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The Role of Microenterprises in Economic Growth: A Panel Study of Wisconsin Counties 1977 to 1997

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Abstract

In this study I examine the role of microenterprises (firms with between one and four employees) in Wisconsin economic growth. Using a panel of Wisconsin counties from 1977 to 1997 I estimate an expanded Carlino-Mills type model of growth. Results suggest that nearly 50 percent of all businesses in Wisconsin are microenterprises and this share is relatively stable over time. Results also indicate that a higher percentage of businesses classified as microenterprises tend to be associated with counties with lower population levels, slower population growth, but higher levels of employment and income growth. Results also vary by type of industry. These results suggest that care must be taken when promoting microenterprises as a major engine of economic growth: results vary by measure of economic growth as well as type of industry.

Introduction

The role of small businesses, often referred to as microenterprises, plays in economic growth and development has been widely debated in the academic and public policy literature. Some recent studies documenting the economic importance of microenterprises to local economies suggest that they should be included in any comprehensive economic development plan (Muske and Woods 2004; Muske, et al 2007; Atasoy, et al 2006; Deller and McConnon (forthcoming)). From a policy perspective local economic development practitioners are looking for applied research that will help them allocate their limited resources in the most effective manner. The overall intent of this applied research project is to provide background descriptive information on microenterprises in Wisconsin and insights into the relationship between microenterprises and subsequent growth using data from Wisconsin counties.

Birch's (1979) argument that microenterprises are particularly important in generating job growth has renewed interest in the idea of Schumpeter's (1942 and 1961) innovative entrepreneur in the economic growth process. Coupled with the observation that there has been an extraordinary escalation in the number of small and medium size establishments nationwide, there has been a renewed interest in the promotion of small firms as an economic development strategy (Aquilina, Klump and Pietrobelli 2006). Although the work of Birch has been widely challenged, (e.g., Brown, Hamilton and Medoff 1990; Dunne, Roberts and Samuelson 1989) it has served as the foundation for what some have called the second wave of economic development policy (Acs 1999; Eisinger 1988 and 1995; Shaffer, Deller and Marcouiller 2006). This policy approach is aimed at creating new small businesses, as well as retaining and expanding existing small firms.-

From a practical perspective this policy approach runs into political opposition at the local level (Eisinger 1995). Because of the political pressures of short-term election cycles elected officials expect

local economic development practitioners to focus their energies on recruitment of larger firms. While the odds of successful recruitment of large firms are relatively low and long-term commitment of recruited firms is questionable, the pressure to pursue such approaches comes at the expense of working with smaller firms. In short, the political reward for working with small businesses in the name of economic growth and development is not sufficiently visual in the public eye when compared to traditional business recruitment efforts.

. Beck, Demirgüç-Kunt and Levine (2003) along with Aquilina, Klump and Pietrobelli (2006) and Shaffer (2006) lay out the rationale, both pro and con, for the promotion of small businesses, especially microenterprises, as an economic growth and development strategy. Advocates argue that microbusiness growth stimulates competition and entrepreneurship which, in turn, enhances efficiency, innovation, and aggregate productivity growth. Acs and Audretsch (1990 and 1993) maintain that in manufacturing, for example, the development of small-scale, flexible production technologies has enabled small firms to flourish. Because of the small scale of operation, microenterprises are more flexible and able to adapt to rapidly changing environments. Further, as a source of experimentation and innovation, microenterprises play an integral role in the renewal processes (i.e., Schumpeter's innovation) which often changes the market structure (Robbins, et al 2000). This "churning" is at the theoretical heart of the advocates' arguments as to why microbusinesses are vital to state and national welfare (Headd 1998).

Some argue that because microenterprises tend to be more labor intensive they are better able to promote employment growth. Others suggest that because most microenterprises are drawing from secondary labor markets (e.g., lower education levels, women, minorities, immigrants, etc.) the promotion of small business may represent a poverty mitigation strategy. Binks and Jennings (1986) stress the insulation against the deleterious effects of recession as one of the primary benefits of promoting small businesses. Because microenterprises are operating at peak efficiency they are less likely to lay off members of their small workforce.

There are an equal number of powerful arguments that maintain that microenterprises are not the engine of economic growth that small business advocates claim. Central to these arguments is endogenous growth theory, which provides the context for arguing in favor of larger firms. Specifically, the powers of economies of scale and scope and the ability to finance research and development and bring to market the fruits of that R&D embodies Schumpeter's notion of innovation. Microenterprises do not have the resources to make noticeable impacts on the economy. Second, research has suggested that outside of developed economies where institutions (e.g., property rights, contract law, etc.) are well established the role of microbusinesses is unclear. In other words, in developing countries the cards may be stacked against small businesses breaking through. Third, the available macro-empirical research is unclear as to causation; simple correlations between microenterprises and growth are not sufficient to base policy. As Shaffer (2006) suggests, most studies looking at the relationship between microenterprises and growth tend to be micro-oriented and industry specific; hence may not be appropriate to draw policy implications concerning macroeconomic growth. Finally, as noted by Shaffer,

et al. (2005) the third wave of development strategies focuses on collaboration and partnership building within and across economies. The focus on cluster development today has its roots in agglomeration economies and the ideas flowing from endogenous growth theory (Thisse and Fujita 2002). Thus, economic growth theory should not emphasize one type of business over another and should focus on the comparative advantage of the region.

A more fundamental problem with this literature is the definition of a small business or microenterprise. Beck, et al. (2003) as well as Aquilina, et al. (2006) use a threshold of 250 employees, Robbins, et al. (2000) use a threshold of 20 employees for one set of analysis and 500 for another and the Association for Enterprise Opportunity (AEO) defines a microbusiness as a business with four or fewer employees. Some researchers such as Shaffer (2002 and 2006) use average firm size to draw inferences. Unfortunately, theory provides little insight into what amounts to a question of definition. In a sense, if microenterprises or small businesses have a roll in influencing economic growth coupled with a viable working definition of what constitutes a small business is an empirical question.

This study follows Robbins, et al. (2000) and Deller and McConnon (forthcoming) by using a panel of Wisconsin counties over the period 1977 to 1997. I focus attention on microenterprises as firms that have between one and four employees for two reasons. First, according to U.S. County Business Patterns, of the approximately 7.4 million enterprises that have an Employer Identification Number used by the Internal Revenue Service (IRS) for employee payroll taxes, 54.4 percent have between one and four employees.[1] If I used the larger definition of small businesses, specifically firms with less than 250 employees, 99.3 percent of all businesses would be considered small. Secondly, if businesses this small do influence economic growth, then the results lend stronger credence to the position of microenterprise advocates then similar results obtained using the larger business definition. I also use an expanded Carlino-Mills (1987) model of economic growth to provide structure to the models. In the following section, I provide a descriptive analysis of microenterprises in Wisconsin. In the next section I briefly outline the theoretical growth framework and empirical specifications. The empirical results are then discussed followed by a brief summary.

A Descriptive Analysis of Microenterprises in Wisconsin

Much like the U.S. the share of businesses in Wisconsin that are classified as “microenterprises” (for this study defined as those with 1-4 employees) accounts for slightly more than half of all businesses (Table 1). Of the 144,116 businesses in Wisconsin accounted for in County Business Patters for 2004, 73,174 have between one and four employees. The sector with the highest share of microenterprises is forestry, fishing, hunting and agricultural support businesses with 432 of its businesses, or 75.1 percent, defined as small. Real estate and leasing firms are also dominated with microbusinesses with 3,414 of its

[1] This does not include sole proprietorships without employees. If we included sole proprietorships without employees in our definition, like the Association for Enterprise Opportunity (AEO) does, then microbusinesses would account for over 80 percent of all businesses in the U.S.

businesses, or 69.8 percent, deemed small. The business sector with the largest number of small businesses is construction with 11,265 of its 17,096, or 65.9 percent, considered to be microenterprises. In Wisconsin the sector with the smallest share of total businesses classified as small, or microenterprises, is manufacturing with 2,873 of its 9,804 enterprises, or 29.3 percent have between one and four employees.

If we examine the share of businesses in Wisconsin that are deemed to be microenterprises over time we can see that the share has declined modestly over the 1977 to 1997 time period.[2] At the beginning of the period (1977) 58.1 percent of all businesses were classified as microenterprises, but at the end of the period (1997) the share declined to 52.3 percent, a decline of 9.9 percent, and as noted in Table 1 it declined slightly more in 2004. Nearly all of this aggregate decline can be explained by the decline in microenterprises in the retail sector which experienced a decline of 21.9 percent over the 1977 to 1997 period. This decline in the importance of microenterprises in the retail sector can be explained in a couple of ways. First, there has been a dramatic rise in the popularity of "big-box" stores such as Wal-

Table 1: Share of Wisconsin Businesses Classified as Microenterprises

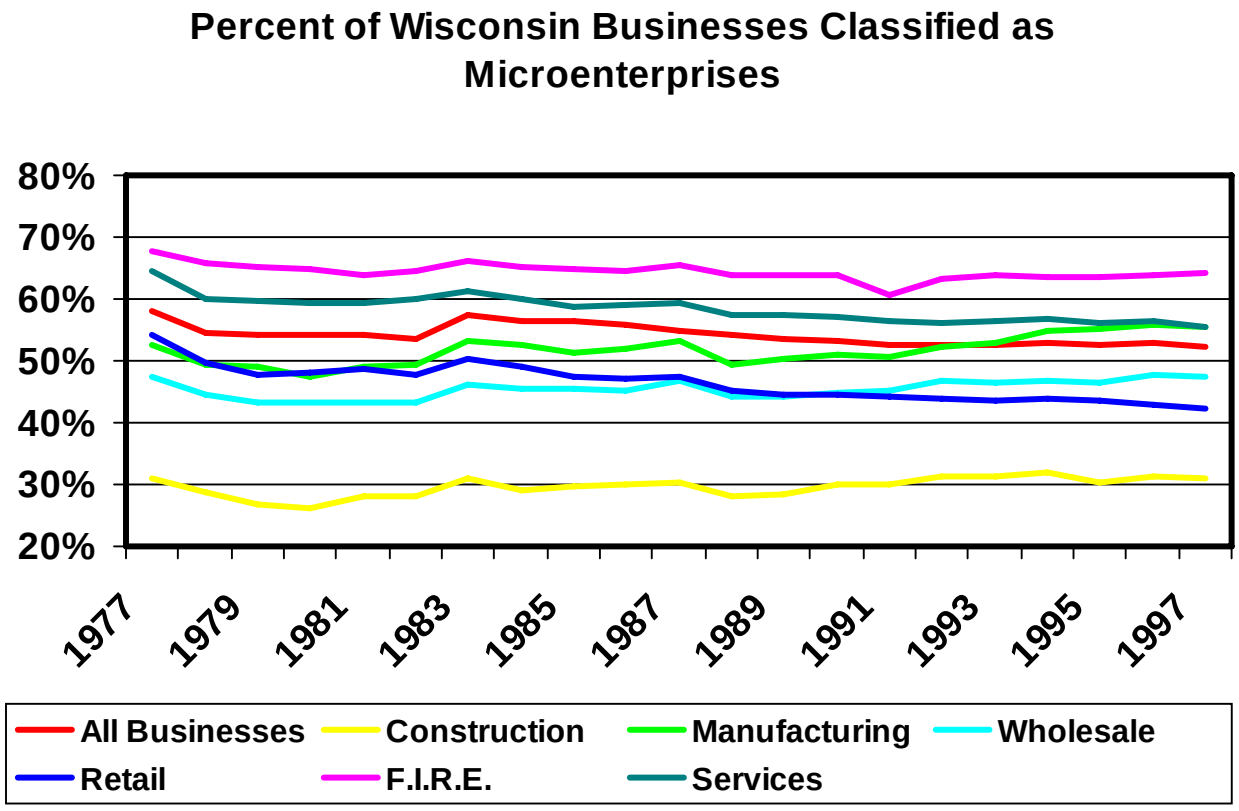
	Percent Classified as Microenterprises
Total	50.8%
Forestry, fishing, hunting, and agriculture support	75.1%
Mining	45.8%
Utilities	31.7%
Construction	65.9%
Manufacturing	29.3%
Wholesale trade	46.8%
Retail trade	42.0%
Transportation & warehousing	57.6%
Information	45.6%
Finance & insurance	56.1%
Real estate & rental & leasing	69.8%
Professional, scientific & technical services	64.0%
Management of companies & enterprises	32.2%
Admin, support, waste mgt, remediation services	56.2%
Educational services	41.3%
Health care and social assistance	41.6%
Arts, entertainment & recreation	55.7%
Accommodation & food services	38.6%
Other services (except public administration)	57.0%

[2] This time period is examined because of changes from the SIC to NACIS system of classifying businesses.

Mart, Target and Home Depot has displaced a large number of smaller retail establishments. Second, to better match changing consumer patterns (e.g., evening and weekend shopping) as well as compete with the big-box stores, smaller retailers have needed to expand store hours and hence employment levels. The share of construction firms that are microenterprises as well has wholesale firms have remained basically the same over the 1977 to 1997 period while the share of manufacturing firms classified as microenterprises has increased by 5.6 percent and the share of finance, insurance and real estate (F.I.R.E.) that are small declined by 5.5 percent. There is also a noticeable decline, 14.3 percent, in the number of service firms classified as microenterprises. The reason the decline in the share of service firms that are small is not as readily clear as in the case of retail.

In order to gain a better understanding of how microbusinesses are distributed across the state a collection of maps have been generated for each of the business classifications reported in Table 1. When viewing these maps two things must be kept in mind. First, the scaling for each map is independent of all other maps. For example, in the construction map (Map 2) the scaling runs from 56.9 to 100 percent while manufacturing (Map 3) scales from zero to 65 percent. Second, the darker shades represent lower percentage of microenterprises.

When examining the spatial distribution of several patterns become apparent. First, there is significant spatial variation across the state not only within but also across business classifications. Consider construction businesses where 65.9 percent of all businesses are classified as microenterprises



(Map 2). In the Fox Valley region of Wisconsin we see the smallest concentration of microenterprises while the northern and southwester part of the state has the highest concentration of small construction firms. Retail microenterprises (Map 4) along with real estate, rental and leasing firms (Map 8) appear to be more randomly distributed across Wisconsin. Another pattern that appears to hold for most business classifications is in northern Wisconsin where the majority of businesses can be classified as microenterprises. But, information service firms (Map 6) tend to break this wider pattern. Transportation and warehousing businesses (Map 5) also shows significant spatial variation across northern Wisconsin.

Casual observation of the spatial mapping of microenterprises suggests that there is a pattern associated with the population size of the county. I test this observation through a series of scatter plots along with simple trend-line regression analysis. The results of this simple analysis are provided in Figures 1 through 14. Of the 13 business classifications nine appear to have a strong negative between the percent of firms classified as microenterprises and county population. The strongest relationship is for accommodation and food service firms (Figure 14) where population explains almost 44 percent (R^2=0.4398) of the variation in the percent of these firms defined as microenterprises. Another sector that is largely explained by population is construction with population explaining 35.6 percent (R^2=0.2564) followed by the percent of retail firms classified as microenterprises at 21 percent (R^2=0.2103).

Not all business classifications, however, can be explained by population, such as forestry, fishing, hunting and agricultural service firms (Figure 1), finance and insurance firms (Figure 7), management firms (Figure 10) and finally health care and social assistance firms (Figure 12). There is one business classification, information service firms (Figure 6) where there appears to be a weak (only one percent of the variation explained, R^2=0.0128) positive relationship between percent of firms deemed as microenterprises and population. The tendency of the inverse relationship between percent of microenterprises and population suggests that less populated counties should pay particularly close attention to small firms when thinking about economic growth and development strategies.

While this descriptive analysis is helpful, it does not lend any insight into the basic question of this research project:: are microenterprises associated with economic growth? To answer this question I present an economic growth model that has been used in numerous studies of regional economic growth. This model is presented in the next section of this study followed by the empirical results.

A Model of Growth

Models of regional economic growth often focus on the interdependencies of house residential and firm location choices. Often this view addresses the notion of whether “people follow jobs” or “jobs follow people” (Steinnes and Fischer 1974). To address this issue of causation and interdependency, Carlino and Mills (1987) constructed a now classic two equation system. This model has subsequently been used by a number of regional scientists to examine regional economic growth (see Boarnet, Chalermpong and Geho 2005 for a detailed review).

In this research I follow Deller, Tsai, Marcouiller and English (2001), Deller and Lledo (2007) and Nzaku and Bukenya (2005) by expanding upon the original formulation of the Carlino and Mills model to explicitly capture the role of income. This expands the "people vs jobs" debate from two dimensional to three dimensional: "people vs. jobs vs. income." Following the Steinnes and Fischer (1974) logic, are people attracted to higher income areas and/or firms repealed by having to pay higher wages? By expanding the classic Carlino and Mills model to explicitly trace the role of income in regional growth we more fully capture the growth process. The expanded model also explicitly captures the increasing concern about job quality as measured by income levels those jobs can support. This speaks directly to the question as to whether microenterprises drawing on the secondary labor market help promote income growth.

The general form of the model is:

$$P^* = f(E^*, I^* \mid \Omega^P) \quad (1)$$

$$E^* = g(P^*, I^* \mid \Omega^E) \quad (2)$$

$$I^* = g(P^*, E^* \mid \Omega^I) \quad (3)$$

where P^*, E^* and I^* are equilibrium levels of population, employment and per capita income, and Ω^P, Ω^E and Ω^I are a set of variables describing initial conditions and other historical information. Contained in the latter set of information are measures of microenterprises.

Relying on the equilibrium conditions laid out above, a simple linear representation of those conditions can be expressed as:

$$P^* = \alpha_{op} + \beta_{1p}E^* + \beta_{2p}I^* + \Sigma\delta_{Ip}\Omega^P \quad (4)$$

$$E^* = \alpha_{oE} + \beta_{1E}P^* + \beta_{2E}I^* + \Sigma\delta_{IE}\Omega^E \quad (5)$$

$$I^* = \alpha_{oI} + \beta_{1I}P^* + \beta_{2I}E^* + \Sigma\delta_{II}\Omega^I \quad (6)$$

Moreover, population, employment and income likely adjust to their equilibrium levels with substantial lags (i.e., initial conditions). Partial adjustment equations to the equilibrium levels are:

$$P_t = P_{t-1} + \lambda_P (P^* - P_{t-1}) \quad (7)$$

$$E_t = E_{t-1} + \lambda_E (E^* - E_{t-1}) \quad (8)$$

$$I_t = I_{t-1} + \lambda_I (I^* - I_{t-1}) \quad (9)$$

After slight rearrangement of terms this yields:

$$\Delta P = P_t - P_{t-1} = \lambda_P (P^* - P_{t-1}) \quad (10)$$

$$\Delta E = E_t - E_{t-1} = \lambda_E (E^* - E_{t-1}) \quad (11)$$

$$\Delta I = I_t - I_{t-1} = \lambda_I (I^* - I_{t-1}) \quad (12)$$

where λ_P, λ_E and λ_I are speed of adjustment coefficients to the desired levels of population, employment and income, respectively, which are generally positive; ΔP, ΔE and ΔI are the region's changes in population, employment and per capita income respectively; P_{t-1}, E_{t-1} and I_{t-1} are initial conditions of population, employment and per capita income. Substituting and rearranging terms allows us to express the linear representation of the model that is to be estimated as:

$$\Delta P = \alpha_{op} + \beta_{1p}P_{t-1} + \beta_{2p}E_{t-1} + \beta_{3p}I_{t-1} + \gamma_{1p}\Delta E + \gamma_{2p}\Delta I + \Sigma\delta_{Ip}\Omega^{P} \quad (13)$$

$$\Delta E = \alpha_{oE} + \beta_{1E}P_{t-1} + \beta_{2E}E_{t-1} + \beta_{3E}I_{t-1} + \gamma_{1p}\Delta P + \gamma_{2E}\Delta I + \Sigma\delta_{IE}\Omega^{E} \quad (14)$$

$$\Delta I = \alpha_{oI} + \beta_{1I}P_{t-1} + \beta_{2I}E_{t-1} + \beta_{3I}I_{t-1} + \gamma_{1I}\Delta E + \gamma_{2I}\Delta P + \Sigma\delta_{II}\Omega^{I} \quad (15)$$

Note that the speed of adjustment coefficient (λ) becomes embedded in the linear coefficient parameters α, β, γ and δ. This framework is particularly useful for this analysis because it allows us to capture structural relationships while simultaneously isolating the influence of microbusiness attributes on regional economic growth. In essence, we are modeling short-term adjustments (i.e., ΔP, ΔE and ΔI) to long-term equilibrium (i.e., P^*, E^* and I*).

For this study I estimate a very simple reduced form of the empirical model outlined in equations (13, 14 and 15). To keep the models simple, I remove the exogenous control variables (Ω^P, Ω^E and Ω^I) by assuming that $\delta_{iP} = \delta_{iE} = \delta_{iI} = 0$ for all potential control variables beyond my measures of microenterprises. Clearly this assumption opens the door to the problem of omitting potentially important variables which may mean that the estimated parameters on the variables are included could be biased and not reflective of the true relationship. The next step of this research effort will be to explore more fully specified versions of the model.

I offer four separate specifications of the set of three equations. First, I include the right hand side change variables (ΔP, ΔE and ΔI) then remove them. The reason for removing these change variables is to test for possible endogeneity which is when endogenous variables are included as right hand side exogenous variables. Second, I define microenterprises as the percent of all businesses that have between one and four employees. I then follow the suggestions of Shaffer (2002) and disaggregate microenterprises into six sectors. By disaggregating I hope to provide insights into whether or not industry type matters in helping to explain the role of microenterprises in economic growth.

Empirical Results

Before turning to the results of the base and expanded models, a series of simple correlations were estimated between the percent of businesses classified as microenterprises and the three measures of economic growth. These correlations are reported in Table 2. The percent of all businesses that are microenterprises is negatively correlated with population growth, positively associated with per capita income growth and has no statistical relationship with employment growth. The positive relationship with income is as expected but the negative relationship with population growth is unexpected. The latter result may be explained by the strong tie microenterprises have with population levels. As observed in Figures 1 through 14 microenterprises tend to cluster in counties with smaller populations. Because smaller counties in Wisconsin have tended to experience slower population growth than larger counties the observed negative relationship could be indirectly capturing population level on population growth relationship.

Table 2: Correlations of Microenterprises and Wisconsin County Growth: 1977-1997 (Annual growth rates)

	Percent Change in Population	Percent Change in Per Capita Income	Percent Change in Employment
Percent of All Businesses Small	-0.0806	0.0586	0.0111
	(0.003)	(0.030)	(0.681)
Percent of All Construction Businesses Small	-0.0095	0.0547	0.0913
	(0.725)	(0.042)	(0.001)
Percent of All Manufacturing Businesses Small	-0.0230	0.0674	0.0103
	(0.394)	(0.012)	(0.703)
Percent of All Wholesale Businesses Small	0.0261	0.0555	0.0283
	(0.333)	(0.039)	(0.294)
Percent of All Retail Businesses Small	-0.1427	0.0218	-0.0186
	(0.000)	(0.418)	(0.490)
Percent of All FIRE Businesses Small	0.0052	0.0476	0.0815
	(0.847)	(0.077)	(0.003)
Percent of All Service Businesses Small	-0.0348	-0.0037	-0.0245
	(0.196)	(0.891)	(0.364)

When examining the simple correlations across the more detailed types of businesses it becomes readily apparent that there is significant variation across types. Small construction along with finance, insurance and real estate (F.I.R.E.) microenterprises has no relationship with population growth, but a positive and significant with both income and employment growth. Both manufacturing and wholesale microenterprises have no influence on population or employment but a positive impact on employment growth. Small retail firms are associated with slower population growth and do not appear to influence income or employment growth. Finally, service microenterprises do not appear to influence any of the three measures of economic growth. Consistent with Deller and McConnon's (forthcoming) of the U.S. states, there is significant variation across business types. These simple correlations, unfortunately, can mask underlying factors such as the complicating relationship between the level of microenterprises and population as discussed above. To better control for these factors I now turn to the results of the more fully specified models.

Because of the panel nature of the Wisconsin county data there are several options in how to estimate the model outlined in equations 13, 14 and 15. For this study I used what is referred to as a two-way fixed effects model. The method assigns a series of dummy variables for each time period and cross section. This method makes it possible to control for variables that have not or cannot be measured. Other methods that were explored include the Fuller (simple OLS), random effects as well as the Parks (error autoregressive) approaches all while note reported here, the overall results were consistent across the different estimation method lending a degree of confidence to the results represent here.

As outlined above there are four specifications of each of the three growth equations. The first set includes all businesses that are classified as microenterprises while another set has six business types ranging from construction to service firms disaggregated. In addition, there has been concerned expressed in the growth literature that uses the theoretical approach outlined above that the inclusion of the change variables (i.e., ΔP, ΔE and ΔI) as right hand side control variables may introduce endogeneity into the estimation process. Endogeneity exists when endogenous variables are included as control variables; this creates a situation where there is a technical problem of correlation between the incorrectly included right hand side endogenous variable and the error term and the estimates will be biased, inconsistent and inefficient. Thus I report two additional sets, one with and one without the change variables (ΔP, ΔE and ΔI) on the right hand side.

Consider first the simplest model specification where the change variables are removed and the aggregate measure, percent of all businesses that have between one and four employees (Table 3). Lagged population has a negative impact on population growth and positive impact on income growth and a statistically weak positive impact on employment. This suggests that smaller counties, as measured by population, are slowly gaining on larger counties, an effect that can be referred to as population convergence. The positive coefficients on lagged population in the income and employment models suggest that larger counties have a comparative advantage in employment and income growth. Lagged per capita income has a small positive impact on population growth, a negative impact on income growth and has no statistical relationship to employment growth. The first two results are consistent and mirror the results of the population growth model. The negative coefficient on lagged income is particularly interesting because it strongly suggests convergence in per capita income across Wisconsin counties. This is an important observation because it provides evidence that poorer counties are slowly catching up to richer counties. Lagged employment has a positive impact on population growth, no impact on income and a negative impact on employment growth. Again these results are consistent and mirror the comparable results of the other two models lending confidence in the modeling results. All three models point to convergence across the three measures of economic growth; the negative coefficients of lagged population on population growth, lagged income on income growth and lagged employment on employment growth all strongly suggest that smaller and poorer counties are gaining on larger and richer counties. This result is consistent across all four specifications of the growth models lending even greater confidence in the results.

The results on total businesses that are microenterprises on the simplest specification of the growth model complement the simple correlation analysis presented in Table 2. The higher the percent of total businesses that are microenterprises has a negative influence on population growth, but a positive impact on per capita income and employment growth. The latter two results are consistent with expectation, but the negative influence on population is unexpected. In my discussion of the negative result in the correlation analysis (Table 2) I suggested that there may be a relationship between the prevalence of microenterprises in small counties. The power of moving beyond simple correlation

Table 3. Simple Carlino-Mills Using WI County Panel Data 1977-2004

	Population Growth	Per Capita Income Growth	Employment Growth	Population Growth	Per Capita Income Growth	Employment Growth
Lagged Population	-0.00030	0.00037	0.00026	-0.00024	0.00011	0.00036
	(4.10)	(1.89)	(1.25)	(3.14)	(0.54)	(1.65)
Lagged Per Capita Income	0.00000	-0.00001	0.00000	0.00000	-0.00001	0.00000
	(3.40)	(10.19)	(0.90)	(0.82)	(9.71)	(2.29)
Lagged Employment	0.00013	0.00002	-0.00038	0.00014	0.00024	-0.00052
	(2.29)	(0.10)	(2.43)	(2.45)	(1.58)	(3.23)
Change in Population	---	---	---	---	-0.77972	0.54065
					(11.39)	(7.09)
Change in Per Capita Income	---	---	---	-0.11749	---	0.35954
				(11.39)		(12.63)
Change in Employment	---	---	---	0.06953	0.30684	---
				(7.09)	(12.63)	
Percent of All Businesses Classified as Microenterprise	-0.02726	0.05046	0.06169	-0.02623	0.00570	0.06389
	(2.60)	(1.81)	(2.11)	(2.53)	(0.21)	(2.21)
Intercpet	0.00347	0.14568	-0.01589	0.02760	0.19882	-0.08440
	(0.36)	(5.62)	(0.58)	(2.71)	(7.72)	(2.97)

analysis is to control for such effects as population size. Because the basic model controls for population size and the negative relationship between microenterprises and population growth remains strongly suggests that the population scale argument outline above is incorrect.

The expanded model, the second set of results presented in Table 3, complements the first set of results, again lending confidence to analysis just presented. The convergence results where lagged population dampens population growth, lagged income dampens income growth, and lagged employment dampens employment growth all suggest that Wisconsin counties are slowly moving toward a state-wide average. The new results, change in the measures of economic growth on growth itself, are symmetric across the three equations. There is a negative relationship between change in population and income, a positive relationship between income and employment. Rather than a "clean" growth relationship between population, income and employment, where all three measures move together, there is a more complex pattern. Unfortunately, the research presented here can not explain what drives this complex relationship associated with population and only hypotheses can be offered. For example, is retirement migration a possible explanation where retires are not directly in the labor market and create jobs only indirectly through new spending in the local economy?

The results on microenterprises are also consistent with both the correlation analysis and the simpler of the two sets of results presented in Table 3. Microenterprises are associated with slower population growth and a positive relationship with employment growth. The positive relationship with per capita income growth, however, becomes statistically insignificant. This suggests that growth in income is dominated by patterns in population, income itself and employment growth.

In the next set of analysis I disaggregate microenterprises into six business types (Table 4). The relationship between the growth measures are comparable to the results in Table 3 and discussed in detail above. The consistency of the results with the expanded models again lends additional confidence

to the results. In terms of construction, the full models suggest that there is no statistically significant relationship This suggests that the positive relationship between small construction firms and income and employment growth observed in the simple correlations (Table 2) is overwhelmed by the other right hand side variables. It is possible that construction does not drive growth but is reactive to growth; as a region grows there is demand for new construction as well as reconstruction. There are similar results for small manufacturing firms. This is somewhat surprising because much of the microenterprise and economic growth literature speaks to the importance of the flexibility small manufacturing firms represent. As noted in the discussion of the literature in the introductory comments to this study, what defines a small business can be driving this result; using the criteria of one to four employees might be too narrow and before conclusions concerning Wisconsin can be drawn additional work examining alternative definitions of "small" is required. It is also possible that treating all manufacturing firms as homogenous may be masking important differences across different types of manufacturers. Again, additional work is required.

Microenterprise wholesale firms appear to have a positive impact on population as well as income but a negative relationship with employment growth. Although the statistical strength of these relationships are weak with the simpler set of results presented in Table 4, the results are stronger with the more complete models that include population, income and employment change. Microenterprise

Table 4. Expanded Carlino-Mills Using WI County Panel Data 1977-2004

	Population Growth	Per Capita Income Growth	Employment Growth	Population Growth	Per Capita Income Growth	Employment Growth
Lagged Population	-0.00026	0.00035	0.00037	-0.00019	0.00008	0.00050
	(3.23)	(1.65)	(1.64)	(2.24)	(0.37)	(2.07)
Lagged Per Capita Income	0.00000	-0.00001	0.00000	0.00000	-0.00001	0.00000
	(3.61)	(10.28)	(0.79)	(0.97)	(9.82)	(2.49)
Lagged Employment	0.00008	0.00002	-0.00045	0.00009	0.00023	-0.00061
	(1.34)	(0.12)	(2.65)	(1.35)	(1.36)	(3.35)
Change in Population	---	---	---	---	-0.79427	0.55570
					(11.60)	(7.30)
Change in Per Capita Income	---	---	---	-0.11960	---	0.36383
				(11.60)		(12.81)
Change in Employment	---	---	---	0.07182	0.31230	---
				(7.30)	(12.81)	
Percent of Construction Firms Classified as Microenterprise	-0.00164	0.00536	0.01352	-0.00151	-0.00046	0.01263
	(0.48)	(0.58)	(1.41)	(0.45)	(0.05)	(1.34)
Percent of Manufacturing Firms Classified as Microenterprise	0.00082	0.00117	0.00189	0.00142	0.00190	0.00020
	(0.34)	(0.18)	(0.28)	(0.60)	(0.31)	(0.03)
Percent of Wholesale Firms Classified as Microenterprise	0.00373	0.00610	-0.01228	0.00589	0.01409	-0.01789
	(1.67)	(1.03)	(1.98)	(2.69)	(2.49)	(2.94)
Percent of Retail Firms Classified as Microenterprise	-0.01152	0.02371	0.04643	-0.01365	-0.00189	0.04783
	(2.05)	(1.59)	(2.97)	(2.47)	(0.13)	(3.11)
Percent of F.I.R.E. Firms Classified as Microenterprise	-0.00557	-0.01070	0.00313	-0.00784	-0.01738	0.00766
	(1.69)	(1.23)	(0.34)	(2.38)	(2.05)	(0.84)
Percent of Service Firms Classified as Microenterprise	0.00453	-0.01545	0.01465	0.00173	-0.01976	0.02068
	(0.82)	(1.06)	(0.96)	(0.32)	(1.42)	(1.38)
Intercpet	-0.00928	0.17806	-0.01878	0.01844	0.22408	-0.09422
	(1.00)	(7.23)	(0.73)	(1.89)	(9.18)	(3.48)

retail firms have a negative impact on population growth but a positive impact on income and employment. The result on income, however, is weak and somewhat unstable. The simple correlation analysis (Table 2) coupled with the results for the more complete model provided in Table 4 suggests that conclusions on the relationship between micro retail firms and income growth are inconclusive. Micro finance, insurance and real estate firms have a negative impact on population and income growth and no impact on employment growth. These more complete modeling results challenges the simple correlations discussed above. The final results on service firms is consistent across the simple correlations (Table 2) as well as the base and expanded growth models (Table 4); in essence there is no statistical relationship between micro service firms and the three measures of economic growth.

The implication of the disaggregated analysis is consist with the findings of Deller and McConnon (forthcoming) in that a broad argument relating microenterprises and economic growth is too summative. In addition, the influence of microenterprises on growth hinges on the metric of growth. This study has demonstrated that microenterprises can have a dampening effect on population growth but a positive influence on income and employment growth. An equally important consistent result is that of convergence across all three measures of economic growth. Convergence occurs when larger counties, whether it is in terms of population, income or employment, are growing at a slower rate than smaller counties. In other words, counties are slowing converging to a state-wide average in terms of population, income and employment.

Conclusions

The simplest conclusion that can draw from this study is that microenterprises do play an important role in economic growth and development. But as with nearly all economic phenomena the broad generalization advanced by many advocates of microenterprises is not necessarily supported. The results from this study point to the complexity of economic phenomena and broad generalizations about economic growth and development policies must be seriously discounted. The overall results suggest that a higher percentage of firms classified as microenterprises are associated with higher levels of economic growth in two of the three metrics of economic growth analyzed in this study. The study also uncovers strong patterns of convergence where counties are slowly moving to a state-wide average in terms of population, income and employment.

This study should be viewed as exploratory. Previous studies that have employed the theoretical framework have found that there are several factors that are associated with economic growth that I do not in this analysis. For example, research has shown that amenities, both natural and built, are becoming increasingly important in understanding economic growth. By not including these potentially important variables in the models misspecification problems could lead to errors in the modeling results. Further work is needed in terms of more fully specifying the models. In addition, while the disaggregated microenterprises into six types of businesses, these classifications, particularly manufacturing, may be too aggregate.

Broadly speaking the policy conclusions for community economic development is clear: working with microenterprises in terms of entrepreneurship development or through focused business retention and expansion programs can help promote economic growth. Unfortunately, as observed by students of the politics of economic growth policies, such as Eisinger (1995), there is limited political support for efforts that focus on small businesses. In essence, there is strong political pressure to divert attention to the recruitment of larger firms which draws immediate public attention. The results of this study provide additional evidence that the promotion and support of microenterprises can have a positive impact on economic growth.

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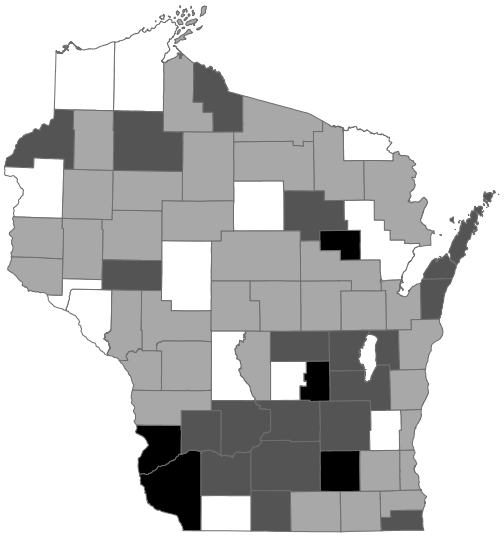
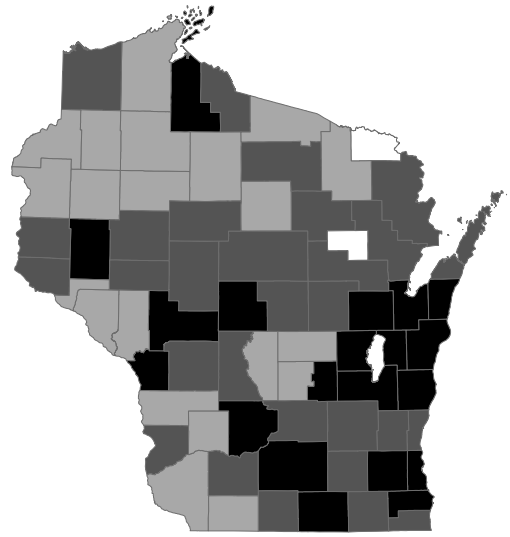
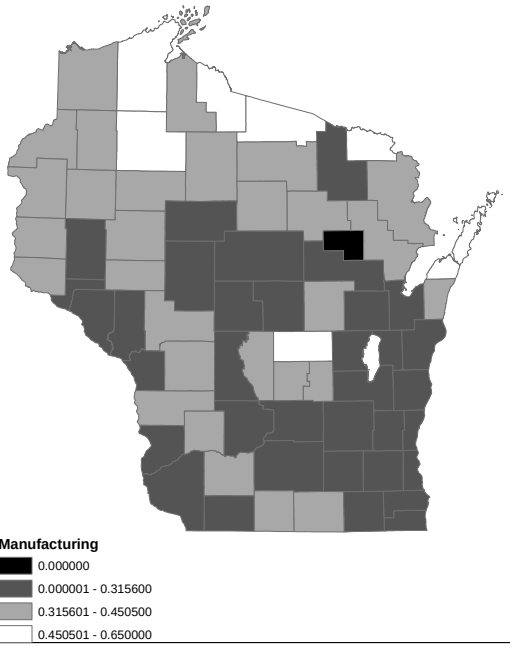
Map 1: Percent of Forestry, Fishing, Hunting and Agricultural Support Firms that have 1 to 4 Employees in 2004



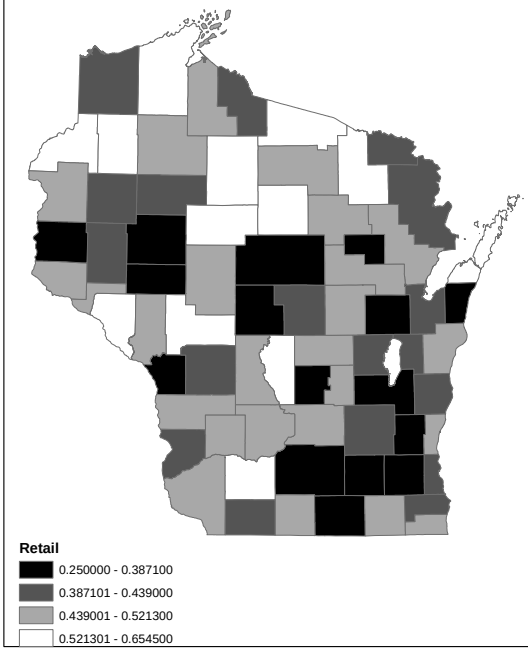
Map 2: Percent of Construction Firms that have 1 to 4 Employees in 2004



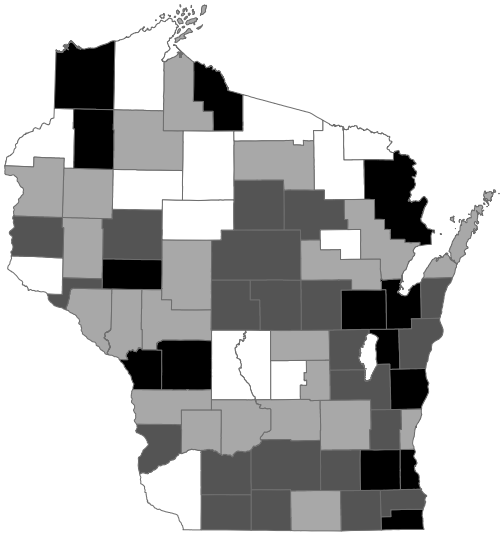
Map 3: Percent of Manufacturing Firms that have 1 to 4 Employees in 2004



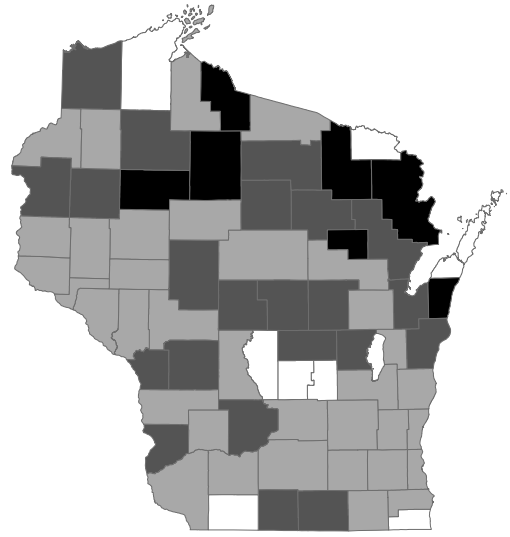
Map 4: Percent of Retail Firms that have 1 to 4 Employees in 2004



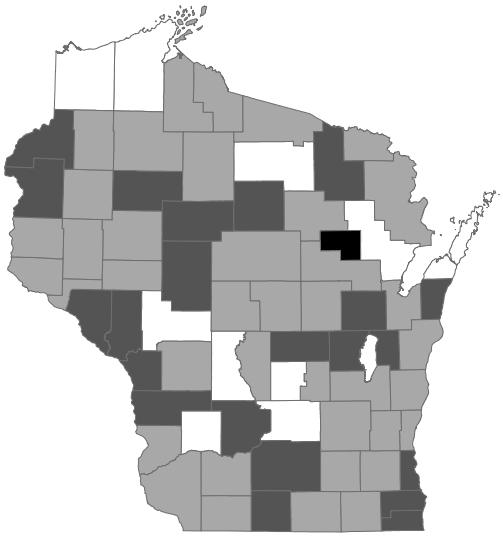
Map 5: Percent of Transportation and Warehousing Firms that have 1 to 4 Employees in 2004



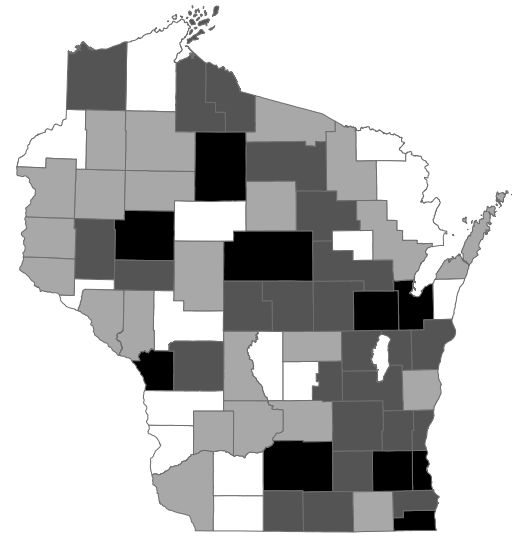
Map 6: Percent of Information Service Firms that have 1 to 4 Employees in 2004



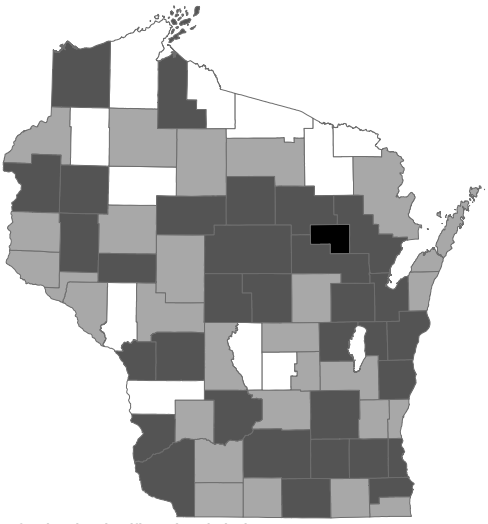
Map 7: Percent of Finance and Insurance Firms that have 1 to 4 Employees in 2004



Map 8: Percent of Real Estate, Rental and Leasing Firms that have 1 to 4 Employees in 2004



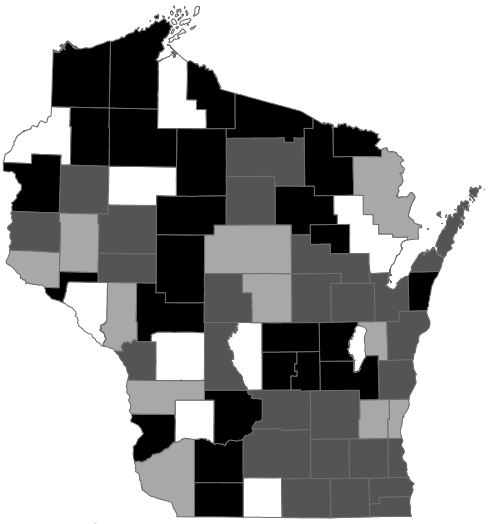
Map 9: Percent of Professional, Scientific and Technical Service Firms that have 1 to 4 Employees in 2004



Professional, Scientific and Technical

- 0.000000
- 0.000001 - 0.659600
- 0.659601 - 0.764700
- 0.764701 - 1.000000

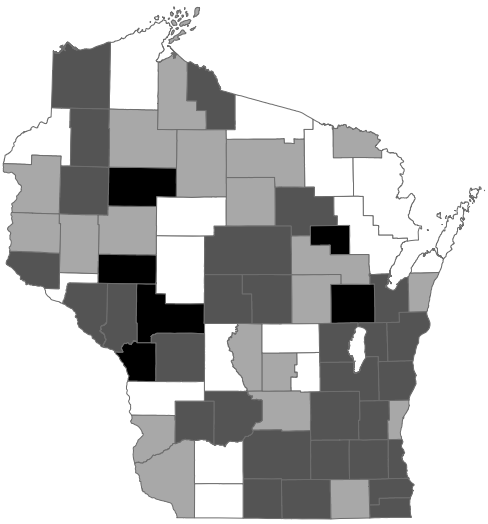
Map 10: Percent of Management Service Firms that have 1 to 4 Employees in 2004



Management Firms

- 0.000000 - 0.142900
- 0.142901 - 0.400000
- 0.400001 - 0.666700
- 0.666701 - 1.000000

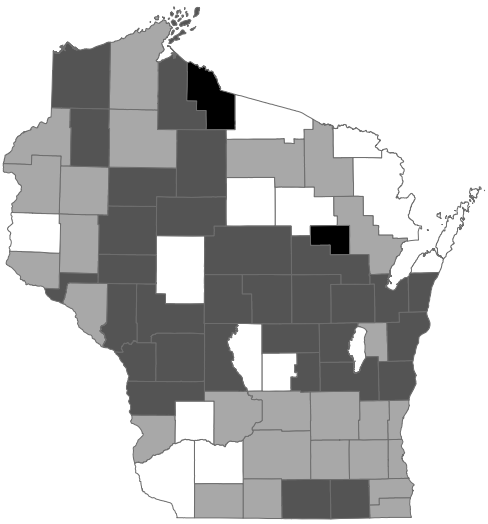
Map 11: Percent of Administrative, Support and Management Management Service Firms that have 1 to 4 Employees in 2004



Administrative, Support and Waste Management

- 0.000000 - 0.441700
- 0.441701 - 0.636400
- 0.636401 - 0.769200
- 0.769201 - 1.000000

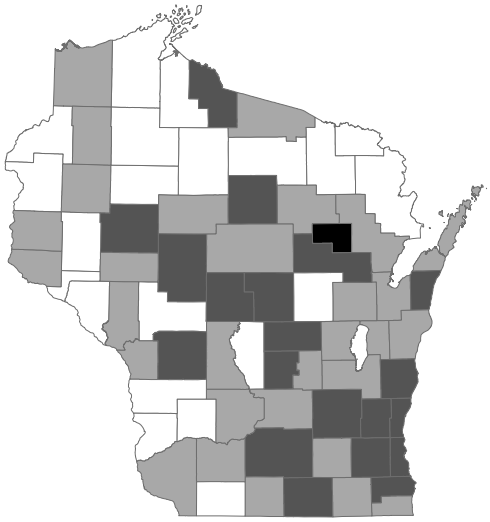
Map 12: Percent of Health Care and Social Assistance Firms that have 1 to 4 Employees in 2004



Health Care and Social Assistance

- 0.000000 - 0.200000
- 0.200001 - 0.395800
- 0.395801 - 0.478000
- 0.478001 - 0.666700

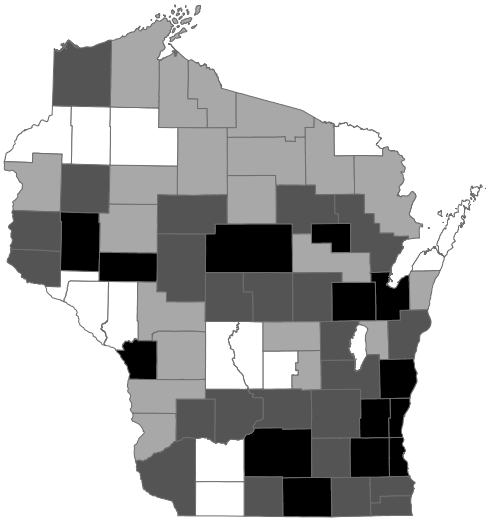
Map 13: Percent of Arts, Entertainment and Recreation Firms that have 1 to 4 Employees in 2004



Art, Entertainment and Recreation

- 0.000000
- 0.000001 - 0.523800
- 0.523801 - 0.688900
- 0.688901 - 1.000000

Map 14: Percent of Accommodation and Food Service Firms that have 1 to 4 Employees in 2004



Accommodations and Food Services

- 0.000000 - 0.339700
- 0.339701 - 0.464600
- 0.464601 - 0.572900
- 0.572901 - 0.711100

Figure 1. Percent of Forestry, Fishing, Hunting and Agricultural Service Firms with 1 to 4 Employees 2004

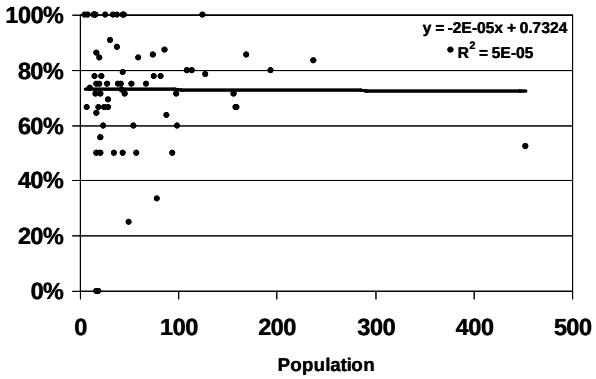


Figure 2. Percent of Construction Firms with 1 to 4 Employees 2004

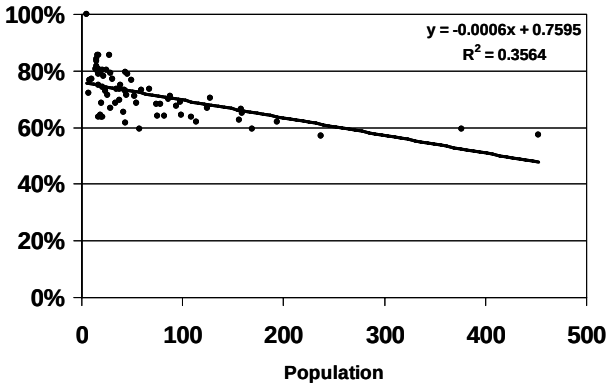


Figure 3. Percent of Manufacturing Firms with 1 to 4 Employees 2004

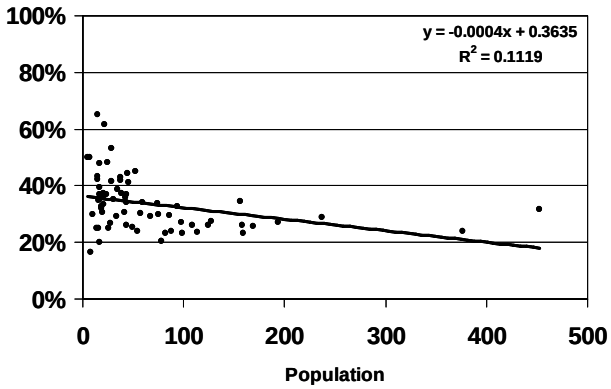


Figure 4. Percent of Retail Firms with 1 to 4 Employees 2004

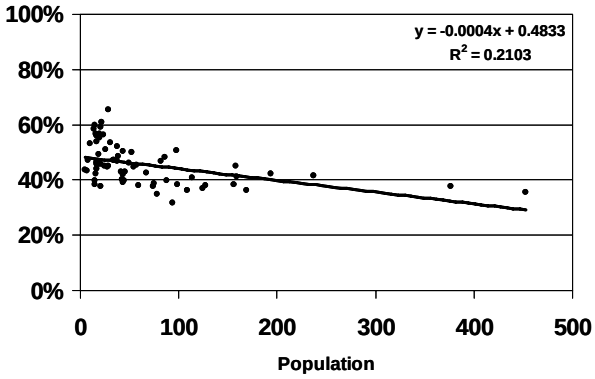


Figure 5. Percent of Transportation and Warehousing Firms with 1 to 4 Employees 2004

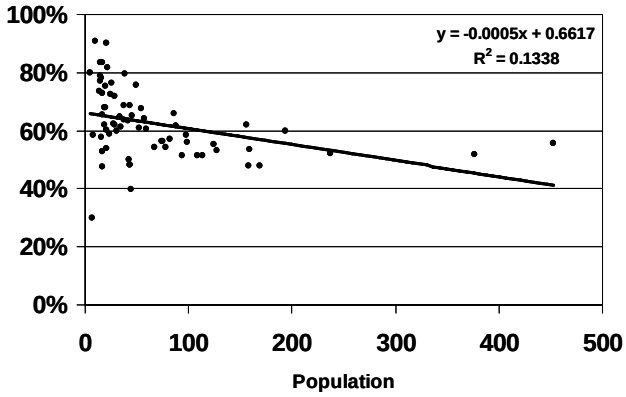


Figure 6. Percent of Information Service Firms with 1 to 4 Employees 2004

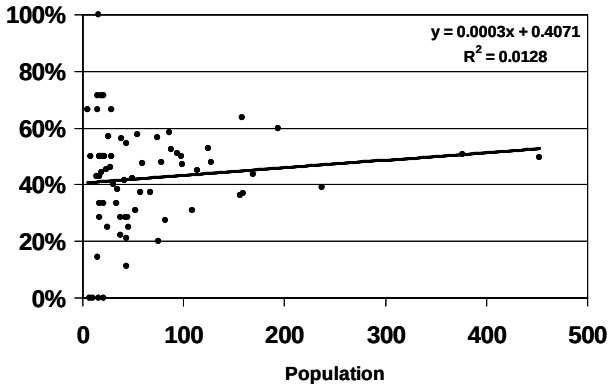


Figure 7. Percent of Finance and Insurance Firms with 1 to 4 Employees 2004

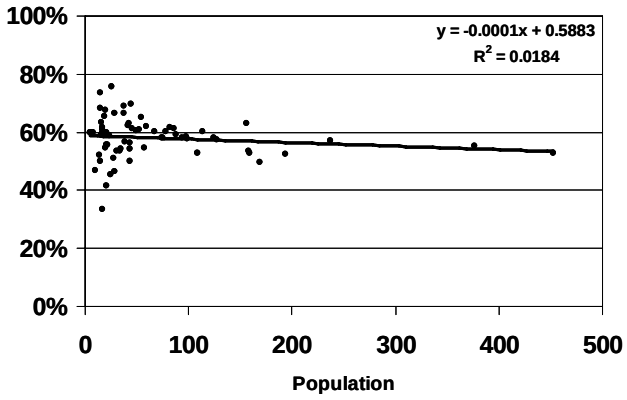


Figure 8. Percent of Real Estate, Renting and Leasing Firms with 1 to 4 Employees 2004

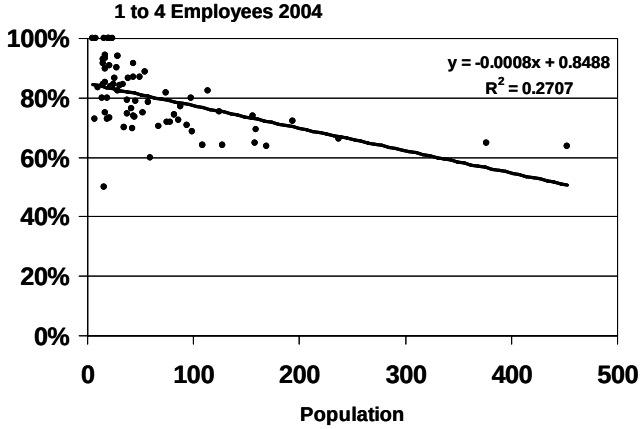


Figure 9. Percent of Profession, Scientific and Technical Firms with 1 to 4 Employees 2004

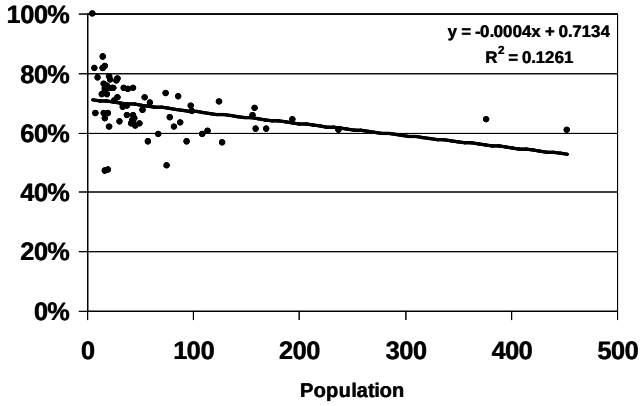


Figure 10. Percent of Management Firms with 1 to 4 Employees 2004

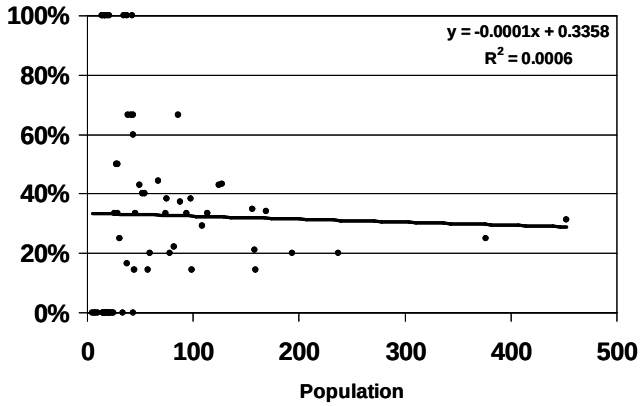


Figure 11. Percent of Administrative and Support and Waste Management and Remediation Services Firms with 1 to 4 Employees 2004

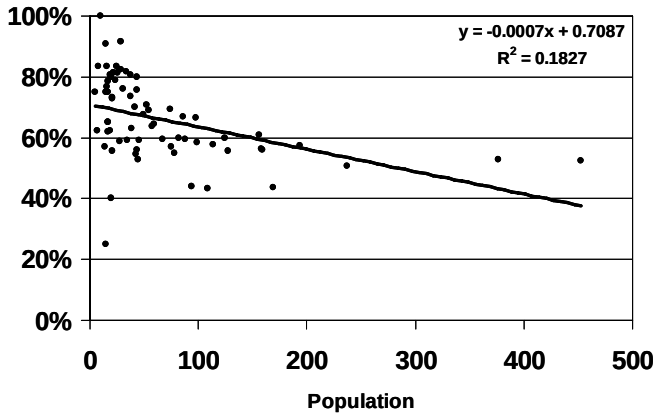


Figure 12. Percent of Health Care and Social Assistance Firms with 1 to 4 Employees 2004

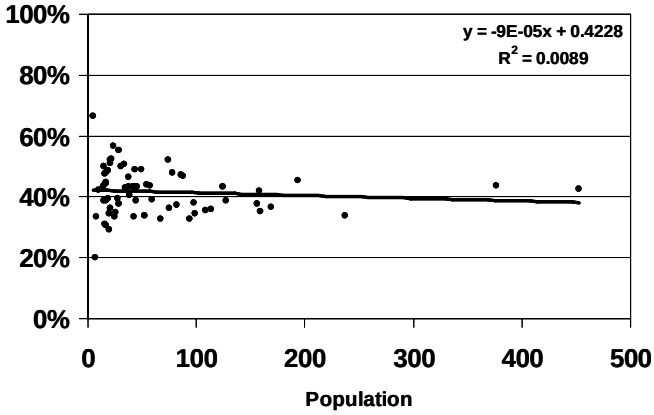


Figure 13. Percent of Art, Entertainment and Recreation Firms with 1 to 4 Employees 2004

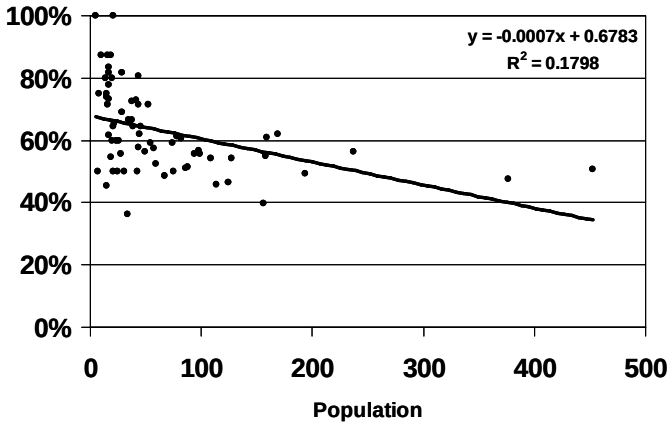


Figure 14. Percent of Accommodation and Food Service Firms with 1 to 4 Employees 2004