Expanding the notion of entrepreneurship capital in American counties: A panel data analysis of 2002-2007.

By: Erick PC Chang, Kaustav Misra and Esra Memili

Abstract:

Entrepreneurship capital refers to the factors of a region that drives new businesses (Audretsch and Keilbach, 2004). This study considers industry growth and performance in manufacturing, retail and service as components of entrepreneurship capital to drive the long-term growth of new establishments. Using a panel data of 2,940 counties from 2002–2007, our results support the notion that the overall new venture activity is benefited by the industry growth and performance. Future research directions and practical implications are also discussed.

Keywords: entrepreneurship capital | U.S. counties | new venture growth | industry growth | entrepreneurship | developmental entrepreneurship

Article:

1. Introduction

Theorists of economic development and growth from Schumpeter (1934) to Romer (1986, 1994) have emphasized the role entrepreneurship has on fostering prosperity in a particular region. Audretsch and Keilbach (2004:951) defined entrepreneurship capital as "a region's endowment with factors conducive to the creation of new businesses." These factors can include the actual creation of new businesses as well as a set of socio-economic indicators that generate externalities conducive for future entrepreneurial activity (Chang et al., 2011; Minniti, 2005). Empirical studies have provided evidence for the benefits of entrepreneurial activities to foster economic development and growth (Carree et al., 2002; van Stel et al., 2005) and subsequent entrepreneurial activity (Chang et al., 2011). At the aggregate level, entrepreneurial activity is not an isolated event as the interactions of businesses, individuals, and several institutions provide a positive environment for influencing start-up decisions and growth (Audretsch and Keilbach, 2004; Audretsch and Lehman, 2005; Sternberg and Rocha, 2007). We can observe the strong entrepreneurial culture in American counties and communities as more than 600,000 new firms are created per year (Minniti and Bygrave, 2004; SBA Office of Advocacy, 2006) and such venturing activities create favorable conditions for economic growth (Bruce et al., 2009). Thus,

aspiring entrepreneurs can be driven to locate their start ups in places where not only an entrepreneurial culture tends to dominate (Bygrave and Minniti, 2000; Minniti and Bygrave, 1999) but also favorable factors allow them to operate (Audretsch and Keilbach, 2004).

In terms of favorable factors, studies have focused on determining conditions that promote entrepreneurial activity (Bull and Winter, 1991; Reynolds et al., 1995; Reynolds et al., 1994); analyzed rates of new firm formation in metropolitan or labor market areas (Acs and Armington, 2004; Armington and Acs, 2002; Lee et al., 2004); analyzed business activity at the state level (Bruce et al., 2009); or explored the non-linear effects of new venture activities over subsequent ones (Chang et al., 2011). These sets of positive factors are aligned with the notion of entrepreneurship capital developed by (Audretsch and Keilbach, 2004) when they analyzed the relationships between start ups in German regions and the impact on economic development. However, the conceptual definition and measurement of entrepreneurship capital have not been incorporated at the empirical level because it has been proposed at the conceptual level (Bygrave and Minniti, 2000; Minniti, 2004, 2005; Minniti and Bygrave, 1999; Ring et al., 2010; Shapero and Sokol, 1982). In particular, Audretsch and Keilbach (2004) suggest the existence of social and venture capital may enrich the entrepreneurship capital of a particular region. Furthermore, the potential consequences of entrepreneurship capital at the aggregate level may provide opportunities for subsequent venture activities.

Our purpose is to expand the Audretsch and Keilbach (2004) notion of entrepreneurship capital and its influence on the long-term growth of establishments in American counties. Particularly, we consider that the industry performance and industry growth in three key sectors (manufacturing, retail and service) represent important components of entrepreneurship capital that can lead to subsequent venturing activities in a county. In that regard, we are considering the entire population of operating establishments regardless of the nature of the business or its extent of innovation in the market. To conduct the empirical tests of our model, a panel data of 2,940 American counties (93.6% of the entire population) was analyzed from 2002 to 2007. Our findings suggest these entrepreneurship capital components exert a positive influence on the long-term growth rate of new establishments in the county.

Our study provides important contributions to entrepreneurship and management theory. On the one hand, before studying organizations at the micro-perspective (e.g. strategy, governance, behavior, etc.), we need to understand how established organizations are located in particular regions, and what positive externalities such activities bring to a region. On the other hand, by incorporating industry-level components to measure entrepreneurship capital, it is possible to analyze particular effects and variations between industrial sectors. Consequently, aspiring entrepreneurs and policy makers can have a better understanding of what can drive and/or inhibit the economic impact of regions.

The next sections are organized as follows. First, the theoretical foundations and hypotheses are introduced. Second, the methodology and data analysis are discussed. Third, the results of the

study are presented. Finally, the study concludes with the discussion of the results, contributions, limitations and future research directions.

2. Conceptual Framework and Hypotheses

2.1. Theoretical foundations

An important foundation to analyze the positive effects of entrepreneurship capital is Marshall (1890) work about agglomeration and economic externalities. Regional economies benefit from the favorable effects externalities produce like localized industries, skilled labor, informational spillovers, etc. (Krugman, 1991; Marshall, 1890). Recently, the endogenous growth theory has taken further these assertions to emphasize the importance of knowledge to promote returns in production and growth to develop a region (Lucas, 1988; Romer, 1986, 1994). These interactions generate knowledge spillovers that are later reproduced on a larger scale within a community or between regions. Particularly, these externalities are incorporated in the community to generate new venturing at a larger scale (Minniti, 2005). Internalizing the creation of new knowledge implies new uses for production can be used in the open market to benefit the innovating firm or an entrepreneur (Romer, 1994). In that matter, the endogenous growth theory is rooted on the work of Schumpeter (1934) to explain that the growth and development of the region is caused by those entrepreneurs whose new entries provide opportunities for others to follow. In similar terms, Kirzner (1973) contention that entrepreneurial knowledge is the highest order of knowledge implies entrepreneurs are alerted to discover opportunities in the market not noticeable to others. Thus, the region is developed from a process where an existing knowledge base spills over into the market to allow new ventures to operate, and these new ventures will improve the future economic conditions of the region (Grossman and Helpman, 1994; Kirzner, 1973; Minniti, 2005; Romer, 1994; Schumpeter, 1934).

Audretsch (1995) connects the endogenous growth model with entrepreneurship by stating that firms "endogenously seek out and apply knowledge inputs to generate innovative output" and the "spillover of knowledge from its producing entity involves endogenously creating a new firm." This process of knowledge creation occurs in bounded geographical areas, although some areas will benefit more from knowledge spillovers that foster the development of new ventures than others (Audretsch, 1995; Audretsch and Lehman, 2005). As a result, the unique knowledge that resides in the population and the operating entities in the region (Romer, 1994) represents a base to foster new ventures and promote economic growth and development.

In his later work with Keilbach, Audrestch (2004) introduces the concept of entrepreneurship capital as another component in the Solow's (1956) neoclassical growth model. Using the endogenous growth model, Audretsch and Keilbach (2004) suggest entrepreneurship capital, particularly those new ventures operating with a level of innovation, tends to improve the economic development of German regions. As explained earlier, their arguments for defining entrepreneurship capital imply that regions may possess favorable conditions for new venture

creation such as social and venture capital that complement the entrepreneur's aspirations. Although they acknowledge the need for alternative measures of entrepreneurship capital, their measure was limited to estimate the start ups per 1000 persons. We expand their work to include three key industrial sectors, namely manufacturing, service and retail, because new entries in these sectors and their performance (i.e. earnings) can generate externalities that will impact the future venturing activities of the entire region.

2.2. Theoretical model and hypotheses

Audretsch and Keilbach (2004) argue that regions with higher levels of entrepreneurship capital are those characterized with "networks of cooperation, social acceptance toward entrepreneurial behavior and individuals willing to take the risk of venturing may generate." In similar terms, Minniti and Bygrave (1999) argue that entrepreneurial activities in a region are then determined by "the difference between the subjective return to becoming an entrepreneur and the subjective expected return to doing something else." Minniti (2005) expands this notion by explaining that local knowledge influences which networks are needed to create new ventures. In that regard, new venture activities will be driven by the actions and interactions among the different economic agents (e.g. individuals and established organizations). Particularly, regions can become specialized centers of economic activity that creates opportunities for expansion and/or developing new ventures.

Porter (1990, 2000) suggests the existence of supporting industries can facilitate the development and competitiveness of clusters. For example, Ring et al. (2010) emphasize opportunities for new venture activities will exist in rural and smaller regions when those are related to either export products outside the region or import customers to the region. Some regions may have specific conditions and/or geographical advantages that allow specialization and/or even recognition. Our model assumes the manufacturing sector of the region is most likely to export its output to other regions while businesses operating in the service and retail industry (e.g. stores, restaurants, hotels, places of entertainment) are more likely to import customers. Although some counties in the United States tend to rely on agriculture as a mean for export products, we are not considering this industry to avoid over-specification in the theoretical model because manufacturers will use some of the agricultural output as raw materials. We address this in the limitations section of our paper. Furthermore, as inferred from Audretsch and Keilbach's (2004) discussion of entrepreneurship capital, when establishments operating in these key industrial sectors generate positive performance (e.g. earnings) or the population of entities operating in these industries grow, the level of entrepreneurship capital in the region increases to create a sustainable long-term growth in subsequent venturing activities. As a result, our model incorporates the industry growth (in number of ventures and in earnings) as measures of entrepreneurship capital.

Figure 1 has been omitted from this formatted document.

Figure 1 presents a model that analyzes how entrepreneurship capital exerts an influence on the long-term new establishment growth of a region. It is important to note that we use establishments rather than ventures because our focus of attention is on the county's level of entrepreneurship capital. In that regard, entrepreneurs and established businesses may see the opportunities for expanding the population of existing businesses regardless of the nature of the entrepreneurial event (i.e. innovative or imitative). The following subsections develop the hypotheses.

Industry Performance. Having a positive performance (e.g. earnings) in different industries can represent pockets of opportunities that can improve the future economic prospects of the region. As Fig. 1 proposes, the long-term new establishment growth of a region can be driven by the prior performance of their key industry sectors (manufacturing, retail, service) because the region may seek growth by either exporting output or importing customers (Ring et al., 2010). As theorists of economic growth and development have established, one of the main determinants for affecting the economic prospects of a region is its level of output (e.g. earnings, productivity, etc.) (Krugman, 1991; Lucas, 1988; Romer, 1986; Solow, 1956). Lucas (1988) suggests economic externalities result from the influence of productive workers on other workers. In a similar vein, Minniti and Bygrave (1999) explain that an individual's choice for becoming an entrepreneur is determined by the existing economic conditions surrounding a region. Although some regions may possess similar economic conditions, variations in the creation of new ventures across regions will depend on the individuals' perceptions about which economic opportunities exist for entrepreneurial activity (Minniti and Bygrave, 1999). This can represent a set of options to locate a new business that will compete against the existing population of businesses (e.g. a new specialty restaurant opening in a region because of the lack of such specialty in the county) or to fulfill a void (e.g. a new supplier moving in to support existing manufacturers or other type of established ventures). Consequently, regions with favorable economic conditions tend to display higher levels of activity across industries to serve multiple purposes. Krugman (1991) explains that regions with higher levels of manufacturing activities will increase the profitability prospects at the aggregated level and pockets of opportunities will emerge for expanding the activities. Therefore, the opportunities for locating new firms will exist. However, small start ups may have problems in competing with the existing firms as well as having limited resources to produce at a larger scale (Todtling and Wanzenbock, 2003) so they may be added to serve particular functions within the existing population of established entities. In that manner, the existence of positive performance, in terms of earnings and profitability, can drive the level of competitiveness and survival of these small start ups to remain in operation.

On the other side, the impact entrepreneurship capital has on less developed regions will be higher as accumulated earnings represent resources for funding to revitalize the economy in terms of new goods, services and jobs. Those economic revivals are housed in new establishments that may be the result of existing business expansions or a new group of

businesses. However, the problem lies in the availability of resources because less developed areas may lack facilities and services that allow firms to flourish. Bull and Winter (1991) express that without proper conditions, entrepreneurs will want to move their businesses to better places. Reynolds et al. (1994) find that less developed areas tend to have lower rates of new firm formation than more developed ones. Wennekers et al. (2005) present similar results as they suggest that entrepreneurial activities tend to be more important in developed countries while existing firms may need to improve their competitiveness in less developed countries.

However, Minniti and Bygrave (1999) argue that the perceptions of the individuals regarding profitable opportunities in these areas may play an important role in improving the economic prospects of the region. Particularly, when the region experiences income increases through business profitability, regions become more competitive because it may imply the entry of new firms that may support the existing industries (Porter, 1990). As a result, prior industry performance will create a positive impact on the overall growth of new ventures in the region. Thus:

Hypothesis 1: Prior industry performance in the manufacturing, retail and service sectors will be positively related to the long-term new establishment growth of a region.

Industry Growth. Since Schumpeter (1934), the contention that entrepreneurship creates a knowledge base (Audretsch and Lehman, 2005; Bruce et al., 2009; Carree et al., 2002) to foster more entrepreneurship (Minniti and Bygrave, 1999) implies that regions are endowed with entrepreneurship capital to induce new flows of entrepreneurs to enter the market. Schumpeter (1934) argues entrepreneurs disrupt the market with their innovations and generate opportunities for others to follow in a process of creating new industries to replace incumbent firms. In similar terms, Kirzner (1973) describes how entrepreneurship creates competition in the market process as entrepreneurs are alerted to profitable opportunities when they foresee differences in prices; therefore, not all the new ventures need to possess a high level of disruption at the industry level because the market allows the entry of imitators. Moreover, both Schumpeter (1934) and Kirzner (1973) argue the entrepreneurial profit that comes from attaining a monopolistic position in the market starts to decrease by the entry of new flows of entrepreneurs.

When a region possesses an entrepreneurship capital in the terms of new businesses created in industries dedicated to either export products or import customers, there is a high prospect for generating a conducive and favorable environment for longterm establishment growth. Particularly, the entrepreneurship capital creates an entrepreneurial history residing within a region that generates higher possibilities for new venture creation (Bygrave and Minniti, 2000). In that regard, the region is involved in an entrepreneurial culture where individuals are motivated by current entrepreneurs to open new businesses. In that way, entrepreneurship is seen as a self-reinforcing, path-dependent phenomenon where individuals are pulled to create new firms because of the existing level of entrepreneurial activity occurring in the region (Bygrave

and Minniti, 2000). Chang et al. (2011) obtained empirical support at the county level for this particular contention.

As new businesses are added to the operating entities in the region, the aggregated effects of groups of individuals involved in entrepreneurial activities will have an influence on the economic prosperity of the region (Bygrave and Minniti, 2000). Although this positive effect of new business creation will take some time to occur (Audretsch and Fritsch, 2002; Fritsch and Mueller, 2004; Van Stel and Storey, 2004), one can expect the overall long-term economic prospects of the region will improve. As a result, the region adopts an entrepreneurial behavior where long-term establishment growth is driven by the actions of multiple groups of entrepreneurs. Consequently:

Hypothesis 2: Prior industry growth in the manufacturing, retail and service sectors will be positively related to the long-term new establishment growth of a region.

3. Methods

Research conducted in the United States has used periods of study of one, three and five years to estimate changes in entrepreneurial activity and economic impact (Acs and Armington, 2004; Armington and Acs, 2002; Chang et al., 2011). Data were collected from secondary sources located in the U. S. Census (2002) such as County Business Pattern, and USA counties to cover the period of study from 2002 to 2007. We limited the study to the 44 states where the U.S. census reports the existence of rural counties. In that manner, Massachusetts, Maine, New Hampshire, Hawaii, District of Columbia, Connecticut and New Jersey are not included in the data. However, missing values and/or the emergence of new counties inside particular states during the period of study reduced the number of counties to 2,940 (93.6% of the entire population). Panel data comprised six time periods to arrive at a total number of 17,640 observations.

3.1. Empirical model

To test our hypotheses, we specify the following equation:

$$Y_{it} = \beta_0 + \beta_1 CV_{it} + \beta_2 IE_{ikt} + \beta_3 IG_{ikt} + \varepsilon_i,$$

where Y_{it} represents the long-term growth rate in establishments from 2002 to 2007; CV_{it} represents a vector of control variables that profile the county; IE_{ikt} represents industry earnings; IG_{ikt} represents industry growth; t denotes the time period; and k refers to the industry.

3.2. Measures

Dependent Variable. The growth rate in establishments from 2002 to 2007 was estimated to determine the long-term growth of establishments in the county. Establishments reporting employees rather than enterprises are used because individuals or established firms may open new establishments to increase the population of businesses operating in the county. According to the U.S. Census Bureau (2002), "an establishment is a single physical location at which business is conducted or services or industrial operations are performed. It is not necessarily identical with a company or enterprise, which may consist of one or more establishments." The data were collected from USA counties and County Business Patterns.

Independent Variables. Audretsch and Keilbach (2004) measured entrepreneurship capital as firm start ups per 1000 people. Because of the arguments developed earlier, we build from their definition to incorporate six important indicators at the county level from the 2002 to 2007 period to indicate the nature of entrepreneurship capital by the type of innovation opportunities (Ring et al., 2010). Industry performance is measured by the earnings per establishment of the three key industrial sectors. Data were collected from USA counties and County Business Patterns to obtain industry earnings and number of establishments from the manufacturing industry (NAICS 31), retail trade (NAICS 44-45), and three service sectors related to the notion of importing customers (real estate, leasing and rental — NAICS 53; arts, entertainment and recreation — NAICS 71; accommodation and food services — NAICS 72). Industry growth is measured by the two-year growth rate of establishments in the three industry sectors.

Control Variables. To control for a specific profile of the county, we included a set of location, type and socio-economic variables. First, we used dummy variables to identify the geographic region (South, West and North) and the designation of rural counties. Second, we draw upon prior research (Armington and Acs, 2002; Audretsch and Fritsch, 2002; Chang et al., 2011; Chrisman, 1985; Chrisman et al., 1992; Reynolds et al., 1995) to include the dynamic aspects of the population such as natural increase, domestic and foreign migration. We consider migration (domestic and foreign) because individuals may relocate to take advantage of a wider range of job prospects or specific opportunities for those with particular educational or occupational backgrounds (Johnson et al., 2005; Mills and Hazarika, 2001; Wright et al., 1997). These newcomers may possess stocks of knowledge (e.g., experience, skills, etc.) that increases available human capital and increase the possibility of knowledge transfers and spillovers to other individuals who may have entrepreneurial aspirations (Lucas, 1988; Romer, 1994). Also, we included household income and the number of banks in the county to control for economic aspects that can be conducive to generate pockets of opportunities for those individuals and organizations operating in the county. We collected the data from USA counties.

4. Data Analysis

Preliminary tests were conducted to determine if the panel model was suitable for the study. In addition, it is important to notice that data gathered from USA counties are not normally distributed because of high levels of kurtosis (e.g. Chang et al., 2011). However, panel data

analysis allows stronger causal inference than cross-sectional design (Finkel, 1995; Baltagi, 2007) where normality is not critical for the interpretation of the results. We ran the Breusch and Pagan (1980) test to confirm the panel model is suitable for our study. Furthermore, we used the Hausman test to determine the estimation method (Greene, 2002). We begin with the Hausman test to confirm the proper estimation technique (fixed effects or random effects) for each of these hypotheses in this paper. A Hausman test result indicates the fixed effects model is adequate to estimate the first model to test the hypotheses in this paper respectively. Moreover, another set of estimations have been conducted where we include the time dummies and then the results are compared to the previous models to check the robustness. A low p-value identifies a significant variable and a sign with the variable shows the direction of effect or the relation between the independent variable and dependent variable. However, because of the nature of our measures, we observe positive autocorrelation in the model (Durbin-Watson ¼ 2:07).

5. Results

Table 1 presents the descriptives and correlations of the measures. Table 2 presents the results of the panel data analysis. Model A includes all the measures and Model B incorporates the time dummy variables.

In the Model A, the adjusted R2 is 0.342 as four of the nine control variables and five of the six components of entrepreneurship capital are significant at the 0.05 level or better. In terms of the control variables, these findings are important to highlight because those can serve as macro-environmental indicators that can facilitate the venturing activities in a particular county. On one side, the two migration measures — domestic and foreign — and household income are positively related to the dependent variable. Furthermore, it is important to notice foreign migration has a higher relative influence than domestic migration. That is, the long-term establishment growth automatically increases in a county with increasing foreign migration, while keeping all other variables in the model at a constant level. One potential explanation about this finding is that counties may expand their establishment numbers to serve these new additions to the population. Another potential explanation is these newcomers may also find the county attractive to establish new ventures that can target specific demographic groups (e.g. Hispanics opening restaurants or specialty stores to offer goods that other businesses may lack in the region). On the other side, the number of banks operating in the county has a negative relationship with the dependent variable at the 0.001 level. This represents an interesting finding because we use this control measure as a proxy for the availability of financial institutions that can provide support and/or resources to those establishing new businesses in the county. However, the inverse relationship suggests a larger population of banks may not be conducive to increase venturing opportunities.

Table 1. Descriptives and Correlations.

	Mean	SD	1	2	3	4	5
Establishment Growth	1.00	4.50	1				
South	0.40	0.49	0.03	1			
West	0.17	0.37	0.07	_0.37	1		
North	0.31	0.46	_0.09	_0.55	_0.30	1	
Rural	0.43	0.50	_0.11	_0.06	0.09	0.05	1
Foreign Migration	285.24	2224.01	0.02	_0.02	0.07	_0.05	_0.11
Domestic Migration	41.78	5083.32	0.09	0.06	0.00	_0.03	_0.01
Natural Increase	529.83	2745.43	0.04	_0.02	0.09	_0.05	_0.16
Household Income	38566.00	9727.81	0.19	_0.30	0.10	0.16	_0.39
Banks	27.44	68.40	0.03	_0.04	0.02	_0.01	_0.25
Manufacturing Growth	1.42	17.12	0.22	_0.01	0.05	_0.01	0.04
Manufacturing Earnings	2211.01	2606.50	_0.02	0.07	_0.17	0.05	_0.21
Retail Growth	_0.34	10.24	0.35	0.01	0.04	_0.03	_0.04
Retail Earnings	286.57	149.65	0.11	_0.02	0.01	_0.04	_0.42
Service Growth	2.41	11.33	0.42	0.07	_0.01	_0.07	_0.05
Service Earnings	190.23	187.94	0.12	_0.02	0.03	_0.07	_0.38

	6	7	8	9	10	11
Domestic Migration	_0.60	1				
Natural Increase	0.91	_0.45	1			
Household Income	0.13	0.04	0.21	1		
Banks	0.82	_0.43	0.85	0.29	1	
Manufacturing Growth	_0.02	0.02	_0.02	0.01	_0.04	1
Manufacturing Earnings	0.03	_0.02	0.06	0.13	0.10	_0.08

Retail Growth	0.01		0.03	0.02	0.07	0.02	0.05
Retail Earnings	0.20		0.01	0.29	0.44	0.39	_0.04
Service Growth	0.01		0.04	0.02	0.04	0.00	0.09
Service Earnings	0.22		_0.03	0.29	0.41	0.38	_0.02

	12	13	14	15	16
Retail Growth	_0.01	1			
Retail Earnings	0.24	0.01	1		
Service Growth	_0.01	0.09	0.02	1	
Service Earnings	0.16	0.04	0.52	0.01	1

N ¼ 17,640; correlations above 0.18¼ $p < 0.001$; correlations above 0:12 ¼ $p < 0:01$; correlations above 0:08 ¼ $p < 0:05$.

Regarding the measures of entrepreneurship capital, we obtained mixed results in terms of industry performance and growth. Hypothesis 1 is partially supported because retail and service earnings are positively related to the dependent variable at the 0.05 level or better, but manufacturing earnings have a non-significant and negative relationship. One particular explanation about the negative and non-significant influence of manufacturing earnings may be the loss of competitive advantage in the sector because of outsourcing overseas. In that regard, the earnings of industrial activities that can import customers rather than export goods and services may increase the long-term growth of establishments in the county. Hypothesis 2 is supported as the 2-year establishment growth rate in the three industries positively influences the overall long-term establishment growth. It is important to notice the higher relative influence of retail earnings as well as the lower relative influence of manufacturing growth when contrasted against their corresponding industry sectors (performance or growth).

Table 2. Dependent variable: Long term new establishment growth.

	Model A		Model B	
Constant	_4.04***	(1.07)	_4.09**	(1.07)
Control Variables:				
Rural	0.04	(0.11)	0.05	(0.11)
South	1.96	(1.28)	1.99	(1.29)
West	1.68	(1.23)	1.72	(1.24)
North	0.99	(0.99)	1.01	(1.50)
Foreign Migration[1]	0.10**	(0.00)	0.15*	(0.00)

Domestic Migration[1]	0.05***	(0.00)	0.05***	(0.00)
Natural Increase[1]	0.03	(0.00)	0.03	(0.00)
Banks	_0.01***	(0.00)	_0.01***	(0.00)
Household Income[1]	0.07***	(0.00)	0.07***	(0.00)
Independent Variables				
Industry Performance				
Manufacturing Earnings[1]	_0.02	(0.00)	_0.02	(0.00)
Retail Earnings[1]	1.60***	(0.00)	1.60***	(0.00)
Service Earnings[1]	0.60*	(0.00)	0.60*	(0.00)
Industry Growth				
Manufacturing Growth	0.04***	(0.00)	0.04***	(0.00)
Retail Growth	0.13***	(0.00)	0.13***	(0.00)
Service Growth	0.14***	(0.00)	0.14***	(0.00)
Time Dummy 2 = 2002			0.01	(0.09)
Time Dummy 3 = 2003			_0.26**	(0.09)
Time Dummy 4 = 2004			0.18+	(0.09)
Time Dummy 5 = 2005			_0.17+	(0.09)
Time Dummy 6 = 2006			0.13	(0.09)
F-value	4.10***		4.11***	
R^2	0.45		0.45	
Adjusted R^2	0.342		0.343	

N = 17, 640. $+p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$, Standard errors in parenthesis.

[1]coefficient is in 1/1000's.

Model B adds the fixed effects and the results remain similar to those in Model A. The adjusted R2 improves to 0.343. 5.1.

Post-Hoc Analysis

It is important to acknowledge that we conducted post-hoc tests to evaluate the power of the hypotheses and our model predictive value. We conducted a test for correlation coefficients between long-term establishment growth and the growth in the three industry sectors. Our results indicated the long-term establishment growth is positively correlated with these variables and these relationships are significant at the 0.05 level. In addition, we compared predicted values against the actual values to analyze the dispersion of our model results over different time periods and across regions. Our comparisons indicated there were particular counties where the predicted value diverged from the actual value; however, Those variations could not consider such counties as outliers in the model. Finally, we explored the potential of non-linear relationships among the measures of entrepreneurship capital, particularly for the manufacturing earnings. However, the results do not provide additional evidence that could have supported Hypothesis 1.

6. Conclusion

Our study developed the contention that we need to move beyond new start ups when explaining and measuring the level of entrepreneurship capital in a region. Particularly, we need to focus our attention on the level of industry performance and establishment growth in sectors, such as manufacturing, service and retail to observe the sources for sustainable and long-term entrepreneurship growth in a region. Our empirical results provide partial support for Hypothesis 1 and full support for Hypothesis 2 to suggest the overall long-term establishment growth is driven by the positive actions of entrepreneurship capital when it is measured by productive activities that aim to export goods and import customers. Furthermore, it is important to notice the positive influence that dynamic aspects of the population, such as migration and the economic impact like household income tend to exert in the long-term establishment growth. Although we use them to control for the county profile, these measures may also represent an objective assessment about the social conditions of the region to expand the entrepreneurship capital measure.

This study provides important contributions to advance the notion of entrepreneurship capital in American counties. First, this study focuses on industry sectors (manufacturing, retail and service) to advance from the original measure of entrepreneurship capital (Audretsch and Keilbach, 2004). Particularly, the use of industry earnings as a determinant of long-term establishment growth provides an important contribution to the literature because it provides a performance measure at the aggregate level. In that manner, one can expect a county with profitable industry groups generate positive conditions for expansion at the county level. Although the manufacturing earnings did not cause a significant effect, the earnings from the retail and service sectors drive the long-term prospects of growth. Thus, our findings suggest the county's performance in these two industry sectors provide opportunities to established entities and entrepreneurs to venture.

Second, this study focused its efforts on investigating the phenomena of entrepreneurship at the community level, particularly in U.S. counties. Sternberg and Rocha (2007) argue that entrepreneurship is a local phenomenon because entrepreneurs will mostly locate their ventures in their place of residence. Thus, these authors explain that regions, rather than countries, are the most appropriate units of analysis to conduct these types of studies. Although research has shown U.S. regions may have spillover effects because of proximity as the effects on one county can permeate to others and vice versa (Bruce et al., 2009), most of the policy aspects toward the economic development of counties tend to be local efforts. In addition, the use of the most recent data available for U.S. counties to estimate our empirical model and

the use of growth rates provide improvements to earlier research that used absolute changes for determining new venturing activities (e.g. Chang et al., 2011).

Third, this study provides empirical support to connect the theories of economic development with entrepreneurship. Put differently, the empirical findings confirm our measures of entrepreneurship capital generate spillovers leading to long-term entrepreneurial activity. Because the knowledge created by entrepreneurial capital is derived from individual's interactions, this study supports models of endogenous growth (Lucas, 1988; Romer, 1986, 1994) and other theories of agglomeration (Krugman, 1991; Marshall, 1890; Porter, 1990, 2000).

Finally, this study enhances knowledge about the entrepreneurial activities in America. Particularly, management scholars need to acknowledge that before one can study organizations and their specifics (e.g. governance, strategy, competitiveness, performance, etc.) and/or determine the innovation capabilities of individuals toward start ups or new creating activities, there is a need for analyzing the environmental conditions that allow the emergence and sustainability of an entrepreneurial behavior. In that regard, one needs to evaluate the level of entrepreneurship capital in a particular region to properly assess how or why new ventures are created or become successful. Consequently, our results suggest subsequent growth in the overall number of establishments is originated by the existence of earnings and growth activities in key industrial sectors. Once the origins of the organizations are established at the macro-environment level, subsequent analysis can be done within particular industries, organization and individuals.

6.1. Limitations

It is important to address that the study presents some limitations. First, the model was constrained because it treated the county profile characteristics as controls rather than potential measures of the social aspect of entrepreneurship capital. Although the foreign and domestic migration can serve as particular proxies for the level of social capital in the county (Bathelt, 2001), the empirical literature in the field has already provided support for such notion and future investigation can take our results to provide further theoretical refinements.

As our results suggest, separating the origin of the migration (e.g. from one county to another and from one country to a U.S. county) provides an interesting avenue of investigation because some counties may be enjoying high level of entrepreneurial activity because of the entry of new knowledge brought by these newcomers. In addition, these newcomers require special services or goods that may impact on the establishment of new businesses whose target market will be these individuals. Second, it is possible some researchers may consider the use of establishments rather than start ups and/or the selection of the five industrial sectors using NAICS codes may not follow the Schumpeterian approach of looking at entrepreneurial events that are pure innovators. However, the empirical findings of this study imply that counties can experience positive growth in ventures that may or may not offer pure innovations. Instead, what the results suggest is that the emergence of new places of employment in the county (establishments as defined by County Business Patterns) is the product of the existing entrepreneurship capital in the area. Thus, the activities of imitators may be as valuable as the innovators for economic growth. Third, our model did not address the effects of agricultural or mining activities because some rural counties may have a high level of dependence in these economic activities. However, it is important to notice that the NAICS 31 code (manufacturing establishments) do include entities that used them as raw materials. In

that regard, we reduce potential problems of over specification, not only at the conceptual but also at the empirical levels when estimating the earnings growth or even the treatment of such activities as potential antecedents.

6.2. Future research directions

In addition to addressing the limitations, future research is encouraged to expand the current framework both at theoretical and empirical levels. First, researchers can develop contingent models where demographic and economic factors interact to expand the interpretation of entrepreneurship capital in the region. Specifically, theoretical developments are needed to explain which additional causal relationships may exist to improve the economic and social conditions of the entrepreneurship capital of the region. Also, future research can explore the consequences of long-term effects of new venturing activities in terms of the subsequent improvements in the knowledge base, entrepreneurship capital, or the overall well-being of the region.

Second, future research can explore the extent of the relationships to whether non-linear effects may provide a better assessment of entrepreneurship capital. For example, there may be the possibility that higher levels of entrepreneurship capital may lead to increasing competition in the region. In this situation, it may be possible to have diminishing growth in new venture activities. Furthermore, because one can recognize that the U.S. economy faced depression and economic downturn after 2007, one needs to evaluate how the contraction of the economy in the recent years and the emergence of new technologies have altered the current state of earnings and new venture creation in particular regions of the country.

Third, future research can address the methodological limitations encountered in this study. On the one side, there are difficulties to provide an appropriate estimate of the number of operating firms in the United States. Specifically, there is a need to provide estimates on how many new businesses are created in a given year. On the other side, researchers need to establish the nature of the new venture (innovator, imitator, etc.) to properly capture the effects at the community level because industry classification can only provide an initial interpretation of the nature of the business but it cannot be presumed how the business is organized and what it offers in the market.

Finally, future research can be driven by our findings to develop fine-grained studies with particular counties or states because levels of entrepreneurship capital may vary upon certain conditions. For example, researchers can study the industry variations within counties or regions that tend to specialize in economic activities and how such externalities modifies the entrepreneurship capital that permeates into new ventures that support the specialized entities or even the emergence on new competitors who can improve the area by engaging in innovative activities.

6.3. Practical implications

The findings of our study also generate implications to educators, policy makers and practitioners. First, entrepreneurial educators and practitioners can find our results as an example of how the accumulation of capital in the form of earnings represents a valuable source for new start ups. Following the cluster concept (Porter, 1990) and the benefits of externalities (Minniti, 2005), one can see the emergence of new

business to complement and support the existing ones. Particularly, because earnings represent positive outlooks for the future of the incumbent businesses, new opportunities for expansion will emerge. In addition, the region will experience the need for nurturing the formation of other businesses to serve them as suppliers or as complementors.

Second, policy makers can use our results for making the case about the benefits of a region to possess a strong level of entrepreneurship capital in terms of focalized industries (e.g. export oriented and/or importing customers). Especially, for those counties with not enough resources to attract entrepreneurs to invest in high technological ventures, one can see operating in industries that can import customers (e.g. restaurants, entertainment and accommodation services, retail stores, etc.) may generate enough capital resources (e.g. earnings) that can be reinvested in the county. Such externalities will generate a sustainable entrepreneurial culture inside the county that may enable interactions for future venturing opportunities. In similar terms, if we move the unit of analysis outside the United States, policy makers in other countries may find our results useful for attracting foreign direct investment and/or motivating local entrepreneurs to particular activities that emanate for the particular level of entrepreneurial capital. For example, agricultural based economies may be endowed with certain conditions that can create new businesses in upstream or downstream activities that generate value-added processes.

Third, policy makers can also use the results of this study to emphasize the needs of the different industrial sectors and what is needed to benefit the entire population in the county. Particularly, earnings represent an indication that the public sector will use a proportion of such resources in taxes and services. Earnings from a very active private sector can contribute to infrastructure projects, technical assistance and even health and education services. In that regard, the expectation for improving the entrepreneurship capital of the county will generate further opportunities that may bring in prosperity to the overall society.

In terms of aspiring entrepreneurs and current business owners, the main implication is the importance of location. First, entrepreneurs can perceive the positive performance in particular industries (i.e. earnings and new establishments) as opportunities for serving entrepreneurial establishments. Furthermore, one can expect profitable industries generate resources to the community in terms of bonuses and dividends to owners and employees that may favor the operation of new businesses. However, the situation reverses in counties where earnings are not growing or businesses are not performing in optimal conditions and the prospects for exploiting opportunities may not be as good for new cradles of entrepreneurs. Second, current business owners may be enticed to pursue additional entrepreneurial activities and open new places of employment (either in the same industries or different ones) because they may have accumulated capital resources from the earnings to fund these new ventures.

In conclusion, our study considers industry growth and performance in manufacturing, retail and service as components of entrepreneurship capital to ignite the long-term growth of new establishments. The overall new venture activity tends to be influenced by the industry growth and performance. Hence, we provide a foundation to analyze entrepreneurship capital and its relationship with the long-term establishment growth.

References

Acs, ZJ and C Armington (2004). Employment growth and entrepreneurial activities in cities. Regional Studies, 38(8), 911–927.

Armington, C and ZJ Acs (2002). The determinants of regional variation in new firm formation. Regional Studies, 36, 33–45.

Audretsch, D (1995). Innovation and Industry Evolution. Cambridge, MA: MIT Press.

Audretsch, D andMFritsch (2002). Growth regimes over time and space. Regional Studies, 36, 113–124.

Audretsch, D and M Keilbach (2004). Entrepreneurship capital and economic performance. Regional Studies, 38(8), 949–959.

Audretsch, D and E Lehman (2005). Does the knowledge spillover theory of entrepreneurship hold for regions? Research Policy, 34, 1191–1202.

Baltagi, BH (2007). Comments on: Panel data analysis – advantages and challenges. b, 16(1), 28–30.

Bathelt, H (2001). Regional competence and economic recovery: Divergent growth paths in Boston's high technology economy. Entrepreneurship and Regional Development, 13(4), 287–314.

Breusch, TS and AR Pagan (1980). The Lagrange multiplier test and its applications to model specifications in econometrics. The Review of Economic Studies, 47(1), 239–253.

Bruce, D, JA Deskins, BC Hill and J Rork (2009). (Small) business activity and state economic growth: Does size matter? Regional Studies, 43(2), 229–245.

Bull, I and F Winter (1991). Community differences in business birth and growths. Journal of Business Venturing, 6(1), 29–43.

Bygrave, WD and M Minniti (2000). The social dynamics of entrepreneurship. Entrepreneurship Theory and Practice, 24(3), 25–36.

Carree, M, A Van Stel, R Thurik and S Wennekers (2002). Economic development and business ownership: An analysis using data of 23 OECD countries in the period 1976–1996. Small Business Economics, 19, 271–290.

Chang, EPC, JJ Chrisman and FW Kellermanns (2011). The relationship between prior and subsequent new venture creation in the United States: A county level analysis. Journal of Business Venturing, 26(2), 200–211.

Chrisman, JJ (1985). Population change and its effects on the retail sector: An exploratory study. International Small Business Journal, 3(4), 26–46.

Chrisman, JJ, C Van Deusen and SMK Anyomi (1992). Population growth and regional economy: An empirical analysis of business formation and job generation in the retail sector. Entrepreneurship and Regional Development, 4, 339–355.

Finkel, SE (1995). Causal Analysis with Panel Data. Sage University Paper Series on Quantitative Applications in the Social Sciences, pp. 7–105. Thousand Oaks, CA: Sage Publications, Inc.

Greene, WH (2002). Econometric Analysis. 5th Edition. Prentice Hall.

Grossman, GM and E Helpman (1994). Endogenous innovation in the theory of growth. Journal of Economic Perspectives, 8(1), 23–44.

Johnson, KM, PR Voss, RB Hammer, GV Fuguitt and S McNiven (2005). Temporal and spatial variation in age-specific net migration in the United States. Demography, 42(4), 791–812.

Kirzner, IM (1973). Competition and Entrepreneurship. Chicago: University of Chicago Press.

Krugman, P (1991). Increasing returns and economic geography. Journal of Political Economy, 99, 483–499.

Lee, SY, R Florida and ZJ Acs (2004). Creativity and entrepreneurship: A regional analysis of new firm formation. Regional Studies, 38(8), 879–891.

Lucas, R (1988). On the mechanics of economic development. Journal of Monetary Economics, 22.

Marshall, A (1890). Principles of Economics. London: MacMillan.

Mills, B and G Hazarika (2001). The migration of young adults from non-metropolitan counties. American Journal of Agricultural Economics, 83(2), 3–42.

Minniti, M (2004). Entrepreneurial alertness and asymmetric information in a spin-glass model. Journal of Business Venturing, 19(5), 637–658.

——— (2005). Entrepreneurship and network externalities. Journal of Economic Behavior and Organization, 57(1), 1–27.

Minniti, M and WD Bygrave (1999). The microfoundations of entrepreneurship. Entrepreneurship Theory and Practice, 23(4), 41–52.

——— (2004). Global Entrepreneurship Monitor: National Entrepreneurship Assessment: United States of America, 2003 Executive Report. Kauffman Foundation and Babson College.

Porter, M (1990). The Competitive Advantage of Nations. New York: Free Press.

——— (2000). Location, competition, and economic development: Local clusters in a global economy. Economic Development Quarterly, 14(1), 15–34.

Reynolds, PD, B Miller and W Maki (1995). Explaining regional variation in business births and deaths: U.S. 1976-88. Small Business Economics, 7, 389–407.

Reynolds, PD, D Storey and P Westhead (1994). Cross-national comparison of the variation in new firm formation rates. Regional Studies, 28, 443–456.

Ring, JK, AM Peredo and JJ Chrisman (2010). Business networks and economic development in rural communities in the United States. Entrepreneurship Theory and Practice, 35, 171–195.

Romer, P (1986). Increasing returns and long-run growth. Journal of Political Economy, 94, 1002–1037.

——— (1994). The origins of endogenous growth. Journal of Economic Perspectives, 8(1), 3–22.

SBA Office of Advocacy (2006). Employer firm births and deaths by employment size of firm, 1989–2003. [www.sba.gov/advo/research/dyn_b_d8903.pdf].

Schumpeter, JA (1934). The Theory of Economic Development. Cambridge, MA: Harvard University Press.

Shapero, A and L Sokol (1982). Social dimensions of entrepreneurship. In Encyclopedia of Entrepreneurship,

CA Kent, DL Sexton and KH Vesper. (eds.), pp. 72–90. Englewood Cliffs, NJ: Prentice-Hall.

Solow, R (1956). A contribution to the theory of economic growth. Quarterly Journal of Economics, 70.

Sternberg, R and HO Rocha (2007). Why entrepreneurship is a regional event: Theoretical arguments, empirical evidence, and policy consequences. In Entrepreneurship: The Engine of Growth, Vol. 3, M Rice and T Habbershon (eds.), pp. 215–238. Westport, CT: Praeger Publishers.

Todtling, F and H Wanzenbock (2003). Regional differences in structural characteristics of start-ups. Entrepreneurship and Regional Development, 15, 315–370.

U.S. Census Bureau (2002). County Business Patterns: Alabama 2000: US Department of Commerce.

Van Stel, A and D Storey (2004). The link between firm births and job creation: Is there a up as three effect? Regional Studies, 38(8), 893–909.

Van Stel, A, M Carree and R Thurik (2005). The effect of entrepreneurial activity on national economic growth. Small Business Economics, 24, 311–321.

Wright, RA, M Ellis and M Reibel (1997). The linkage between immigration and internal migration in large metropolitan areas in the United States. Economic Geography, 73(2), 234–254.