



Evaluating Rural Entrepreneurship Policy

by Stephan J. Goetz, Mark Partridge and Steven C. Deller

Rural Development Paper no. 46

©2009 The Northeast Regional Center for Rural Development

Located at: The Pennsylvania State University

7 Armsby Building, University Park, PA 16802-5602

Phone: 814-863-4656 FAX: 814-863-0586

E-mail: nercrd@psu.edu URL: nercrd.psu.edu

*“Enhancing the capacity of Land Grant Universities
to foster rural development and regional prosperity”*

Evaluating Rural Entrepreneurship Policy

Stephan J. Goetz, Mark Partridge and Steven C. Deller¹

June 28, 2009 (revised)

1. Introduction and Motivation

Interest in entrepreneurship and policy to influence entrepreneurial behavior has increased dramatically in recent years among academics and some practitioners, although it has yet to afflict all policymakers and economic development groups, such as local development agencies (Acs et al. 2008; Goetz et al. 2009). Major foundations, including Kauffman, Kellogg and Lowe, have invested heavily in this area, with the President of the Kauffman Foundation suggesting that entrepreneurship may be the *only* avenue through which the US will retain its global economic lead (Schramm 2006). In a recent special report, the *Economist* magazine (2009) refers to entrepreneurs as “global heroes.”

Despite this growing interest and the perceived need for greater reliance on self-employment, data on entrepreneurship trends at least in the US are equivocal. Data sources such as the Current Population Survey reveal a similar monthly rate (0.32%) of new firm formation since 1996 among households (Fairlie 2009), while the Regional Economic Information System shows steady increases in rural self-employment rates since 1969, from 18 to 25%, based on IRS Schedule C proprietor tax filings (Goetz 2008*a,b*). Both of these data sets are compiled by the federal government. Reconciling such data discrepancies is the first challenge in evaluating entrepreneurship policy. A second issue is collecting data of sufficient detail to make meaningful statements about rural versus urban differences in policy needs and policy impact, and whether it is even feasible or desirably to have a distinct entrepreneurial policy. An even greater challenge is distinguishing among types of entrepreneurship. Measured entrepreneurship could reflect opportunity and innovation that enhance local wealth or acts of necessity that reflect desperation and local economic decline.

Our plan for this paper is as follows. We next examine the position of entrepreneurship in economic development, using cross-country evidence. This is followed in Section 2 by a conceptual framework embedded in new growth and agglomeration theories, drawing largely on the work of Acs et al. (various years). The framework is valuable for sorting out different types of entrepreneurship and extracting key policy-relevant variables. In Section 3 we briefly present greater detail on data sets available within the US for potential policy evaluation, distinguishing among different geographic levels. We review and evaluate existing entrepreneurial development programs, including those of Small Business Administration (SBA), Kellogg and the Appalachian Regional Commission in Section 4. In Section 5 we outline econometric studies that could be helpful in evaluating entrepreneurial policy and suggest further research topics.

Table 1 provides an overview of the role of entrepreneurship in the process of economic development. As an economy evolves from being factor-based (e.g., agricultural) to efficiency-based (e.g., manufacturing) and ultimately innovation-based (e.g., information technologies), the primary form of organizing work changes, as do the dominant sectors, sources of growth, and firm sizes. While the logic outlined in this table is designed to track development over time, it also portrays development across the urban-rural continuum and, *ipso facto*, elements of the product cycle.

It is essential to understand and delineate these sources of growth when contemplating rural policy development. In particular, policy interventions that merely shift economic activity to rural areas through subsidies (for example), may represent a zero sum game or worse if agglomeration economies are negated as a result. Indeed, the World Bank (2009) argues that policy should be as spatially neutral as possible – e.g., entrepreneurship programs should apply across nations, not just rural territories.

¹ Goetz is Professor of Agricultural and Regional Economics, The Pennsylvania State University and Director, The Northeast Regional Center for Rural Development; Partridge is Professor of Agricultural, Environmental and Development Economics and Swank Chair in Rural and Urban Policy, Ohio State University; and Deller is Professor of Agricultural and Applied Economics, University of Wisconsin. Prepared for the OECD Conference on Rural Policy Evaluation, June 15-16, 2009.

Table 1. Entrepreneurship in Economic Development

Feature	Economic development base		
	Factor-based	Efficiency-based	Innovation-based
Main organizational form	Self-employ. / proprietorships	Wage-&-salary employment	Opportunity or necessity entrepre.
Income level	Lower	Medium	Higher
Dominant Sector	Natural resources	Manufacturing	Services
Sources of growth	Abundance of resources	Gap-filling; copy-cat	New products, proc., services
Firm size	Smaller	Larger	Small & large

Adapted from Acs et al. 2008.

The table also differentiates among true innovation and so-called imitation, input completing or copy-cat behavior, and entrepreneurship of necessity (reactive) from that of opportunity (radical). For example, the entrepreneurship of H. Schultz of Starbucks Corp. is essentially efficiency-based, as the chain copied the idea of Italian coffee shops. While there are limits to efficiency-based development strategies (see Deller 2009 for specific implementation strategies), and to factor-based development that relies on non-renewable resources, the potential for innovation-based economic development is fundamentally unbounded (Romer 1990).

The relationship presented in Figure 1, from Bosma et al. (GEM 2008, 22), illustrates the principles in table 1 using cross-country data. *Early stage entrepreneurial activity* is defined as the share of 18-64 year-olds active as beginning entrepreneurs or the proprietor-managers of a newly-created business. Generally, the early stages are characterized as agriculturally-intensive economies. The distinctive *U-shaped* pattern between entrepreneurial activity and GDP/capita is fairly consistent over time, as evident in previous GEM reports. The importance of institutions and macroeconomic stability in facilitating this pattern is noted in the GEM report (p21). Mature economies are characterized by a mixture of small and large firms that enjoy economies of scale and scope and benefit from agglomeration economies, or grow on the basis of innovation. For example, economies of scale tend to reside in manufacturing establishments that then transition into knowledge-based firms. Thus, in the most-mature economies such as the U.S., development policy needs to refocus towards entrepreneurship and knowledge-based establishments.

In the following section we outline a conceptual model of entrepreneurship. This allows us to identify variables pertinent for the subsequent applied policy analysis.

2. Conceptual and Empirical Frameworks

The challenge for economists essentially is to capture serendipity within a formal model. Further, Baumol has noted that yesterday's brilliant entrepreneurial insight is today's routine chore. Schumpeter identified creative destruction as the growth-maximizing process in which innovative, more profitable firms replace existing firms. While new growth theory does not address entrepreneurship explicitly, it provides a useful starting point. In this section we follow the development in Acs and Varga (2005: 327-8); Parker (2004) and Goetz and Rupasingha (2009). We start with a model of knowledge accumulation, measured as current-period patent applications,

$$(1) \quad dA/dt = \delta H_A^\lambda A^\varphi$$

where A denotes generally-known or cumulative codified knowledge, and H_A is the number of workers generating new technological knowledge (Acs and Armington 2006). Parameter δ measures research produc-

tivity whereas φ measures how codified knowledge spills over into economic activity (Romer 1990), or how effectively such knowledge is translated into new technologies.

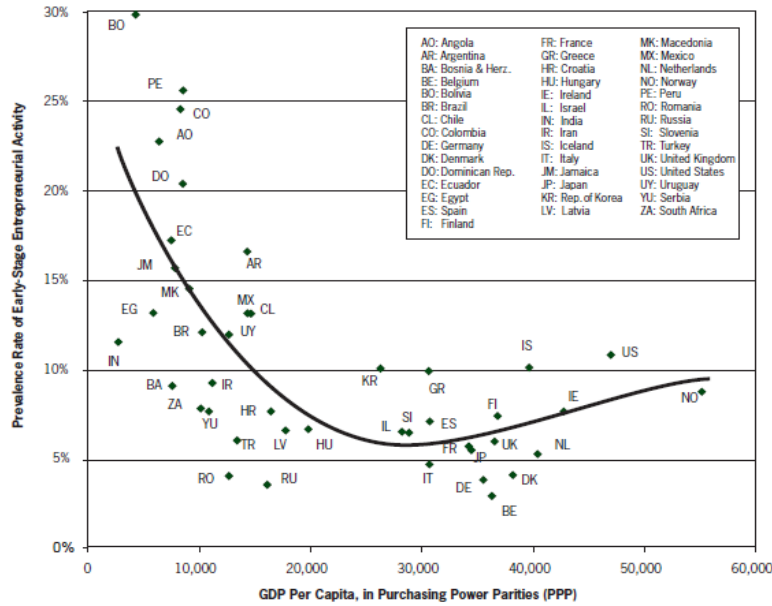


Figure 1. Early-Stage Entrepreneurial Activity Survey and GDP/Capita (fig 8 in Bosma et al., GEM 2008, p.22); data are from GEM Adult Population Data and IMF.
http://www.gemconsortium.org/download/1243181057011/GEM_Global_08.pdf

Parameter λ on the other hand captures spillovers of *tacit* knowledge among researchers. This parameter and its determinants are of particular interest to those concerned with influencing entrepreneurial efforts, as it varies endogenously over space. In particular, these kinds of spillovers have been shown to increase with agglomeration or population density (Rosenthal and Strange 2001, 2003), either within an industry due to localization economies (or Marshall-Arrow-Romer economies) or urbanization effects (or Jacobs externalities) across the entire region (see Kilkenny as quoted in World Bank 2009, p128). We hypothesize that the parameter is larger within industry clusters or among businesses with stronger networks. Acs and Varga (2005) operationalize this concept by allowing λ to vary with existing entrepreneurial activity and agglomeration. Their cross-country regression yields average estimates of $\lambda=0.36$ and $\varphi=0.70$, which is considerably larger, though of course, omitted factors could bias the results.

H_A varies over space, with different levels of agglomeration, and this leads to important geographic, including rural and urban, differences. The multiplicative nature of the function indicates that a given stock of knowledge grows more rapidly in the presence of more knowledge workers. Acs and Armington (2006 pp37-40) describe four distinct sources of entrepreneurial opportunity: 1. disequilibrium in existing markets; 2. political and socio-demographic change; 3. exploitation of A in equation (1) above, which is proxied by the cumulative stock of patents; and 4. development of new knowledge embodied in H_A , operationalized using R&D expenditures. Only the latter two sources can produce sustained growth, but without ongoing R&D investments even A will disappear as a source of opportunities.

From this model, we can motivate a neoclassical entrepreneurial decision equation, according to which a new business opportunity is pursued if it pays more than comparable wage and salary employment (Acs and Armington 2006, Goetz and Rupasingha 2009):

$$(2) \quad E_i = f([\pi_i(A_{\mu}C) - \omega_i]\theta_i)$$

E_i is entrepreneurial activity in region i , π_i profit expectations associated with the activity, A_{μ} knowledge that has not yet been tapped by (or spilled over into) existing firms, C measures entrepreneurial climate or

culture, ω_i is wage-and-salary earnings and θ_i is individual- and community-level receptiveness to new-firm formation. The latter may include spatially-varying education and skills, access to collateral and financing, daycare facilities, and regulations or other legal constraints.

While profit-making opportunities are locally-conditioned, variables such as A_μ may be constant over space. As such, no separate rural policy would be needed. Even so, however, one can envision cases where transaction costs and absorption capacity differ over space, thus creating differential opportunities. More importantly, because of agglomeration economies the returns to such endeavors will vary significantly between densely and less-densely settled places, as well as places that are remote or urban adjacent. This heterogeneity needs to be acknowledged in rural development policy, especially given the conventional wisdom that entrepreneurship is universally a way to ‘grow from within’ as an alternative to attracting outside investments.

2.1 Dependent variables

A first issue facing academics and analysts is that of choosing a measure of entrepreneurial activity. Two basic approaches are the ecological (firm-based) and labor market-based (Audretsch and Fritsch 1994). These determine the denominator used for the normalization in comparisons across geographies. Another question is whether to use firms as a unit of measure of growth or the number of employees. This is captured in table 2, which shows additional important measures. Additional data details and sources for this variable are presented in section 3.

Table 2. Entrepreneurship Indicators (Measures)

Firm-based	Employment-based	Other
Employer firm birth rate	High-growth firm rate by employment	High-growth firm rate by turnover
Employer firm death rate	Gazelle rate by employment	Gazelle rate by turnover
Business churn	Ownership rate start-ups	Value-added by young firms
Net business population growth	Ownership rates business population	Productivity contribution, young firms
Survival rate at 3 and 5 years	Employment in 3 and 5 year old firms	Innovation, performance, young or small firms
Proportion 3 and 5 year survival	Average firm size after 3 and 5 years	Export performance, small firms

Source: OECD 2008.

One measure usually ignored in this work is the number of businesses that were started, but should not have been started. Introducing this concept into policy evaluation frameworks is difficult, but the opportunity costs of these investments should be considered. The ratio of firm deaths to births (appropriately lagged) reveals a region’s effectiveness in growing firms. This could be calculated as net firm creation divided by the sum of firm deaths and births.

A critical conceptual distinction is that between entrepreneurship of necessity and opportunity. GEM survey data in Bosma et al. (2008) indicate that the share of businesses started in response to opportunity increases with a nation’s level of development, while the share established out of necessity falls (Figure 2). This could be tested across rural and urban areas as well. A complementary hypothesis is that opportunity entrepreneurship is associated with higher returns to self-employment compared to entrepreneurship of necessity. With the exception of value-added and productivity contribution measures, the variables in Ta-

ble 2 are counts or ratios of firms and individuals, and not of earnings, profitability or other returns to entrepreneurship.

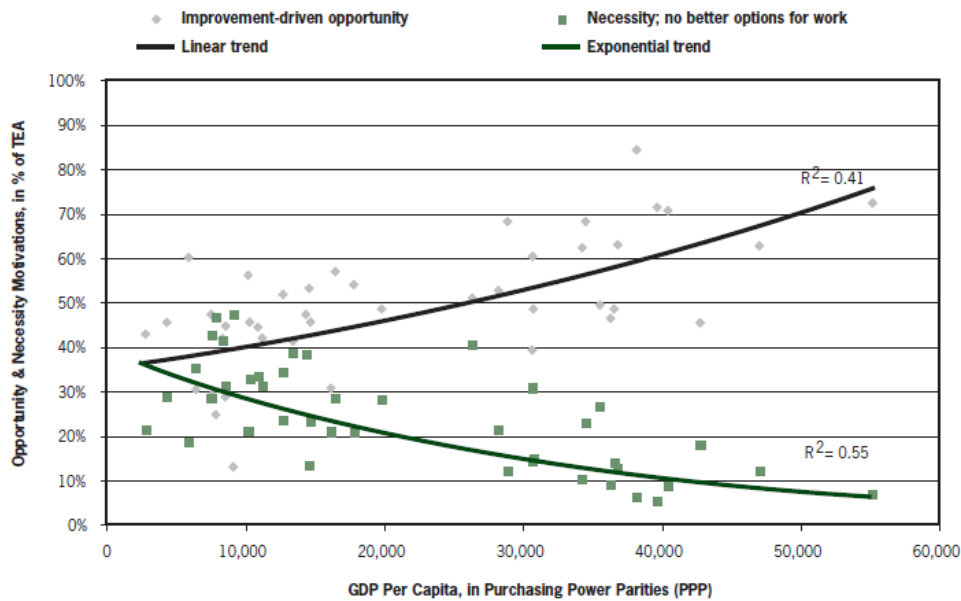


Figure 2. Necessity- and Opportunity-Based Entrepreneurship (Share of Early-Stage Activity), GEM 2008 Nations. Data source: see Fig. 1 above. http://www.gemconsortium.org/download/1243181057011/GEM_Global_08.pdf

Variables showing motivation for firm formation are not available at the state- or county-levels, as they have to be collected in specialized surveys. Preliminary work in Goetz 2008b shows some promise here in that patenting activity and higher educational or occupational attainment are positively associated with new firm formation, while the same is true of unemployment rates. Thus the former likely represents entrepreneurship of opportunity while the latter represents necessity, and it may be possible to construct synthetic estimates of the two from secondary data.

2.2 Independent variables

Explanatory variables in these types of studies can be categorized in a number of ways, building on equation (2). OECD (2008), for example, distinguishes among: 1. regulatory framework, 2. market conditions, 3. access to finance, 4. R&D and technology, 5. entrepreneurial capabilities, and 6. culture (see Ahmad and Hoffman 2008 for details). Goetz and Rupasingha (2009) use demographic characteristics as proxies for the potential pool from which the self-employed emerge, regional characteristics, and policy characteristics based on the state-level Economic Freedom of North America index.

More generally, entrepreneurship occurs at two or even three distinct levels. One is the individual, profit-seeking businessman or woman, with a specific set of characteristics that support or undermine entrepreneurial endeavors (Dyer et al. 2008). In econometric studies individual-level attributes such as age, income, education and home ownership (a measure of collateral) are used as proxies for characteristics of local entrepreneurs. In contrast, factors such as individual drive, motivation, tolerance for risk-bearing and ability to generate new insights cannot be captured with secondary data.

The second level is based on the notion that individuals are embedded in networks or community ecosystems and that they function only with underlying support systems and collaborators. These include access to pooled labor markets, transportation or other specialized service providers, in the sense of Marshall (1966(1890)). The cluster literature focuses on these linkages in great detail (e.g., Goetz and Rupasingha

2002; Goetz et al 2009). Although networks are commonly viewed as exogenous, individuals clearly act strategically when forming networks and alliances. A new literature is emerging here using game theory (Stuart and Sorenson 2007; Goetz, et al. in progress).

Yet a third literature focuses on how communities support individual entrepreneurs or their clusters – i.e., services they provide so as to ensure entrepreneurial success. This idea has been operationalized by Collaborative Strategies LLC in the form of the Entrepreneurial League System which builds on Lichtenstein and Lyons (2006) (see also Lichtenstein et al. 2004). These authors conceptualize an entrepreneurial pipeline through which nascent entrepreneurs pass. The collaborative strategy consists of viewing individual businesses as being at different stages in a league, much like Baseball’s system with rookies, A, AA and AAA players. Nizalov and Loveridge (2007) test this idea and find that the optimal local development policy varies with the existing size distribution of businesses, and that economic growth in Michigan would be higher if there were more small firms.

3. Potential Data Sources

(You cannot evaluate what you cannot measure)

In this Section we briefly present greater detail on data sets available, primarily within the US, for policy evaluation, distinguishing among different levels of geographic detail (Table 3; also Fairlie and Robb 2009). With the exception of YourEconomy.org (Dun and Bradstreet data) and the INC 5000, these data sets are from state or federal sources. While data reporting to the federal government is mandatory, sources such as the BEA-REIS (Bureau of Economic Analysis – Regional Economic Information System) obviously miss unreported activity. The REIS also overstates the true extent of entrepreneurship because individuals file a different Schedule C for each business they own. One manifestation of this over-counting is the downward-revision by 9% of the 2006 self-employed with the 2007 data release (D. McGranahan first pointed this out to us).

Table 3. Data Source, Geography, Frequency, Industry Detail, Earnings

Source	Geography, frequency	Industry detail	Firm size	Earnings
GEM	National	Yes		
Kauffman Index	State, 2004 – 2008	Yes	No	No
BDS Census	State, 1977 – 2005	Yes	Yes	Yes
County Business Patterns	County, 1990 – 2007	Yes	Yes	Payroll data
REIS, Self-employment	County, 1969 – 2007	Census years	No	Yes
YourEconomy.org; D&B	County, 1993 – 2007	Yes	4 cats	No
Employment Securities ES 202	Zipcode 1990-present	Yes (NAICS)	Yes	Yes
INC 5000 firms	Zipcode, 2008	Yes	No	No

Source: compiled by authors.

Yet self-employed individuals may be undercounted on the US Census, because they have only the option of declaring themselves as employed or self-employed. Those who work for others but have a business on the side are effectively excluded from the count. The same question essentially is used in the Current Population Survey, which forms the basis of the Kauffman Index (Fairlie 2009). Perhaps the most compelling evidence for undercounting of entrepreneurship is the so-called tax gap (the difference between actual and expected tax revenues), which was estimated at \$365bn in 2004, the most recent year for which data are available.

The larger problem here is not only that none of these data sources are set up specifically to collect entrepreneurship data but also that the definition of entrepreneurship remains elusive (see Headd and Saade 2008). Table 1 is helpful in this regard, but it is just a start.

The self-employed are essentially ignored by state-policymakers, where development efforts tend to focus on landing “big firms” with tax incentives. Smaller businesses are an important missed opportunity for policy purposes, and potentially for understanding rural differences. States report only ES202 data on employed workers even though most have the same data as those reported by BEA; non-employers or self-employed workers are not considered explicitly by state agencies, beyond general calls such as taxes being too high to attract businesses. Self-employed workers do not have rights to unemployment compensation in the US (as they do in Germany, for example, at least up to six months – see *BusinessWeek*, May 11, 2009, p.44; this article provides anecdotal evidence of the success of this policy).

Thus, as one immediate and first policy step, we recommend that States collectively take more careful consideration of the growing number of workers who work for themselves as opposed to others. Without systematic consideration and analysis, we do not know how these individuals are affected by state policies, let alone differences in rural and urban areas. And, the data already exist. The only additional step would be to aggregate income data by individuals’ Social Security Numbers with protection of privacy. In addition to basic income, details such as NAICS industry codes could be reported.

Plummer and Headd (2008) use Business Information Tracking Series (BITS) data on business establishment births and deaths, and find that new firm formation rates are essentially the same in rural as in urban areas, regardless of whether the ecological or the labor force method (see table 2) is used. Using the ecological approach they find average rates of firm births of 0.11 per firm for primary metro counties, 0.12 for suburban counties, and 0.11 for non-metro counties between 1990 and 2003.

To illustrate the difference across counties in self-employment changes over time and space we include a series of maps in the Appendix. The last map shows that the fastest-growing firms (INC5000) also have a presence in rural areas.

4. Evaluation of Existing Programs

Section 4 presents and evaluates existing private and public entrepreneurial development programs, including those of Small Business Administration (SBA), Kellogg and the Appalachian Regional Commission. An important context for the focus on local activities is provided by Michelacci and Silva (2007) who report for both the US and for Italy a *local bias in entrepreneurship*: businesses tend to be owned by local residents, and they are larger and more capital-intensive than other businesses. These authors suggest that local entrepreneurs are better able to take advantage of local financial resources in the regions of their birth, which helps explain their success.

4.1 Kellogg Foundation’s Entrepreneurial Development Systems

In 2004 the Kellogg Foundation announced a national competition for funding Entrepreneurial Development Systems (EDSs), in the amount of \$2mn each over three years. Over 180 applications were received, many of which were fundable, far exceeding the resources available. In the end, only 6 applications were funded. The Aspen Institute recently published an evaluation (Edgcomb *et al.* 2008).

In essence, the EDSs are designed to further economic development in lagging communities by 1. developing and expanding the pipeline of entrepreneurs; 2. building institutional and other support systems for entrepreneurs (including coaching, access to capital and market information, etc.); and 3. influencing state and local policies as well as communities so as to enhance local entrepreneurship. Edgcomb (2008: 18) note that:

[b]ecause of challenges with the data collection at each of the sites, the quantitative record is only partial. Nevertheless, the available data, along with documentation of the qualitative changes, produce a fairly strong picture of what has been achieved.

Edgcomb *et al.* (2008) write that the EDS projects in each region increased the understanding of and appreciation for entrepreneurship. This is an intangible but nevertheless important impact. Importantly, it was recognized that a state-wide approach is more effective than one focusing only on rural areas. Further, the efforts served as demonstration projects for how firm genesis and growth could be accelerated in a region. Investments made in supporting entrepreneurial infrastructure included promotion of entrepreneurship and facilitating of youth entrepreneurship. Entrepreneurship education was better integrated into college curricula and policymakers were educated on the need for appropriate policy. Finally, solutions were developed that could ensure the sustainability of these systems over time, if they are implemented (Edgcomb *et al.* 2008).

Overall, the amount of support provided by Kellogg likely was too little and extended over too short a period of time to effect profound and lasting local changes. Two million dollars is a small amount of money in a regional economy, and it takes time to develop such systems and, more fundamentally, to change the culture of a region in which wage-and-salary employment has long dominated other forms of work. This does not mean, of course, that the effort did not produce important insights; however, they may be costly or difficult to reproduce elsewhere. Secondary data on firm formation (BEA or Lowe Foundation) could now be used in more systematic impact assessments of the Kellogg funding. To our knowledge this has not been done but it represents an important opportunity because it would allow controls and counterfactuals to be introduced into the policy analysis. Of course, the presumption is that the funds spent were large enough to make a significant and independent difference in the regions involved. Figure 3 below, for one of the sites funded by Kellogg, suggests that the effort did not have a sustained impact, or that it made a difference relative to comparisons counties.

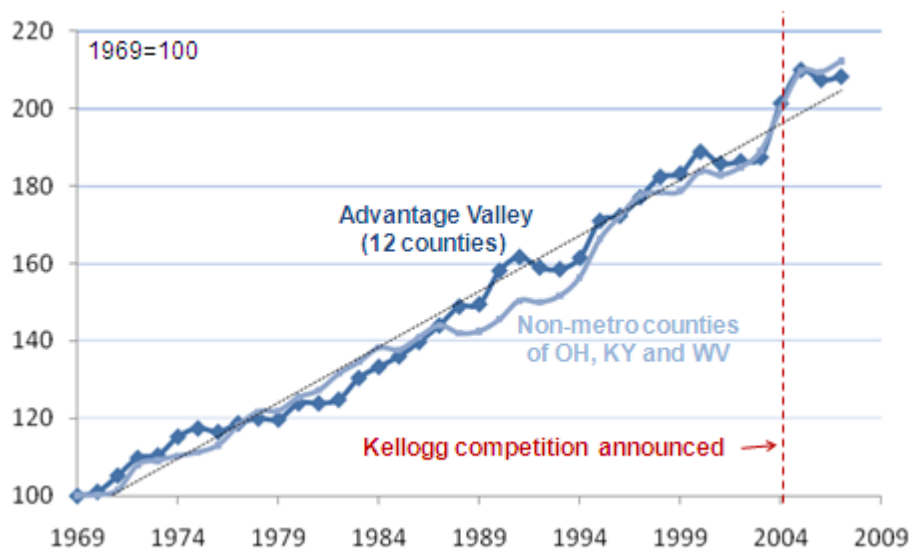


Figure 3. Change in Self-Employed Workers (BEA/REIS data), Advantage Valley, WV-OH-KY Kellogg ELS, 1969-2007

4.2 ARC's Entrepreneurial Development Effort

The Appalachian Regional Commission has invested nearly \$43mn since 1997 to create entrepreneurial economies, and this effort was recently evaluated by Markley *et al.* 2008. Three basic conclusions of this evaluation are that as a result of the initiative, the entrepreneurial pipeline in the region has expanded; entrepreneurs now have more information and greater skills; and the ARC region has more firms (1,787) and

jobs (12,178) as a result of these investments (pp1-2). Also, entirely new sectors have emerged, including the “sustainable wood products industry.”

For policy makers, Markley *et al.* (pp. 9ff) draw the following lessons. First, it is important to tap into local knowledge bases (compare this with equation 1 above), and to bring together various partners to create leverage, or agglomeration economies. The authors discuss other process indicators, but also propose that conventional measures of economic development – job creation – be replaced with an “entrepreneurship development metrics portfolio” (p.13). Such a portfolio might consist of (p.14) business profitability measures (see above); counts of youth contemplating entrepreneurship; changes in community support of local entrepreneurs; and measures related to the use of incubators.

Overall, the evaluation suggests that financial and technical support can make a measureable difference in a region’s entrepreneurial development. This requires, however, the presence of ‘soft factors’ such as local champions and leaders who can galvanize a community around such an initiative and a culture conducive to the experimentation embodied in entrepreneurship and small business development. Public policy can support these kinds of individuals, but without them such efforts, are likely to fail. Further, the very real impact of climate or culture on new firm formation in a region is evident. For example, Goetz and Rupasingha (2009) find that the ARC indicator variable is negative and statistically significant (t -statistic=3.17), even after controlling for other variables influencing self-employment growth rates during the 1990s. Presumably, other persistent cultural differences that precede the creation of and inclusion in the ARC region underlie this finding.

4.3 Other Federal Programs

Federal efforts in regional economic development have long been criticized for being disjointed across agency silos. Mills *et al.* (2008) argue that the federal government is missing important opportunities by not taking advantage of cluster principles. Instead, they argue that federal policy should aim (p.9) “to augment regional economic competitiveness by harnessing the power of geographic proximity and inter-organizational collaboration.” Of course, this leaves out rural areas with low population densities where clustering cannot be achieved economically. USDA/RD (rural development) spending has focused heavily on bricks-and-mortar type infrastructure spending, which may be necessary but not sufficient for effecting lasting changes (Kilkenny and Johnson 2007; also Renkow 2009).

While cluster principles may appeal superficially, they are difficult to implement in practice. In fact, there is much that we do not know about how clusters are started, how they subsequently grow or how policy can foster and support them. Finally, we do not know whether clusters enhance local growth or merely represent undiversified economies vulnerable to economic shocks.

Mills *et al.* also argue that federal efforts are not only piecemeal but also that they focus on inputs rather than outputs or even collaborative efforts across agencies. Most federal funds are dedicated to (individual) business, financial and technical assistance, or to research and development (Fig. 4). The over \$75bn spent in FY 2006 were spread across 14 departments or agencies and 250 individual programs involving regions, firms or workers that failed to establish any kind of synergy or leverage.

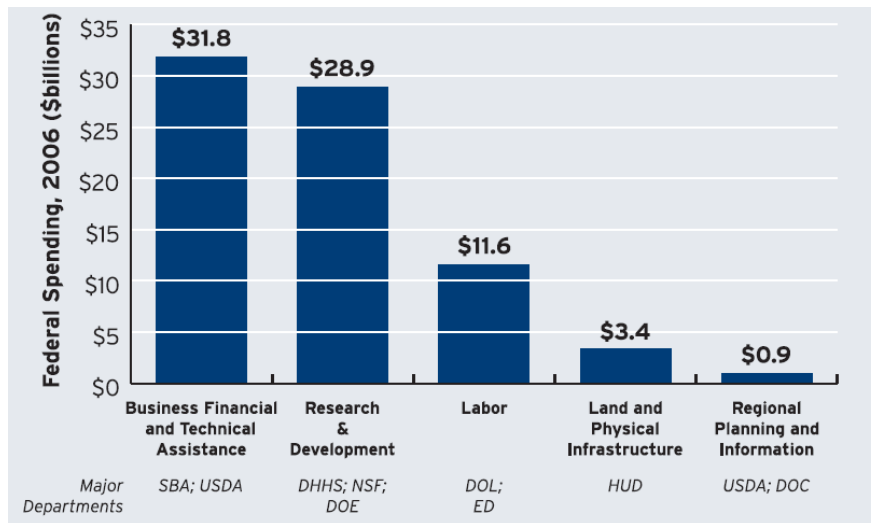


Figure 4. Federal Expenditures on Regional Economic Development, by Area and Department. *Source:* Mills *et al.* (2008), p.6.

Note: includes direct expenditures and loan guarantees

Along these lines, a recent GAO (2008) report found that ample opportunities exist for USDA/RD business development and the Small Business Administration loan programs to collaborate more closely. While collaborative efforts currently are in place, such as joint hosting of workshops and cross-referrals across the two agencies, such efforts tend to be sporadic and initiated in an *ad hoc* manner by individual employees rather than being systematically pursued by the agencies. Further (*p.i.*), “[t]he two agencies worked together frequently in a few locations, infrequently in others, and not at all in many locations.” The GAO recommends that the two federal agencies “define and articulate a common outcome, agree on roles and responsibilities, monitor key progress and results, and reinforce accountability for collaborative efforts. With such an approach, SBA and Rural Development could more effectively leverage each other's unique strengths and help to improve small business opportunities in rural communities.”

The Small Business Administration's Loan and Investment Programs were analyzed in more detail in Rossman *et al.* 2008. The SBA operates four different programs, with different criteria, exposure levels and goals (2008, p.2): the Section 7(a) Loan Guaranty; CDC/504 loans, MicroLoans, and Small Business Investment Company Funds (SBIC). In their regression analysis, Rossman *et al.* include basic characteristics of firms, of markets (region, industry, unemployment, etc.) and of the financing involved as explanatory variables. The dependent variable consists either of sales or employment growth of the firm. The financing essentially is the treatment effect, and it includes the dollar amount, interest rate and maturity or length of loan.

Rossman *et al.* (2008, p.58) conclude that SBA financing failed to boost firm performance as measured by sales or employment growth. In fact, they found that this growth increased *prior* to the receipt of financing and suggest that the anticipation of and preparation for the loan application triggered this positive response (or it may even indicate that ‘healthier’ firms were more predisposed to apply for funding). Further, their regression analysis revealed no statistical differences across the terms and conditions of the loans, whereas the age of the firm, industry and region did matter (accounting for only 2 to 10 percent of the variation in the dependent variable, however). In the case of the 7(a) program, agricultural and mining firms grew more rapidly in terms of sales (plus 65) and employment (plus 44 percentage points) than did firms in other industries (*op. cit.* p. 20 and 21). Since these types of firms tend to be more prevalent in rural areas, further investigations may prove fruitful. Furthermore, the opportunity costs of such investments need to be considered systematically in an assessment. For example, would more jobs have been created if the SBA has simply written checks to the population in the region?

4.4 NERCRD Listening Sessions

Prompted in part by the significant unmet need demonstrated in the response to the Kellogg RFP in 2004 (with 183 applicants), the four Regional Rural Development Centers hosted a series of listening sessions on rural entrepreneurship in their respective regions. In the Northeast, 100 rural stakeholders drawn from both the public and private sectors agreed that the following factors and conditions in their areas were conducive to entrepreneurship (Goetz and Whitmer 2007, p.7):

1. networking, mentoring and training opportunities
2. a variety of financial and other incentives to start businesses
3. increasing collaboration among entrepreneurs and agencies that support them
4. expansions of “buy local” campaigns and business-to-business channels

These developments were viewed as being possible only as a result of strong state and local leadership in the area.

Of course, the results of such listening sessions are not free of selection bias among the participants. In particular, the very fact that these individuals were present indicates that they were part of a network that was informed about the event in the first place. We have no observations on the needs of and insights from those not attending. Further, the insights gained are based on what respondents say rather than what they necessarily do. More systematic data and analysis are needed to arrive at robust policy recommendations.

Nevertheless, these listening sessions provided useful information about the possible roles of federal, state and local government policy in supporting – or discouraging – entrepreneurial efforts. These include affordable health care for small business owners, and in fact Goetz (2008*b*) finds that at the state-level higher health care premiums statistically are associated with lower rates of new firm formation. Other federal policy options include business insurance, lending programs even for higher-risk start-ups, longer-term funding streams, greater support for the SBA and the introduction of entrepreneurship curricula in K-12 education. These results provide clues about variables to be included in an overall evaluation framework, outlined in the next section.

5. Developing Effective Rural Policy: What the research shows

If there is a positive message in the existing literature it is that, using the measures of entrepreneurship available, government policy can influence economic start-up activities. Other measures, such as regional and individual-level characteristics are more difficult to influence over the short-term (e.g., average educational attainment of the population, individual drive and motivation), or even impossible to change in the long-run (e.g., natural amenities). On the other hand, policy effects are not always in the anticipated direction. For example, government spending on SBIR Awards is associated with fewer start-ups, holding other factors constant, possibly due to a crowding-out effect (Goetz 2008*b*). An applied, policy-relevant literature is also emerging around the returns to self-employment and entrepreneurship, as well as the effects of small business formation on the larger economy (Deller and McConnon 2008; Shreshta et al. 2007). Entrepreneurial climate and culture in a community also make a difference (Loveridge and Nizalov 2007; see Goetz and Freshwater 2001 for an attempt to measure such climate).

More specifically it is clear that soft factors – by definition difficult to measure, model and put into place – play important potential roles in making communities more entrepreneurial. In this section we focus more systematically on the factors that are measureable and about which we can draw generalizable conclusions for other communities. This raises the larger question of whether each community is so unique and the particular constellation of actors so idiosyncratic that principles learned and applied cannot work elsewhere, or whether a set of factors can be identified that consistently influence entrepreneurial activities across rural communities.

A basic evaluation framework:

ΔY = a measure of change over time in some measure of entrepreneurship (#, \$)

Y = base year value of the measure

X = regional/local conditions affecting Y (beyond policymakers' control)

Z = individual-level factors affecting Y

R = rural status indicator (continuum code, density or distance)

T = policy treatment effect (program, funding, training, etc.)

The dependent variable ΔY consists of basic measures of firm formation, including data stratified by firm size to capture pipeline effects, from YourEconomy.org. One construction of this variable is the number of firms transitioning from small to medium and from medium to large-sized over a predetermined period (e.g., five years). Another measure is ownership of the firm – in-state or out-of-state (these are likely to be FDI or big-boxes, etc.). This measure is supplemented by self-employment counts as well as average earnings per self-employed worker; the higher the latter, the greater the odds that the entrepreneurship in question involves opportunity rather than necessity. Conversely, other formulations would consider whether these Y measures in turn affect overall economic performance – i.e., are self-employment shares associated with enhanced local growth.

Following Acs and Armington (2006) and others, regional or local conditions affecting Y in vectors X and Z include average firm size (number of workers per firm); business sector specialization (establishment counts in each sector per capita); establishment density; and industry churn. In addition, we include educational attainment measures (college and high school graduate shares in adult population) and the share of the workforce consisting of self-employed workers (depending on the dependent variable). Acs and Armington's adjusted R-square values for these regressors at the level of LMAs and with firm formation rates as dependent variables exceed 60% for most sectors and are as high as 86% for business services. Additional measures include interstate highway access for transportation as well as broadband availability.

Potential treatment effects are SBA training workshops held, USDA RD programs held and actual expenditures, including loan guarantees, etc. Included here as well are the number of scientists and engineers in the community (occupational data from EMSI) as well as basic patent information to capture existing and new knowledge generation. These are variables H_A and A from equation 1 above, and they are interacted with R . To the extent that they are amenable to policy influence, we also include measures of networks to supplement the agglomeration or clustering effect captured in the number of firms per unit area. For example, Goetz and Shrestha (2009) use coffee shops, cafeterias and drinking places as venues that encourage networking and find that their presence is independently associated with higher returns to self-employment. Endogeneity and omitted variable bias that can arise in cross-sectional approaches needed to be accounted for carefully. Creative ways of instrumenting for potential endogeneity has been an important research topic in the associated growth literature (e.g., Partridge et al., 2008b; 2009b).

The variables in vector T are entered as alternative (competing and complementary) policies, and in the form of interactions with one another and with the density term (R) to evaluate the effectiveness of alternative rural policies.

Essentially the data on small-firm formation are starting to become available for more rigorous policy assessment even at the county-level. At the same time advances in spatial statistical analysis allow researchers to study more seriously the effects of proximity – and of distance and position within the urban spatial hierarchy (Partridge et al 2007, 2008b, 2009b). Likewise, spatial heterogeneity in the effects of the particular variables can be considered using Geographically Weighted Regression (Partridge et al., 2008a).

Many advances have occurred in the general program evaluation literature (Imbens and Wooldridge, 2009). In particular, the issue of “program selection” has greatly advanced. In the proposed study, special care must be taken because communities that receive assistance could differ systematically from those that do not – e.g., they have better leadership that identified the government program in the first place. One correction is to adjust for selectivity effects based on the probability of selection into the “program” and to use

weighted regressions based on propensity scores. However, Imbens and Wooldridge (2009) point out that the standard errors of the estimates must be estimated with significant care.

In summary, we maintain that with a more refined and thorough understanding of the entrepreneurial process, improvements in spatial econometric tools, and the availability of county-level data bases, as outlined above, the conditions are ripe for further policy evaluation research on entrepreneurs, and how the process plays out in urban vs. rural areas. Access to geo-coded individual-level tax records with adequate protections of privacy could produce even more robust findings. The OECD/EUROSTAT conception of entrepreneurship indicators: Determinants → Entrepreneurial Performance → Impacts outlined in Ahmad and Hoffmann (2008, 10) is valuable as an overall analytical framework. We would expect the cumulative benefits of such a policy evaluation to far exceed the costs in the long-run.

6. Conclusion

Entrepreneurship is the missing “ingredient x” that is believed to enhance growth and raise living standards. Indeed, support for entrepreneurship and associated programs to increase small business formation has in part grown out of frustrations with past efforts that often focus on the latest fads in economic development including tax incentives, clusters, attracting young creative class workers, and so on. Entrepreneurship has the particular advantage of being locally grown, which is especially important in rural areas. Having a diverse set of entrepreneurs seems especially promising given that traditional rural base industries in agriculture, extractive industries and manufacturing are typically associated with negative growth (Goetz and Debertin, 1996; Kilkenny and Partridge, forthcoming). Yet, the lack of agglomeration economies in remote rural areas including the lack of access to thick input markets and knowledge spillovers place rural entrepreneurs at a significant disadvantage, suggesting that while the benefits of promoting rural entrepreneurs may be high, so are the costs.

Policymakers have created programs at the federal, state and local levels designed to enhance entrepreneurship. The shift to supporting entrepreneurship should not be taken without rigorous efforts to evaluate these policies. While many efforts have evaluated these programs, practical and conceptual barriers limit the value of their use and their transferability. Foremost, evaluation efforts need to appraise the goals of the ‘entrepreneurship’ programs (e.g., Partridge et al., 2009a). Are these efforts aimed at increasing small business formation, numbers of proprietors, profits, regional output, etc.? Or is entrepreneurship a means to an end – i.e., policy enhances entrepreneurship in order to improve *overall* local and regional economic conditions such as through greater population and job growth. In terms of using entrepreneurial policies to enhance rural development, the latter set of goals seems more appropriate.

One key concern that limits evaluation of entrepreneurship programs is the question of measurement. Clearly, conventional data sets only allow an approximation, forcing analysts to use indirect measures thought to be associated with entrepreneurship – e.g., numbers of self employed, earnings per self-employed worker, numbers of small businesses created, etc. Measuring entrepreneurship is especially critical considering the distinctions between entrepreneurship of necessity versus opportunity, but as we have noted new data sets may allow researchers to draw more rigorous conclusions in the future.

Numerous efforts have evaluated rural entrepreneurship, but most have lacked sufficient rigor, including controls. Many are not based on structural economic models of entrepreneurship, let alone structural models of how entrepreneurship enhances local economies. Likewise, the propensity exists to count direct and indirect jobs using impact models, which may be criticized for over-counting the actual numbers of jobs created (Kilkenny and Partridge, forthcoming). Finally, in these models causality needs to be established with great caution. For example, while entrepreneurship may improve local economic activity, strong local economies also attract entrepreneurs. Economists have become much more careful with modeling causality in the last decade. Using the types of models proposed here, we believe careful and relevant evaluation is possible, but this requires adequate funding and flexibility to allow researchers to conduct these studies.

References

Acs, Z. and Armington, C. (2006) *Entrepreneurship, Geography and American Economic Growth*, Cambridge Univ. Press, Cambridge, MA, 250pp.

Acs, Z., Glaeser, E., Litan, R., Fleming, L., Goetz, S.J., Kerr, W., Klepper, S., Rosenthal, S., Sorenson, O., Strange, W. (2008) *Entrepreneurship and Urban Success: Toward a Policy Consensus*, Ewing Marion Kauffman Foundation, Kansas City, MO, Feb., 26pp.

Acs, Z., Desai, S. and Hessels, J. (2008) Entrepreneurship, Economic Development and Institutions. *Small Business Economics* 31, 219-234.

Acs, Z. and Varga, A. (2005) Entrepreneurship, Agglomeration and Technological Change, *Small Business Economics* 24: 323-334.

Ahmad, N. and Hoffman, A.N. (2008) A Framework for Addressing and Measuring Entrepreneurship, OECD, Paris, France, Statistics Working Paper, STD/DOC(2008)2, 36pp.

Bosma, N., Acs, Z., Autio, E., Coduras, A., Levie, J. (2008) *Global Entrepreneurship Monitor 2008 Executive Report*, Babson College, Universidad del Desarrollo, and London Business School. 58pp.

Deller, S.C. (2009) Import Substitution and the Analysis of Gaps and Disconnects, Ch. 19 in Goetz, S. et al. Editors, Routledge/Taylor & Francis, UK, pp 365-388.

Deller, S.C and McConnon, J.C. Microenterprises and Economic Growth: A Panel Study of the US States: 1977-1997. *Applied Economics Letters*. Publ. on-line 13 Feb 2008.

Dyer, J.H., Gregersen, H.B., and Christensen, C. (2008) Entrepreneur Behaviors, Opportunity Recognition, and the Origins of Innovative Ventures. *Strategic Entrepreneurship Journal*, 2:317-38.

Economist Magazine (2009) "Global Heroes: A Special Report on Entrepreneurship," May 14, print edition, 20pp.

Edgcomb, E.L, Klein, J.A. and Black, D. (2008) *Revitalizing Rural Economies Through Entrepreneurship Development Systems*, Microenterprise FIELD, The Aspen Institute, Dec. 127pp. Available at:

Fairlie, R.W. (2009) The Kauffman Index of Entrepreneurial Activity: 1996-2008, Ewing Marion Kauffman Foundation, Kansas City, MO.

Fairlie, R.W. and Robb, A.M. (2009) Entrepreneurship, Self-Employment and Business Data: An Introduction to Several Large, Nationally-Representative Datasets, Forschungsinstitut zur Zukunft der Arbeit, Discussion Paper No. 4052, 17pp.

GAO (2008) *Rural Economic Development: Collaboration between SBA and USDA Could Be Improved*, GAO-08-1123, US Government Accounting Office, Washington, DC; September 18, 51pp.

Goetz, S.J., (2008a) Self-Employment: The New Rural Reality, *Rural Realities*, Rural Sociological Society, 2(3):13pp.

Goetz, S.J., (2008b) *State Entrepreneurial Climate Estimates: An Update Based on the Kauffman Index*. RDP-41, The Northeast Regional Center for Rural Development, Univ. Park, PA, Sept. 27pp. Also available at: <http://ssrn.com/abstract=1265243>

Goetz, S.J. et al. (in progress) "Networks, Clusters and Game Theory: Strategic Behavior in Small-Farm Agriculture," University Park, PA.

- Goetz, S.J. and Debertin, D.L. (1996) Rural population decline in the 1980s: Impacts of farm structure and federal farm programs. *American Journal of Agricultural Economics* 78(3), 517-529.
- Goetz, S.J., Deller, S.C. and Harris, T. (2009), Editors, *Targeted Regional Economic Development*, Routledge/Taylor & Francis Group, Abingdon, Oxon, UK. 410pp.
- Goetz, S.J., and Freshwater, D. (2001) State-Level Measures of Entrepreneurship and a Preliminary Measure of Entrepreneurial Climate, *Economic Development Quarterly* 15(1), 58-70.
- Goetz, S.J. and Rupasingha, A., (2002) High-Tech Industry Clustering: Implications for Rural Areas, *American Journal of Agricultural Economics* 84(5), 1229-36.
- Goetz, S.J. and Rupasingha, A. (2009) Determinants of Growth in Non-Farm Proprietor Densities in the U.S., 1990-2000, *Small Business Economics* 91(1), 22-38.
- Goetz, S.J., and Shrestha, S. (2009) Explaining Self-Employment Success and Failure: Wal-Mart vs. Starbucks or Schumpeter vs. Putnam, *Social Science Quarterly* 91(1), 22-38.
- Goetz, S.J. and Whitmer, W. (2007) *Regional Listening Sessions on Rural Entrepreneurship: Lessons from the Northeast, RDP-37*, The Northeast Regional Center for Rural Development, University Park, PA, July; 13pp.
- Headd, B. and Saade, R. (2008) Do Business Definition Decisions Distort Small Business Research Results? Small Business Administration, Wash. DC. Working Paper, 34pp.
- Imbens, G. and Wooldridge, J.M. (2009) "Recent Developments in the Econometrics of Program Evaluation." *Journal of Economic Literature* 47(1), 5-86.
- Kilkenny, Maureen R., and Stanley R. Johnston. 2007. "Rural Development Policy." <http://www.cabnr.unr.edu/kilkenny/Rural%20Development%20Policy%20for%20AEI.pdf>
- Kilkenny, M. and Partridge, M.D. (forthcoming) Export sectors and rural development. *American Journal of Agricultural Economics*.
- Lichtenstein, G.A., Lyons, T.S. and Kutzhanova, N. (2004) Building Entrepreneurial Communities: The Appropriate Role of Enterprise Development Activities. *Journal of the Community Development Society* 35(1), 5-24.
- Lichtenstein, G.A. and Lyons, T. (2006) Managing the Community's Pipeline of Entrepreneurs and Enterprises: A New Way of Thinking About Business Assets. *Economic Development Quarterly* 20(4), 377-386.
- Loveridge, S. and Nizalov, D. (2007) Operationalizing the Entrepreneurial Pipeline Theory: An Empirical Assessment of the Optimal Size Distribution of Local Firms. *Economic Development Quarterly* 21(3), 244-262.
- Markley, D., Pages, E., Dabson, B., Johnson, T., Lawrence, S., Yanosy, S. and Dabson, K. (2008) *Creating an Entrepreneurial Appalachian Region: Findings and Lessons from an Evaluation of the Appalachian Regional Commission's Entrepreneurship Initiative: 1997 – 2005*, RUPRI Center for Rural Entrepreneurship, Dec. 17pp.
- Marshall, A. (1966(1890)) *Principles of Economics* 8th edition, London: McMillan.
- Michelacci, C., and Silva, O. (2007) Why So Many Local Entrepreneurs? *Review of Economics and Statistics* 89(4), 615-633.

Mills, K.G, Reynolds, E.B. and A. Reamer (2008) Clusters and Competitiveness: A New Federal Role for Stimulating Regional Economies, Brookings Institution, Washington, DC, Metropolitan Policy Program, 12pp.

OECD (2008) Measuring Entrepreneurship: A Digest of Indicators, OECD Eurostat Entrepreneurship Program, Paris, France, 28pp.

Partridge, M.D., Bollman, R. Olfert. M.R. and Alasia, A. (2007) Riding the Wave of Urban Growth in the Countryside: Spread, Backwash, or Stagnation, *Land Economics*, 83: 128-152.

Partridge, M.D., Rickman, D.S., Ali, K. and Olfert. M.R. (2008a) The Geographic Diversity of U.S. Non-metropolitan Growth Dynamics: A Geographically Weighted Regression Approach. *Land Economics*, 84: 241-266.

Partridge, M.D., Rickman, D.S., Ali, K. and Olfert, M.R. (2008b) Lost in Space: Population Dynamics in the American Hinterlands and Small Cities. *Journal of Economic Geography*. 8(6): 727-757.

Partridge, M.D., Olfert, M.R. and Ali, K. (2009a) "Lessons from the Evaluation of Canadian and U.S. Rural Development Policy." Paper presented at the OECD Expert Consultation on Aiding the Process of Agricultural Policy Reform Workshop. Paris, France, June 15, 2009.

Partridge, M.D., Rickman, D.S., Ali, K. and Olfert, M.R. (2009b) Agglomeration Spillovers and Wage and Housing Cost Gradients Across the Urban Hierarchy. *Journal of International Economics*.

Plummer, L.A. and Headd, B., (2008) *Rural and Urban Establishment Births and Deaths Using the U.S. Census Bureau's Business Information Tracking Series*, SBA Office of Advocacy Working Paper No. 316, Wash. DC. 58pp.

Renkow, M. (2009) Evaluating Rural Infrastructure Policy; this workshop.

Romer, P. (1990) Endogenous Technological Change. *Journal of Political Economy* 98, S71-S102.

Rosenthal, S.S. & Strange, W.C. (2001) The determinants of agglomeration. *Journal of Urban Economics*, 50, 191-229.

Rosenthal, S.S. & Strange, W.C. (2003) Evidence on the nature and sources of agglomeration economies. Prepared for the *Handbook of urban and regional economics*, Vol. 4. Accessed from www.rotman.utoronto.ca/~strange on November 22, 2005.

Rossmann, S.B., and Theodos, B. (2008) *Key Findings From the Evaluation of the Small Business Administration's Loan and Investment Programs*, The Urban Institute, Washington, D.C., 66pp.

Schramm, C.J. (2006) *The Entrepreneurial Imperative*, HarperCollins, New York, NY, 195pp.

Shrestha, S.S., Goetz, S.J. and Rupasingha, A. (2007) Proprietorship Formations and US Job Growth, *Review of Regional Studies* 27(2), 146-168.

Stuart, T.E. and Sorenson, O. (2007) Strategic Networks and Entrepreneurial Ventures, *Strategic Entrepreneurship Journal* 1, 221-227.

World Bank (2009) *World Development Report Reshaping Economic Geography*. Washington, DC: The World Bank.

APPENDIX: Data sources

- BEA Regional Economic Information System (Census Bureau); 1969-2006 – counties
 - <https://www.bea.gov/regional/reis/>
- YourEconomy.org – 1993-2007, county-level (Dun and Bradstreet/NETS data)
 - <http://www.youreconomy.org/>
- ES 202, State Employment Securities series (requires confidentiality waiver)
- Business Dynamics Statistics (Kauffman Fdn. and Census Bureau) – 1977-2005; state-level only
 - <http://www.ces.census.gov/index.php/bds>
- County Business Patterns (Census web-site)
- Kaufman Index of Entrepreneurial Activity (state-level)
 - http://sites.kauffman.org/pdf/KIEA_041408.pdf