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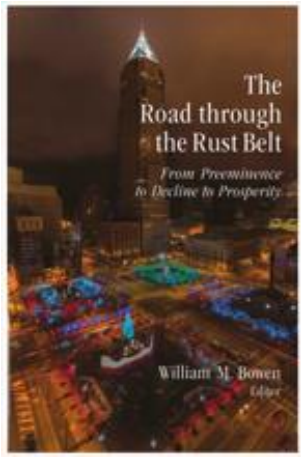
Lost a Step: The Great Lakes Region and Entrepreneurship



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The Road through the Rust Belt

From Preeminence to Decline to Prosperity

William M. Bowen
Editor

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11
Lost a Step

The Great Lakes Region and Entrepreneurship

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The Great Lakes region is often synonymous with the Rust Belt. Those tracking the vitality of cities such as Buffalo, Chicago, Cleveland, Detroit, and Milwaukee see economies and populations that are now just fractions of what they once were. But is this really the case? During the Second Industrial Revolution, the Great Lakes region was the focus of intense entrepreneurial activity. Today, while it has lost some of that earlier dynamism, entrepreneurs remain a part of the region's economy. With aggresive and thoughtful policy actions, the region may reclaim some of its former stature as a region attractive to entrepreneurs.

"Lost a step" is an adage directed at the older football player who misses a well-thrown pass, the tennis player who fails to return a serve with the ball just short of her racquet, the athlete who just doesn't appear to be the star he or she once was. A *New York Times Magazine* article ruminated on the nature of the aging athlete, sports, and the New York Yankees shortstop Derek Jeter. The article concluded with a quote from the Yankees general manager, Brian Cashman, "'He's not the same player he used to be,' Cashman said. 'But I think he's above average at that position, despite his age'" (Sokolove 2011).

"Lost a step" is apropos to the issue of entrepreneurialism in the Great Lakes region, which once produced some of the major industries and fortunes that fueled the Gilded Age. Today that entrepreneurial energy and dynamism appear to have drifted to other regions of the United States and the world. For instance, in the high-technology field the most lionized entrepreneurial activities are associated with the West

Coast and not with the industrial Midwest. Today, the entrepreneurial image of the Great Lakes region, to the extent it has one, appears worn and tattered. Is it an empirical reality that the Great Lakes region lacks an entrepreneurial dynamic?

This is the central research question posed by this chapter, which will first explore the nature of entrepreneurship and what it means for an economy. Next, it will present descriptive evidence tackling the issue of whether the Great Lakes region has lost its entrepreneurial vigor. Finally, statistical tests are performed to examine whether, controlling for critical variables, the Great Lakes region has lost a step. The short answer to this final question is that it largely depends on how entrepreneurialism is measured. In one sense, the Great Lakes region has, indeed, lost a step. However, like many seasoned athletes, it remains in the game and competitive.

ENTREPRENEURS AND THE ECONOMY

Who is an entrepreneur and what does the entrepreneur do? Joseph Schumpeter (1939) defined the entrepreneur as an individual who carries out innovations. He suggested that an entrepreneur is neither a profession nor a social class (p. 104; 1949, p. 78). Schumpeter argued that "entrepreneurs come from all classes which at the time of their emergence happen to exist" (p. 104). He also contended that entrepreneurs do not assume financial risk; the entrepreneur risks reputation but "loses other people's money" (p. 104). By contrast, Knight (1921) suggested that the assumption of risk and uncertainty was one of the defining features of the entrepreneur. In fact, Schumpeter's notion that entrepreneurs do not assume risk has been one of the most frequently challenged of his contentions (Hébert and Link 1982, pp. 82–84).

Multiple streams of scholarship have developed in this area, typically contrasting entrepreneurs with nonentrepreneurs (Lundstrom and Stevenson 2005). While at least one scholar suggests that entrepreneurs share distinct personality pathology (Gartner 2005), another stream of literature submits that "special types of individuals create entrepreneurship" (Thornton 1999, p. 22). Scholars have found that entrepreneurs are motivated by a desire to achieve (McCelland 1961)

and by other nonpecuniary benefits of entrepreneurial activity (Evans and Leighton 1989; Hamilton 2000) and that they have higher tolerances for risk (Brockhaus 1982; Lazear 2004, 2005; Van Praag and Cramer 2001). In general, entrepreneurs start their ventures at the point at which they have reached maturity in both their careers and their lives. Entrepreneurs with professional and educational training opt for such training that reflects a managerial generalist approach (Lazear 2004, 2005). Access to capital is important for entrepreneurs, and research has shown that individuals with greater access to funding are more likely to be not only entrepreneurs but successful ones (Holtz-Eakin, Joulfaian, and Rosen 1994). Some work suggests that inheritances are an important source of entrepreneurial capital (Branchflower and Oswald 1998), while other research implies that inherited wealth has a limited effect on entrepreneurship (Hurst and Lusardi 2004). Additional exploration indicates that, although parental wealth has a positive impact on entrepreneurial self-employment, it is the parent's self-employment, particularly successful parental self-employment, that may be the defining feature associated with the adult child's trend toward entrepreneurial self-employment (Dunn and Holtz-Eakin 2000).

What do entrepreneurs do? The Schumpeterian notion is that the entrepreneur is an innovator who brings ideas to markets. However, after a lengthy survey of economic literature, economic historians Robert F. Hébert and Albert N. Link suggest in their book *The Entrepreneur* (1982) that the entrepreneur varies by the theoretical context into which that individual is thrust (Hébert and Link 1982, pp. 107–110). At its basic level, the entrepreneur is engaged in both the assumption of risk and innovation. Stated more simply, Shackle, in his introduction to Hébert and Link's book, notes, "the entrepreneur is a man whose characteristic act is a gamble on his imagination" (Shackle 1982, p. viii). Acs and Armington (2006) suggest that entrepreneurship is "what happens at the intersection of history and new technology" (p. 7). Baumol (2010) underscores this idea by noting that there are innovators and replicators. He defines the innovative entrepreneur as one fitting the Schumpeterian model, whose job is "to locate new ideas and to put them into effect" (p. 18). The role of the entrepreneur in the economic system is that of a destabilizing catalyst for economic growth, who "sparks" the economic system and thereby generates economic expansion. The entrepreneur thus acts to transform knowl-

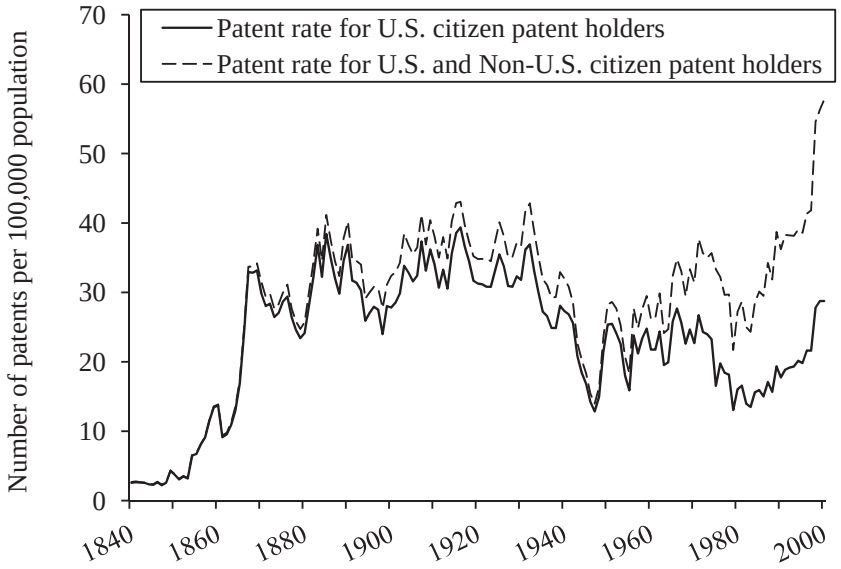
edge into "economic knowledge that otherwise would have remained uncommercialized" (Audretsch and Keilbach 2004, p. 608).

ENTREPRENEURSHIP AND THE GREAT LAKES REGION

During the Second Industrial Revolution roughly between the 1840s and the early part of the twentieth century, the Great Lakes region was filled with entrepreneurial activity. Landes (1969) characterizes this period as having been shaped by "electric power and motors; organic chemistry and synthetics, the internal-combustion engine and automotive devices, precision manufacture and assembly-line production—a cluster of innovations that have earned the name of the Second Industrial Revolution" (p. 235). Schmookler (1966) argues that invention and innovation are not the mere happenstance of noneconomic actors but that they are central to economic enterprise. Further supporting Schumpeter's (1939) argument, Shane's (1996) empirical analysis prompts him to observe that "rates of technological change drive rates of entrepreneurship" (p. 773). Figure 11.1 illustrates the rapid expansion of technological innovation, as shown by the number of U.S. patents per 100,000 population for each year between 1840 and 20000.[1] Around 1850, coinciding with the start of the Second Industrial Revolution, there was a sharp increase in the number of patents, and this level of innovative activity remained high for nearly 100 years. While drawing firm conclusions about economic activity from patent data is problematic (Schmookler 1966; Worgman and Nunn 2002), the statistics are suggestive of the economic expansion taking place in the United States. It just so happens that this surge in invention and innovation coincided with a rapid expansion of the population of the Great Lakes region.[2]

Figure 11.2 illustrates the scope of the Great Lakes regional population expansion. The solid line indicates the decade-to-decade percentage change of the total U.S. population, and the dashed line depicts the decade-to-decade percentage change in the population for the counties containing five major Great Lakes cities.[3] For many decades the decennial growth of these counties far exceeded the growth of the United States. According to U.S. Census figures, these five counties had fewer than 250,000 persons combined in 1840, but by 1930 they had well over

Figure 11.1 Patent Rate, 1840–2000

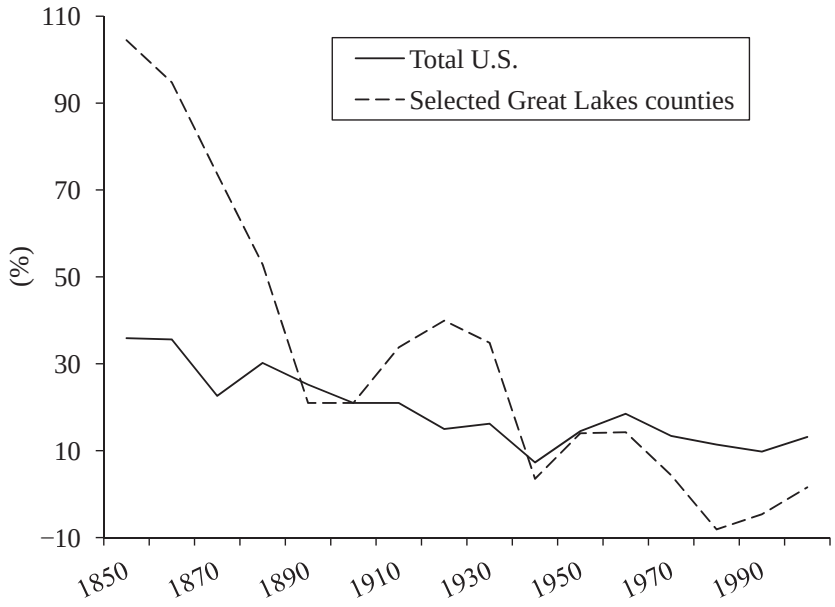


SOURCE: Wright (2006).

8 million, accounting for over 7 percent of the total U.S. population. It is worth noting that prior to 1860, no Great Lakes city was ranked in the nation's top 10 by population. However, beginning in 1860 and for decades thereafter, Great Lakes cities would emerge as some of the largest in the country (Gibson 1998). McClelland (1961) finds that the surge in his measure of "achievement motivation" coincided with the jump in patent issuances. It seems plausible that the growth in population, invention and innovation, and the desire to achieve found fertile entrepreneurial ground in the Great Lakes region. Certainly, between 1840 and the start of the Great Depression, cities in the area thrived, as did the entrepreneurs who called these places home. Indeed, some scholars have compared the dynamism of the Great Lakes region to that which occurred during California's high technology boom (Klepper 2009; Lamoreaux, Levenstein, and Sokoloff 2006).

In recent years, this area has been viewed as home to old manufacturing centers enduring steep declines in production and employment

Figure 11.2 Percentage Change in Population for the United States and Selected Great Lakes Counties, 1850–2000



SOURCE: U.S. Census Bureau (1996).

(Hill and Negrey 1987). As depicted in Figure 11.2, the decennial percentage growth for the region either kept pace with or exceeded that of the nation for nearly a century. However, since 1960 the trend shows a region lagging substantially behind the rest of the nation in population growth, a phenomenon that has led some to describe the area as decaying and abandoned. For instance, in 1985 the Federal Reserve Bank of Chicago (FRBC) (1985) suggested that too many observers think of the Great Lakes states as the "sick old man" of the United States (p. v). Still, the FRBC underscored that this was not an entirely accurate image. Later, for instance, Negrey and Zickel (1994) noted that the region is home to metropolitan areas that are both "stable transition centers" and "innovation centers" (p. 35). More recently, Acs and Armington (2006) have commented, "The South and the West have the strongest new firm start-up rates, while the Northeast and the Midwest, which were formerly characterized by large-scale manufacturing, generally continue

to lag behind the rest of the country" (p. 53). Clearly, the region trails in many areas. Its population is growing more slowly than is that of much of the United States. Many of its central cities have lost significant population due to out-migration to either nearby suburban areas or other parts of the country. The nature of this long-term decline raises the chief question for this chapter: Relative to other regions of the United States, is entrepreneurship lagging in the Great Lakes region?

DATA AND METHODS

Proximity to the Great Lakes directly affects the region and its population. From commerce to leisure, this connection is fundamental. For the purposes of this chapter, the Great Lakes region is inclusive of both urbanized and rural areas and is defined here as any county that is contiguous to one of the Great Lakes and any county bordering that county. For example, Wayne County, Michigan, adjoins Lake Erie. Wayne County is defined as part of the Great Lakes region, along with its two neighboring counties, Oakland County and Washtenaw County. In addition, the National Oceanic and Atmospheric Administration provides a list of counties that are relevant to this list.[4] According to the definition used in this chapter, the Great Lakes region consists of 178 counties across 8 states. For this analysis, however, because of missing or otherwise unreported data, only 146 of these 178 counties are included in this designation.[5]

This regional definition is unambiguously narrow. It is used to identify the core of the region and to exclude those areas that are geographically peripheral. This approach avoids some of the pitfalls of defining regions by the states that they contain. For instance, if all of New York State were included in a definition of the Great Lakes region, the region would include New York City and Buffalo.

Three measurements of entrepreneurial activity will be used: 1) business establishments per 1,000 labor force (business density); 2) percent self-employed individuals (percent self-employed; Branchflower and Oswald [1998]); and 3) business establishment "births" per 1,000 labor force (business birth rate; Acs and Armington [2004, 2006]). Each method covers some feature of the conceptual notion of entrepreneur-

ship. For instance, business density provides a generalized notion of commercial activity and, perhaps, reflects the idea that members of the business community perceive opportunity. The number of business establishment births provides a direct indicator of entrepreneurial activity. The ratio of business births to business deaths is not included in this analysis because the key issue is an examination of entrepreneurial business starts and not entrepreneurial success. Stated another way, this chapter explores whether entrepreneurialism occurs and not whether it is successful. Finally, percent self-employed provides a measure of the degree to which individuals alone are engaged in entrepreneurial activity. The data for business density and business establishment births are derived from the U.S. Census Bureau's County Business Patterns, and the data for self-employed individuals are derived from the U.S. Social Security Administration (2011).

Table 11.1 provides the means and standard deviations for each of the three indicators of entrepreneurship. Several points are established in the table. First, the regions vary in entrepreneurial activity. For instance, the Great Lakes region's business density has a mean of 4.71 (standard deviation [sd] = 1.09), which means 4.71 business establishments per 1,000 members of the labor force. This places the business density of the counties of the Great Lakes region above that of the counties in the South but below that of every other region. Second, the variation among the regions for each of these variables is statistically significant.[6] Third, a pattern emerges that places the counties of the Great Lakes region at or near the bottom among these measures and the West's counties at either the top or near the top. Finally, the Great Lakes' counties, for every measure, fall below the average for all the counties. For example, the Great Lakes' counties mean for percent self-employed is 10.5 (sd = 0.04); however the total for all counties, including the Great Lakes' counties, is 12.4 (sd = 0.05). This snapshot of the nature of the Great Lakes region depicts an area that, while still engaged in entrepreneurial activity, lags behind the nation as a whole and most all other regions. Despite these apparent regional differences, it is important to determine, once controlling for variables linked to entrepreneurship, whether the Great Lakes region lacks the same degree of entrepreneurship as do other regions in the United States.

Table 11.1 County Business Density, Percent Self-Employed, and Business Birth Rate by Region, 2008

Region	Business density	% self-employed	Business birth rate
Great Lakes[a]	4.71	10.49	3.99
(*n* = 146)	(1.09)	(0.04)	(1.19)
Northeast[b]	5.03	11.32	4.14
(*n* = 183)	(1.25)	(0.04)	(1.28)
Midwest[c]	4.80	13.06	3.66
(*n* = 509)	(1.07)	(0.06)	(1.06)
South[d]	4.60	12.41	4.15
(*n* = 884)	(1.37)	(0.04)	(1.40)
West[e]	5.71	13.03	5.74
(n = 249)	(1.92)	(0.05)	(2.31)
Total	4.83	12.41	4.21
(*N* = 1,971)	(1.40)	(0.05)	(1.57)

NOTE: Means are reported, with standard deviations in parentheses.

[a] Includes all counties bordering the Great Lakes and their contiguous counties across eight states: Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.

[b] Includes all counties in Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, Rhode Island, and Vermont. New York and Pennsylvania counties not defined as Great Lakes counties are defined as Northeast region counties.

[c] Includes all counties in Iowa, Kansas, Missouri, North Dakota, Nebraska, and South Dakota. Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin counties not defined as Great Lakes counties are defined as Midwest region counties.

[d] Includes all counties in the states of Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

[e] Includes all counties in the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming.

SOURCE: U.S. Census Bureau (2008); U.S. Social Security Administration (2011).

Analysis of Entrepreneurship

Scholars have found a number of variables associated with entrepreneurship. Age is one of these factors. The notion behind entrepreneur's age is that over time individuals develop knowledge (both formal and experiential), reputations within their fields, and a degree of communication acumen. At a point in life, a person may view a propitious moment to leverage these traits and go into an entrepreneurial

venture. By contrast, as individuals become older they are less willing to bear risk: "[A]ge has a curvilinear relationship with the exploitation of opportunity," as noted by Shane (2003, p. 95). For the purposes of this analysis, it is anticipated that there will be a positive relationship between the median age of a county's population and entrepreneurial activity.

Secondly, most empirical research on entrepreneurs finds that they have relatively extensive formal education. While formal schooling is not required to engage in entrepreneurial efforts, those entrepreneurs who are successful frequently have higher levels of education (Brüderl, Preisendörfer, and Ziegler 1992; Van Praag and Cramer 2001). As part of a theoretical approach advocating the importance of human capital, education has been linked empirically with measures of U.S. economic growth (Hoyman and Faricy 2008). I expect that the proportion of a county's population that is college educated is positively associated with entrepreneurial activity and measure the college-educated population as the percentage of people aged 25 years or older in a county who have at least a bachelor's degree.[7]

A third variable is immigration. A number of scholars have noted that some immigrant groups trend toward entrepreneurial self-employment and that this is a significant feature of the immigrant experience (Borjas 1986). Researchers suggest several reasons immigrants are involved in entrepreneurial self-employment. For instance, they may do so because of their lack of adequate English language skills, the possibility to reduce labor costs by recruiting family members as employees, the potential absence of host-country recognition for their educational credentials, and a more generalized host-country hostility (Bonacich 1973; Evans 1989; Portes and Jensen 1989; Sanders and Nee 1996; Wilson and Portes 1980). While some immigrant groups may be drawn toward self-employment, it may also be that as self-selected migrants they have a greater degree of entrepreneurial spirit than others. For example, Saxenian (2002) finds that immigrant labor is a vital component of the Silicon Valley's entrepreneurial success. Also, it is not clear that immigrants are prompting greater entrepreneurship; immigrants' location decisions may be driven by a desire to locate in areas of the country where they believe they will have the most economic opportunity. Unlike native-born residents, who may have familial obligations and attachments that increase domestic relocation costs, immigrants

may have comparatively lower costs and be freer to select where to live. I anticipate that the percentage of foreign-born population in a county will be positively associated with entrepreneurship.[8]

Another variable associated with entrepreneurship is taxation. There is a debate in the literature regarding taxation's role in entrepreneurial behavior. One stream of research suggests that a higher marginal tax rate in a progressive tax system depresses entrepreneurialism (Gentry and Hubbard 2000; Shane 2003). Shane (2003) suggests, "Higher marginal tax rates make people less willing to accept variable earning, thus decreasing the likelihood of self-employment" and they "reduce people's perception of the profitability of exploiting opportunities" (p. 153). Additional scholars have found that tax rates affect other features of entrepreneurial behavior. For instance, one study suggests that when the marginal tax rates of self-employed entrepreneurs increase, they are less likely to hire more employees (Carroll et al. 2000, p. 349). Bartik (1985) finds that higher marginal corporate tax rates are linked with a slight decline in new manufacturing plants among the states.

By contrast, a separate stream of literature suggests that higher marginal tax rates compel individuals toward self-employment, a measure of entrepreneurship, to avoid tax obligations (Blau 1987; Bruce 2000; Schuetze 2000). As Blau (1987) states, "The main effect of higher tax rates is expected to be an increase in self-employment due to the increased attractiveness of underreporting income at higher tax rates and the presumed greater ease of underreporting self-employment income relative to wage-salary income" (p. 457). Clearly, to the extent that entrepreneurs are less risk averse, pursuing tax avoidance represents a risk-taking venture. For the purposes of this analysis, no position is taken on the underlying theoretical motivations of entrepreneurs and taxation. However, the expectation is that taxation will have some influence on the degree of a county's entrepreneurship. Taxation will be measured as a statewide variable of per-capita individual income tax as of 2008 (Council of State Governments 2010).[9]

An economically related variable is unemployment. Some suggest that joblessness may prompt individuals toward self-employment. The argument is that should an individual become unemployed, a reasonable response might be to form a new business (Reynolds 1994). To that extent, it is anticipated that counties with higher levels of unemployment will see higher levels of entrepreneurial behavior. Still, other

research has strongly indicated that capital is a critical element of the entrepreneurial effort. To the extent that unemployment suggests a lagging economy, there may simply be less start-up capital available to initiate an entrepreneurial venture, no matter how much a potential entrepreneur may desire to do so. To that end, an alternative expectation is that unemployment will be inversely associated with entrepreneurialism. The variable used here is the county's unemployment rate for 2008, derived from the U.S. Bureau of Labor Statistics Local Area Unemployment Statistics.

Because many counties have varying degrees of an urban-rural split, I include a variable depicting the percentage of rural population for each county. The reasoning is that in more rural areas one may find entrepreneurialism captured by self-ownership of family farms and other enterprises. The variable is an eight-year extrapolation between the census counts of the years 2000 and 2010 for the percentage of urban population.

Finally, region is measured as a dichotomous dummy variable. For instance, the analysis will identify those counties defined as part of the Great Lakes region as 1 and all others as 0. This method will be used for all other regions as well (Northeast, Midwest, South, and West). The following ordinary least squares (OLS) estimations examine each region separately. If the assumption that the Great Lakes region is lagging in its entrepreneurial activity is correct, it is expected that each of the following OLS estimates will be both statistically significant and negative. Before proceeding to that feature of this analysis, a brief examination of the descriptive statistics is in order.

Reported in Table 11.2 are the summary statistics for the control variables by the five regions. Among the control variables, the Northeast counties have the highest mean value for median age and the West has the lowest value. By contrast, the Northeast counties, on average, have a high proportion of their populations with bachelor's degrees. For example, among the valid data used for this analysis, nearly one-quarter (24.6 percent, n = 45) of Northeast counties have populations where one-third has bachelor's degrees. In comparison, only nine of the Great Lakes counties report such a statistic. The counties of the West show populations that are nearly as well educated.

Counties of the West and the Northeast have the greatest proportion of foreign-born population, while the Midwest and the Great Lakes

Table 11.2 Descriptive Statistics for Key Variables by Regional Counties

Variables	Great Lakes $N = 146$	Northeast $N = 183$	Midwest $N = 509$	South $N = 884$	West $N = 249$
Median age, 2008 (est.)	39.20	40.14	38.54	37.41	36.89
	(3.14)	(2.73)	(3.85)	(3.69)	(4.91)
Percent bachelor's degree, 2006–2010	21.04	26.97	20.18	19.21	25.15
	(7.74)	(9.73)	(7.90)	(9.10)	(10.37)
Percent foreign born, 2006–2010	3.55	7.26	2.86	4.95	9.74
	(3.41)	(8.18)	(3.08)	(5.29)	(7.80)
Unemployment rate, 2008	7.29	5.49	5.47	5.87	6.09
	(1.76)	(1.05)	(1.59)	(1.80)	(2.54)
State-level per-capita income tax, 2008 ($)	1,009.95	1,256.39	930.60	648.75	848.58
	(416.77)	(531.17)	(289.66)	(449.32)	(551.97)
Percent rural, 2008 (est.)	51.40	41.70	50.81	50.34	35.42
	(26.89)	(29.80)	(25.55)	(27.48)	(25.89)

NOTE: Means are reported with standard deviation (in parentheses).
SOURCE: Council of State Governments (2010); U.S. Census Bureau (2009, 2011a, 2012); U.S. Department of Labor (2008).

counties have the lowest values. To provide some further perspective, this variable is divided into three categories. According to 2010 census figures, 12.9 percent of the population is foreign born (Grieco et al. 2012). Using the 12.9 percent figure, three foreign-born population categories were created: 1) 6.5 percent and less (half the 12.9 percent figure); 2) between 6.5 and 12.9 percent; and 3) 12.9 percent and greater. More than 9 out of 10 Midwest counties (90.0 percent, n = 458) have less than half the U.S. average for foreign-born population. The proportions are nearly identical for Great Lakes region counties (88.4 percent, n = 129). However, over a quarter (26.9 percent, n = 67) of the West region counties have proportions of foreign-born populations above the national average.

Turning to economic variables, this cross-sectional analysis depicts the Great Lakes region with the highest mean unemployment rate at 7.28 percent (sd = 1.75). By contrast, the Midwest and Northeast counties have the lowest mean unemployment rates. Finally, the per-capita personal income tax is greatest in the Northeast counties and lowest in the South.

Regression Findings

In Tables 11.3, 11.4, and 11.5 the OLS results are presented for each of the dependent variables. Table 11.3 depicts the OLS outcomes for business density with the control variables and the regional dummy variables, which confirm many of the findings of previous scholars studying entrepreneurship. The data indicate that counties with higher median ages and larger proportions of their populations with bachelor's degrees are positively associated with business density. In addition, the analysis suggests that unemployment is inversely associated with the business density variable. This offers some support for the notion that economic challenges depress entrepreneurship rather than inspiring it. Among the regional variables, the Northeast, the South, and the West show statistically significant results. The Northeast and the South regions report inverse relationships with the business density variable, −0.537 and −0.183, respectively. This suggests that these regions' counties have lower business densities than other regions' counties, all other things being equal. By contrast, the West regional variable shows a positive, statistically significant result (0.937), indicating that this region's counties have greater business density. Finally, in the Great Lakes region the estimate is negative, but it is not statistically significant.

Table 11.4 illustrates the regression data for the percent self-employed. As with the business density variable from the previous table, the results depicted in Table 11.4 provide support for much of the previous scholarship in this field. Across most categories depicted in Table 11.4, the control variables are statistically significant. Age and percent foreign born are positively associated with percent self-employed. By contrast, the unemployment rate and a state's tax burden are inversely associated with percent self-employment. The percent of population with bachelor's degree fails to attain statistical significance. According to these findings, a county's percent self-employed is independent of its population proportion of college educated. Finally, the percent rural variable has a positive, statistically significant result, indicating that the greater the rural proportion of a county, the greater the proportion of self-employed residents.

Table 11.4 indicates that counties in both the Great Lakes and Northeast regions have statistically significant, inverse associations with percent self-employed. These results suggest that, in general, a county in

Table 11.3 Multivariate Linear Regression Results for Business Density, 2008

		Regional analysis				
Variables	Control variables	Great Lakes	Northeast	Midwest	South	West
Constant	−0.828***	−0.889***	−1.209***	−0.807**	−0.537	−0.798***
	(0.320)	(0.322)	(0.325)	(0.322)	(0.333)	(0.310)
Median age, 2008 (est.)	0.123***	0.124***	0.131***	0.123***	0.120***	0.124***
	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)
Percent bachelor's degree, 2006–2010	0.062**	0.062***	0.064***	0.062***	0.060***	0.059***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Percent foreign born, 2006–2010	0.009	0.008	0.011**	0.008	0.010	−0.005
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Unemployment rate, 2008	−0.045***	−0.039**	−0.046***	−0.046***	−0.048***	−0.061***
	(0.016)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)
State-level income tax, 2008	−0.106	−0.099	0.030	−0.101	−0.163***	−0.093
	(0.059)	(0.059)	(0.060)	(0.060)	(0.062)	(0.057)
Percent rural, 2008 (est.)	−0.028	−0.031	−0.035	−0.031	−0.003	−0.005
	(0.122)	(0.122)	(0.121)	(0.122)	(0.122)	(0.118)
Great Lakes		−0.157				
		(0.108)				
Northeast			−0.537***			
			(0.101)			
Midwest				−0.039		
				(0.065)		
South					−0.183***	
					(0.059)	
West						0.937***
						(0.083)
Adjusted R^2	0.258	0.259	0.269	0.258	0.262	0.303
N	1,971	1,971	1,971	1,971	1,971	1,971

NOTE: Standard errors are in parentheses. * significant at the 0.10 level; ** significant at the 0.05 level; *** significant at the 0.01 level.

SOURCE: Council of State Governments (2010); U.S. Census Bureau (2008, 2009, 2011a,b, 2012); U.S. Department of Labor (2008).

either the Northeast or Great Lakes regions will report nearly 2 percent fewer self-employed. By contrast, positive coefficients are associated with both the Midwest and West dummy variables. This indicates that counties in the Midwest and the West regions are likely to have moderately greater levels of self-employment than are those counties not in these regions. While the West dummy variable's positive coefficient is as anticipated, the Midwest variable's positive relationship is unex-

Table 11.4 Multivariate Linear Regression Results for Percent Self-Employed, 2008

		Regional analysis				
Variables	Control variables	Great Lakes	Northeast	Midwest	South	West
Constant	−0.015	−0.023*	−0.029**	−0.020	−0.011	−0.015
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Median age, 2008 (est.)	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Percent bachelor's degree, 2006–2010	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Percent foreign born, 2006–2010	0.002***	0.002***	0.002***	0.002***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployment rate, 2008	−0.003***	−0.002***	−0.003***	−0.003***	−0.003***	−0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
State-level income tax, 2008	−0.009***	−0.008***	−0.006***	−0.010***	−0.009***	−0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Percent rural, 2008 (est.)	0.074***	0.074***	0.074***	0.075***	0.075***	0.075***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Great Lakes		−0.020***				
		(0.004)				
Northeast			−0.019***			
			(0.003)			
Midwest				0.009***		
				(0.002)		
South					−0.003	
					(0.002)	
West						0.015***
						(0.003)
Adjusted R^2	0.257	0.266	0.266	0.261	0.255	0.265
N	1,971	1,971	1,971	1,971	1,971	1,971

NOTE: Standard errors are in parentheses. * significant at the 0.10 level; ** significant at the 0.05 level; *** significant at the 0.01 level.

SOURCE: Council of State Governments (2010); U.S. Census Bureau (2008, 2009, 2011a,b, 2012); U.S. Department of Labor (2008).

pected. To some degree, the prevailing stereotype is that this region is not associated with exceptional entrepreneurial activity. Part of this result may be explained by the way the Great Lakes dummy variable has been created. That is to say, other definitions of the Midwest region frequently include counties of the Great Lakes. The definition used in this chapter creates a discrete Great Lakes counties variable. By excluding those counties from the Midwest variable designation, the Midwest

dummy variable's results suggest that the drag on the Midwest's economic dynamism may be associated with those counties in and around the Great Lakes. The result of the Great Lakes dummy variable does support the notion that the counties of this region are lagging in entrepreneurial activity.

Table 11.5 depicts the OLS results for the final dependent variable, the business birth rate. Among the control variables, age, education, and foreign-born population are statistically significant and positively associated with the business birth rate. While the unemployment rate is not statistically significant in these results, the variable representing the tax burden is statistically significant with across-the-board negative coefficients. As with the percent self-employment dependent variable, the percent rural variable's positive coefficient indicates that the less urbanized a county is, the more business births that county is likely to experience. The regional variables depict results consistent with previous analyses. First, the Northeast dummy variable has a negative coefficient with the business birth rate. Second, the West dummy variable has a positive coefficient with the business birth rate. Unlike the Midwest dummy variable's positive association with percent self-employment, the variable has a statistically significant negative coefficient with the business birth rate. By contrast, the South and the Great Lakes dummy variables do not achieve statistical significance with the dependent variable. The South dummy variable has a positive but not statistically significant coefficient. The Great Lakes dummy variable is negative, but it is not a statistically significant result.

Table 11.6 provides a summary of the various statistical tests for each of the dependent variables. In general, the results depicted in these statistical tests confirm much of the scholarship examining entrepreneurial activity. The consistent or near-consistent outcomes for many of the control variables suggest that in counties with relatively better educated and older populations there is greater probability of entrepreneurial activity. A relatively larger foreign-born population is also associated with entrepreneurial activity, and rural areas report consistent degrees of entrepreneurial activity. By contrast, the economic and tax burdens can, according to this cross-sectional analysis, depress entrepreneurial activity.

Turning to the regional analysis, there are some consistent results that comport with both previous research and conventional wisdom.

Table 11.5 Multivariate Linear Regression Results for Business Birth Rate, 2008

		Regional analysis				
Variables	Control variables	Great Lakes	Northeast	Midwest	South	West
Constant	−0.728**	−0.805**	−1.257***	−0.425	−0.881**	−0.682**
	(0.352)	(0.355)	(0.357)	(0.349)	(0.367)	(0.331)
Median age, 2008 (est.)	0.086***	0.087***	0.098***	0.087***	0.088***	0.088***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Percent bachelor's degree, 2006–2010	0.083***	0.084***	0.087***	0.081***	0.084***	0.079***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Percent foreign born, 2006–2010	0.042***	0.041***	0.046***	0.032***	0.042***	0.021***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Unemployment rate, 2008	0.002	0.009	0.000	−0.019	0.003	−0.022
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)
State-level income tax, 2008	−0.557***	−0.548***	−0.451***	−0.476***	−0.527***	−0.536***
	(0.065)	(0.065)	(0.066)	(0.065)	(0.068)	(0.061)
Percent rural, 2008 (est.)	0.291**	0.287***	0.281**	0.244	0.277**	0.326***
	(0.134)	(0.134)	(0.133)	(0.132)	(0.134)	(0.126)
Great Lakes		−0.198				
		(0.119)				
Northeast			−0.744***			
			(0.110)			
Midwest				−0.567***		
				(0.070)		
South					0.096	
					(0.066)	
West						1.445***
						(0.089)
Adjusted R^2	0.285	0.286	0.308	0.308	0.286	0.369
N	1,971	1,971	1,971	1,971	1,971	1,971

NOTE: Standard errors are in parentheses. * significant at the 0.10 level; ** significant at the 0.05 level; *** significant at the 0.01 level.

SOURCE: Council of State Governments (2010); U.S. Census Bureau (2008, 2009, 2011a,b, 2012); U.S. Department of Labor (2008).

Across all three dependent variables, counties of the West are positively associated with business density, self-employment, and business births. To the extent that the three dependent variables represent features of entrepreneurship, the strong impression is that the West is leading in entrepreneurial efforts. By contrast, a different result is apparent for Northeast counties. For the Northeast, the evidence indicates that business density, self-employment, and business births are relatively lower

Table 11.6 Summary Results of Statistical Tests for Business Density Rate, Percent Self-Employed, and Business Birth Rate

Variables	Business density rate	Percent self-employed	Business birth rate
Median age, 2008 (est.)	+	+	+
Percent bachelor's degree, 2006–2010	+		+
Percent foreign born, 2006–2010		+	+
Unemployment rate, 2008	−	−	
State-level individual income tax, 2008		−	−
Percent rural, 2008 (est.)		+	+
Great Lakes		−	
Northeast	−	−	−
Midwest		+	−
South	−		
West	+	+	+

SOURCE: Tables 11.3, 11.4, and 11.5.

than found in non-Northeast counties. However, the interpretation of the results for the counties of the Great Lakes must be guarded. In only one of the dependent variables, percent self-employed, does this regional variable report statistical significance.

ENTREPRENEURIAL POLICY AND THE GREAT LAKES

What strategies may be offered given the mixed empirical results for the Great Lakes region? As stated by Eisinger (1995), entrepreneurial policies, particularly state-based ones, are "designed to foster indigenous firms and local entrepreneurial capabilities" (p. 147). Eisinger (1988) once argued that entrepreneurial economic development policies were emerging as an important feature of a state's overall portfolio of developmental initiatives and as a movement away from the strategy of industrial relocation policies. However, a few years after making that claim, Eisinger (1995) suggested that as policy learning

took place, state development policy evolved in other directions. Saiz (2001) argues that the underlying motive for this policy shift was one of context. He suggests that states strategically retreated from entrepreneurial policies once confronted with the possibility of losing business to neighboring states competing for industrial relocation.

Another reason for this shift among state policymakers is that they have few tangible incentives to initiate entrepreneurial policies. As Hart (2008) observes,

> [T]he puzzle for political scientists is why entrepreneurial state ED [economic development] strategies have caught on. Their economic and programmatic promise notwithstanding, their political logic seems to contain neither rent seeking nor credit claiming. At least at first glance, the direct beneficiaries of entrepreneurial strategies appear to be far more widely diffused and poorly organized than those of locational strategies. In fact, in the case of future start-ups, the individual beneficiaries are unknown and the corporate beneficiaries, nonexistent. Most of the economic gains that these beneficiaries produce will emerge long after those who instigated the policies have left office. The credit for this economic success, if it can be claimed by any policy makers at all, will not accrue to the instigators of the strategy, but rather their successors in office. (p. 154)

A full examination of state-based entrepreneurial policies is beyond the scope of this chapter. However, one place to start would be to analyze the degree to which the variables empirically associated with entrepreneurship may be used to capture some features of the regions, an approach that may help policymakers identify strengths and weaknesses they may wish to address. Logistic regression is used, with each region defined as a binomial dependent variable. A county is assigned to its constituent region, coded one if it is in a region and otherwise a zero. Next, each independent variable associated with entrepreneurship regression analysis is used to detect regional features.

As depicted in Table 11.7, the Great Lakes region, in the first column, indicates with its positive coefficients for median age and education that it is presumably well positioned for entrepreneurship. However, the Great Lakes region is also defined by its unemployment, and to that extent unemployment may act as a drag on entrepreneurial activities. For policymakers, the inverse coefficient with percent for-

eign born strongly suggests that the region's public and private sector leaders should attempt to find ways to make the area more attractive to immigrants. It is clear that some of the region's leaders are moving to address this issue.

Recently, the city of Chicago passed what its officials call a "Welcoming City" ordinance. In addition, Mayor Rahm Emanuel declared his desire to make Chicago the most immigrant-friendly city in the United States (City of Chicago 2012). The largely symbolic ordinance was seen as a response to the anti-immigrant measures being adopted in some states (Huffington Post 2012). Still, the underlying desire on the part of officials in the Great Lakes region to attract immigrants is to be encouraged. For example, the National League of Cities identifies a number of proposals to assist with immigrant integration (Gambetta and Gedrimaite 2010). Many of the strategies focus on administrative coordination between and among federal, state, and local authorities. More concrete recommendations are targeted toward the creation of mayoral

Table 11.7 Logistic Regression Results for Regional Variables

Variables	Great Lakes	Northeast	Midwest	South	West
Constant	−11.180***	−13.490***	1.294	5.409***	−2.838***
	(1.210)	(1.194)	(0.700)	(0.611)	(0.785)
Median age, 2008 (est.)	0.071***	0.221***	−0.008	−0.091***	−0.022
	(0.014)	(0.027)	(0.016)	(0.014)	(0.18)
Percent bachelor's degree, 2006–2010	0.092***	0.044***	−0.005	−0.042***	0.031***
	(0.014)	(0.011)	(0.009)	(0.007)	(0.009)
Percent foreign born, 2006–2010	−0.195***	0.010	−0.254***	0.019	0.079***
	(0.034)	(0.017)	(0.026)	(0.011)	(0.012)
Unemployment rate, 2008	0.609***	−0.053	−0.252***	−0.077***	0.147***
	(0.057	(0.062)	(0.037)	(0.029)	(0.042)
State-level income tax, 2008	1.169***	2.085***	0.934***	−1.512***	−0.184
	(0.231)	(0.212)	(0.140)	(0.119)	(0.143)
Percent rural, 2008 (est.)	−0.581	−0.686	−0.678***	0.644***	−0.467
	(0.413)	(0.365)	(0.253)	(0.225)	(0.318)
−2 log likelihood	855.592	935.928	1,974.009	2,373.771	1,343.403
Cox and Snell adjusted R^2	0.087	0.134	0.130	0.157	0.076
N	1,971	1,971	1,971	1,971	1,971

NOTE: The values in the table represent logistic regression coefficients, with the standard errors are in parentheses. * significant at the 0.10 level; ** significant at the 0.05 level; *** significant at the 0.01 level.

SOURCE: Council of State Governments (2010); U.S. Census Bureau (2008, 2009, 2011a,b, 2012); U.S. Department of Labor (2008).

advisory boards and addressing language issues. The National League of Cities report identified 20 cities engaged in meeting the challenges of immigrant populations. To be globally competitive in an entrepreneurial world, the Great Lakes region must more vigorously engage in immigration outreach and support.

Separately, policymakers may need to address issues related to their region's less-than-competitive tax burden. The statistically significant positive coefficient in Table 11.7 indicates that the counties of the Great Lakes region are characterized, relative to the counties of most other regions, as having a relatively higher tax burden. Recently, many of the region's policymakers, most notably led by recently elected conservative Republican governors, have been moving to adjust their state's tax structures. From the perspective of stimulating entrepreneurial development, the challenge for these officials is to find the means to provide appropriate entrepreneur-oriented tax relief while not undermining the region's educational advantage. The analysis depicted here clearly links an educated population with some forms of entrepreneurial activity. Cutting state education budgets to provide tax relief may not work in the long-term interest of developing an entrepreneurial environment. Still, as Hart (2008) observes, providing for a future long-term developmental payoff may be less compelling than a more immediate political one.

Beyond the central focus of this chapter, it is worth briefly commenting on the nature of the results relative to the other regional designations. The counties of the Northeast region are distinctly urban and defined by their relatively low rates of unemployment, older populations, and high percent of foreign born. They are also defined by state-level tax burdens that may depress entrepreneurialism. The Midwest region benefits from its relatively low levels of unemployment, but is defined by its very low rates of immigration and its state-level tax burden, which is greater than either the West or South. Indeed, perhaps the signature characteristic of the Midwest counties is the low levels of foreign born. The Southern counties can be identified by their relatively low tax burdens. However, this region is also defined by its youth and relative lack of college-educated adult citizens. Southern policymakers continue to struggle with their education systems and making them competitive in a global economy. To the extent that education plays a significant role in entrepreneurship, that region's policymakers will

need to address these issues. Finally, the counties of the West are defined by their relatively higher degrees of education and large foreign-born populations. Still, the counties of the West lead in entrepreneurialism. The challenge public and private actors may need to address is that it remains defined by a degree of unemployment.

CONCLUSION

Entrepreneurialism is a driver of economic growth. Historically, the Great Lakes region has been linked with the entrepreneurial development of many major companies in the United States. However, today there is a strong sense that this region, like an aging star athlete, has lost a step in its entrepreneurial dynamism. The results depicted in this analysis support elements of that assumption. To be clear, this analysis is a snapshot of a time prior to the enduring economic slump beginning in the fall of 2008. The region is still productive and competitive in a number of ways, but, in several factors related to self-employment, all things being equal, it lags behind other U.S. regions. In addition, this analysis is consistent with the current and widely held view of the western United States as a driver of U.S. entrepreneurial activity.

For policymakers in the Great Lakes region, some features of their locales are signs of hope. They are advantaged by the degree to which they have an educated population relative to other places. Given the notion that entrepreneurialism links innovation to the market, an educated workforce is an important asset, particularly in a digital information age. However, to the extent that the region is also defined by its relatively high tax burdens and its relatively low proportion of foreign born, these elements need to be addressed. In the Great Lakes states, recently elected Republican governors and Republican-controlled state legislatures have made it part of their agenda to address noncompetitive features of their states' tax codes. For the purpose of entrepreneurial economic stimulation, this is a worthwhile endeavor. However, these groups must use caution not to undermine the quality of their states' educational institutions. In addition, some regional leaders are making strides in finding methods to make the Great Lakes area a magnet for highly educated immigrants. This is important. During the

region's boom years it was a major destination for many migrants and immigrants. They brought their energy and inventiveness and spurred unprecedented industrial development.

To the cities and counties that comprise the Great Lakes region, this is a marketing opportunity to showcase the advantages of the area's many unique and shared attributes, such as direct access to a stable, natural fresh-water resource. The communities of this region may wish to shape their appeals to educated potential immigrant populations. Such a campaign may wish to express that this region offers, for the right entrepreneurs, an overlooked opportunity.

Notes

1. Figure 11.1 includes data illustrating patents issued to both domestic and foreign patent holders. While the potential implications of the growing disparity between domestic and foreign patent holders are interesting, they are beyond the scope of this chapter to explore more fully.
2. By contrast, Wilken (1972) places the surge of U.S. economic growth between 1810 and 1880.
3. The counties include Cook County (Chicago, Illinois), Cuyahoga County (Cleveland, Ohio), Erie County (Buffalo, New York), Milwaukee County (Milwaukee, Wisconsin), and Wayne County (Detroit, Michigan). The data for Figure 11.2 are derived from U.S. Census Bureau (1996).
4. The National Oceanic and Atmospheric Administration coastal counties are identified in U.S. Census Bureau (2011c).
5. Missing data occur among all of the regions, with the Northeast and the Great Lakes regions having the most valid observations and the Midwest, South, and West having many more counties not reporting self-employment data. There are 3,140 counties among the 50 American states, but because of missing or otherwise unreported data among the Social Security figures, the valid number is 1,971 counties. The vast majority of the missing data come from sparsely populated rural counties. For example, the counties with missing self-employment figures have mean estimated 2008 populations of 10,380 persons, with nearly four-fifths of their 2000 population defined as rural (mean = 0.79). By contrast, the valid data's 2008 estimated population is 147,735 persons, with over half of these counties' populations defined as urbanized (mean = 0.52).
6. Business establishment rate: $F = 35.796$, significant at the 0.001 level [MSBW= 65.594 (df=4), MSWI= 1.832 (df=1967)]; percent self-employed: $F = 12.42$, significant at the 0.001 level [MSBW= 0.026 (df=4), MSWI= 0.026 (df=1967)]; business birth rate: $F = 89.515$, significant at the 0.001 level [MSBW= 187.695 (df=4), MSWI= 2.097 (df=1967)].
7. This variable is derived from data from the U.S. Census Bureau (2011a).

8. The data for this variable are derived from the U.S. Census Bureau (2011b).
9. It should be stressed that much of the literature relating to taxation and entrepreneurial behavior is about the effect the marginal rate has on behavior. This analysis uses a far less sensitive measure related to the tax burden.

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