012); Innovation Works (2012b).



encouraging risk taking in their localities. Due to their history, regional economies in the Midwest ranked lower on measures of innovation and entrepreneurship and experienced lower rates of growth. As a result, many bright and talented people worked for established companies or moved to the East or West Coasts, where innovation and starting a company were encouraged (Cortright 2005).

Over time, with the understanding that entrepreneurship is a critical element of economic growth, public policy has shifted from only investing in physical capital to also supporting risk capital, mentoring, and other support services that entrepreneurs need to foster job growth. In the 1990s and 2000s, more regional decision makers began to address the barriers to entrepreneurship caused by industrial history and the culture that discouraged risk taking and starting new businesses. Since the economies of the Midwest regions were lagging, state and local public policy intervened in the market in order to grow the entrepreneurship ecosystem. Many states, including those in the Midwest, instituted tax credits for early stage investments in order to create or increase the flow of available capital to invest in new companies.

In addition, many regions supported the formation of nonprofit intermediaries to promote and support innovative start-ups, providing them with access to capital as well as technical assistance and mentoring to help them accelerate the development of nascent ideas into successful companies. JumpStart and Innovation Works are both active seed-stage investors in start-up companies located in their respective regions. They offer similar programs, including technical assistance, mentoring, and talent attraction. JumpStart has a unique focus on inclusion that promotes funding and other services to women- and minority-owned businesses. Innovation Works has an accelerator that specializes in rapid product development and commercialization, working with a select group of individuals to launch the next generation of companies. Ann Arbor SPARK, also offers business accelerator services, but does not have its own seed fund. SPARK's funding activities are conducted as an administrator of several state-funded programs for start-up companies.

All three intermediaries affect their respective regions through the companies they mentor and the companies in which they invest, helping to overcome the legacy costs and economic history of their lagging industrial regions. The impacts include establishing new compa-

nies, creating and retaining jobs, raising follow-on funding from other sources, and generating revenues. Moreover, these organizations are changing their local entrepreneurial ecosystems by networking and referring, promoting new ideas and start-ups, increasing the availability of pre-seed capital, recruiting talent and creating a pool of individuals who can lead and work in start-up companies, and generally advocating for entrepreneurs. Direct impact is already observed, but future research will demonstrate whether these intermediaries have had lasting effect on their regions' economic growth.

### Notes

1. The Leading MSAs include Baltimore-Towson, Maryland; Bridgeport-Stamford-Norwalk, Connecticut; Hartford-West Hartford-East Hartford, Connecticut; and Providence-New Bedford-Fall River, Rhode Island-Massachusetts. The selection of leading MSAs was based on several criteria, including minimum level of employment, rank in the top quartile in short-term and long-term growth, and improvement in ranking over time. The Midwest MSAs include Cincinnati-Middletown, Ohio-Kentucky-Indiana; Columbus, Ohio; Indianapolis-Carmel, Indiana; Kansas City, Missouri-Kansas; Milwaukee-Waukesha-West Allis, Wisconsin; Minneapolis-St. Paul-Bloomington, Minnesota-Wisconsin; Pittsburgh, Pennsylvania; and St. Louis, Missouri-Illinois. The northeast Ohio MSAs include Akron, Ohio; Canton-Massillon, Ohio; Cleveland-Elyria-Mentor, Ohio; and Youngstown-Warren-Boardman, Ohio-Pennsylvania.
2. People become angel investors for different reasons, including financial returns, supporting their community, creating and growing companies, making use of their expertise, and even for personal enjoyment.
3. Early stage investment tax credits are tax credits provided by state governments to private entities or investment firms for investing in early stage companies, early stage investment funds, angel investment funds, venture capital funds, or other investments toward businesses in the initial level. Each state has its own legal criteria on what it considers an "early stage investment" and each state has a set a cap on the dollar amount it will enumerate toward these investments.

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**The Road through  
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