Entrepreneurship and Start-Ups in the Boston Region: Factors Differentiating High-Growth Ventures from Micro-Ventures

John H. Friar
Marc H. Meyer

ABSTRACT. The use of entrepreneurship to stimulate economic growth in lagging regions of the world has grown over the last decade. The type of business needed for job creation is a new venture rather than a micro-business. The experience of a major program in the U.S., empowerment zones, has failed to produce many jobs, mostly because the program has stimulated micro-businesses rather than growth ventures. This paper analyzed the factors differentiating between the formation of high-growth ventures and micro businesses, and discussed how these factors may best influence the activities of organizations that either nurture ventures or create government policies for regional development. The data consisted of ninety business plans submitted to a business plan competition in Boston. The results showed that founders of high-growth ventures have work experience or advanced training in their technologies, and teams rather than individuals created the plans. The results suggest that a combination of exogenous and endogenous approaches may be needed to stimulate a lagging region's economic growth.

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John H. Friar
Executive Professor
Center for Technological Entrepreneurship
Northeastern University
Boston, Massachusetts 02115
U.S.A.
E-mail: j.friar@neu.edu

Marc H. Meyer
Sarmanian Professor of Entrepreneurial Studies
Northeastern University
Boston, Massachusetts 02115
U.S.A.
E-mail: mhm@neu.edu

Introduction

Entrepreneurship has been shown to be a significant engine of job creation and economic growth. In the U.S., studies have shown that 90% of new jobs come from small firms (Allen, 1999). Cross-country studies of economic growth have shown that much of the difference in the growth rates is due to entrepreneurial activity (Global Entrepreneurship Monitor, 1999). Because of such findings entrepreneurship has emerged as a key policy tool for regional development, economic growth, and job creation (Laukkanen, 2000; Rosa et al., 1996). This has led to a change in regional policy: from a redistributive exogenous approach to one of endogenous development of regional capabilities. In other words, the primary aim has shifted to promoting generative rather than competitive growth (Maillat, 1998). This shift has changed the focus to local economies, as a country's economic growth is considered to be the sum of the local economies' growths rather than the local economy being totally dependent on the national, exogenous growth. Over the past decade, therefore, there has been a strong emphasis on the analysis of local economic development and the improvement of the local milieu for entrepreneurship (Ritsila, 1999).

Three activities have been identified as policies to improve a local milieu for economic development (Maillat, 1998):

1. Stimulate the generation of entrepreneurs
2. Stimulate the creation of networks
3. Perform R&D to stimulate new technology

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An example of the first activity's use in regional policy in the United States is the development of empowerment zones in 1994 by the Clinton Administration. A major goal of empowerment zones is to make the local populace of an economically lagging part of the country more entrepreneurial. These zones, typically in urban settings, are defined as areas that suffer from chronic unemployment and lack investment by the private sector. Incentives to start businesses in these areas include tax breaks, guaranteed loans, and worker training. The hope is that increased entrepreneurial activity will stimulate economic growth by providing both increased employment and needed goods and services. The programs were initially instituted in six areas in the U.S. with great fanfare and optimism. Although no study has been done on the Boston empowerment zone, the administrators of the program feel that their experience has been similar to the other zones. Reports on the programs in other zones, however, have begun to question their effectiveness, especially in being able to start new businesses.

A review of the program in Los Angeles after 4 years found that the program continues to fall short on its core mandate to create jobs because the recipients of the program benefits were not creating jobs (Romney, 1999). The program has financed businesses that could not receive other sources of funding. Not only have these businesses failed to create jobs, they have a default rate of 32% on the loans.

In Cleveland, $26.2 million in loans and grants have led to the creation of 322 jobs in the empowerment zone (Ford, 1999). The creation of 300 jobs is considered to be negligible and the pace of progress is being questioned, especially during a time of unprecedented regional prosperity. In Detroit, the program was supposed to have launched 100 businesses by creating a "One Stop Capital Shop" (Dixon, 2000). Instead, the program is bankrupt, having spent $1.2 million with no companies started within the zone and six started outside of the zone.

Further details on the Detroit empowerment zone can shed some light on the mixed results from these programs. Needed service companies, such as supermarkets and drug stores, are not moving into the zone (Dixon, 2000). While some micro-businesses are being created, they have provided minimal increased employment. A typical example of a new empowerment zone startup is the "Bubble Laundromat" (Stringer, 1998). Started by two entrepreneurs, the laundromat consists of 20 self-operating washers and dryers. The entrepreneurs and their family members, who are not residents of the empowerment zone, work at the store. Instead of vital services, less capital-intensive micro-businesses are being formed, such as franchised fast food restaurants. It is questionable how many submarine sandwich shops Detroit's empowerment zone can support. In any event, these fast food restaurants will provide only a limited number of low paying, non-skilled jobs, which runs counter to the aims of the empowerment zone.

Approach

This paper explores the factors differentiating between the formation of high-growth ventures and low growth micro-businesses, and discusses how these factors may best influence the activities of organizations that either nurture ventures or create government policies for regional development. To do this, we examined those ventures that have been developed within a particular entrepreneurship center at a major urban university in one of the world's leading entrepreneurial environments: Boston, Massachusetts.

At issue for the authors is what type of businesses one would like to see started to substantively fuel new economic development. We, and others, categorize startups roughly into two types: the micro-business and the high-growth venture (Allen, 1999).

- A *micro-business* is independently owned and operated, does not dominate either its local or national field, and tends not to engage in innovative practices (Hunger and Wheelen, 1998). A micro-business is generally started to generate an income for the owner or the family. It tends to remain relatively small, with fewer than 25 employees.
- A *high-growth venture*, on the other hand, has the primary goals of profitability and growth. Its management uses innovative strategic practices. The entrepreneurial venture creates value

through innovation, through bringing new jobs to the economy that do not merely draw from other businesses currently existing, and through finding unserved niches in the market (Allen, 1999).

While micro-businesses are important, the implicit assumption for regional policy is that innovation is required to generate economic growth (See for example Maillat, 1998 and Landabaso, 1997). The type of businesses that one seeks for job creation and economic growth, therefore, are high-growth ventures. Part of the difficulty with the empowerment zone experience is that it has resulted in the development of some micro-businesses or the moving of existing jobs. It has not resulted in the creation of high-growth ventures needed to stimulate economic growth. As a Boston empowerment zone administrator observed while wishing to remain anonymous, "We have received many plans for starting beauty salons but no real business plans."

The results of the empowerment zone experiment are not too dissimilar from the experiences of the Northeastern University Entrepreneurship Center Business Plan Competition. Our general feeling has been that we have helped generate a number of sustainable micro-businesses but few high-growth ventures. We analyzed the results of the first four years of the competition, therefore, to find key differentiating factors between high-growth ventures and the more micro-businesses.

The Entrepreneurship Center

The purpose of the Entrepreneurship Center is to facilitate the creation of new businesses by members of the university community – students, faculty, staff, and alumni. Northeastern University already has a rich innovative milieu because of the research productivity of its engineering and biotechnology faculty. Associated with that is the entrepreneurial productivity of the Northeastern University community – NU is second in the Boston area only to MIT in the number of companies started by alumni, and NU alumni have started three of the five leading companies in Massachusetts (Roberts, 1991; Wiseman, 1999). Northeastern is playing an important part in the growth of the economy and jobs in the Massachusetts area.

The Center has four main functions: to provide entrepreneurship education at the undergraduate, graduate, and community levels; to provide consulting help to entrepreneurs; to provide seed money for startups; and to create networks for entrepreneurs to find money, professional services, personnel, and business/technical contacts. The Center runs a business plan competition each year. Students are trained in entrepreneurship courses on how to write a business plan, raise money, put together a team, and run a startup business. From these courses, approximately 200 business plans are generated a year. Through several screening processes, the plans are whittled to the best 20 to enter the competition each year. An outside panel of venture capitalists and successful entrepreneurs evaluates the plans and awards the money. Plans that are attempting to create new high-growth ventures rather than micro-businesses are preferred by the judges, just as the judges would seek in investing their own funds. Guidelines for judging a new venture are: how large is the company likely to become, how many people will it employ, and how likely is the company to go through multiple rounds of financing and a possible initial public offering. Winners of the competition split an award package of $60,000 plus the in-kind services of several professional organizations such as legal and accounting firms. All semi-finalists are exposed to a dozen investors who are connected with the competition in order to generate deal flow.

Within an already rich milieu of entrepreneurship, therefore, the Business Plan Competition is attempting to facilitate the creation of even more new high-growth ventures rather than micro-businesses. The Center is providing training, fostering an environment of entrepreneurship, and is making available a significant amount of resources for entrepreneurs through its own resources and through its network. The activities of the Center, therefore, mirror the recommendations of Maillat in the policies that should be created for economic development. The results of the first four years of our activities offer some insights into issues related to entrepreneurship and economic development.

The data: Four years of high-growth ventures and micro-businesses

The data used for this analysis come from the 90 plans that have survived into the semifinal rounds of the annual business plan competition over the past four years. External judges have evaluated these plans as to their potential to create new high-growth ventures if properly funded. These judges are venture capitalists and successful entrepreneurs primarily from the Boston area. Multiple judges review each plan submitted to the competition. Part of the judges' task is to assess each business plan for the reasonable probability of eventually becoming a high-growth venture, for it is these firms that are most likely to receive successive rounds of funding, to draw the best local managerial talent, and to make the largest long-term impact in their respective industries. "Finalists" in the competition have tended to be technology-intensive companies.

There were 90 business plans in the sample. 52 of these were deemed by the judging panels as most likely to remain as micro-businesses. 38 were deemed to have the reasonable potential to initiate and prosper as high-growth ventures.

We found two key factors: the founders of the high-growth venture plans had significant work experience and/or advanced training in their industries/technologies ($p < 0.001$). Second, business plans for new high-growth ventures were submitted predominantly by teams of people versus individuals ($p < 0.001$).

Figure 1 shows both of these results in the form of contingency tables and statistical tests. In the first test, the semi-finalists for all four years were categorized as either high-growth venture or micro-business, and then examined for the presence of a founding team or a single individual founder. The second was similar. The judges' high-growth versus micro-business categorization was compared to the specific industry experience of the founders, gleaned from the plans by examining the resumes and other related material contained in the plans. Figure 1 shows the solid statistical significance of both results.

We also examined whether founders with industry experience were also more likely to form teams. The third test shown in Figure 1 shows a strong relationship between industry experience and team formation ($p = 0.09$). An inference from this finding is that people who have experience working in companies realize earlier that one person alone cannot do everything required by new venture. They therefore seek team members from the beginning.

As a further screen, we examined those plans that became "finalists" in our competition, receiving financial and other types of rewards in the annual competitions. These "winners" possessed a strong balance between marketing and technology, as well as reasonable business models. For example, one of the sample ventures has created a financial services marketing "ASP" for independent mortgage brokers. Its founding team included two successful mortgage brokers and a highly experienced systems architect. Another venture distributes specialized accessories to farriers in the United States, and comprised a founding team of both international class horseback riders and marketers with strong industrial sales experience. Yet a third venture is a Web based distribution portal for independent film producers. The founders of this venture included an engineering manager from a leading film editing systems manufacturer and a distribution manager from an automotive supplies company.

The strengths demonstrated by these and other successful founders were attributable to their tendency to work in teams and their industry experience. More specifically, the winners had cross-functional experience within the founding team. Gender appeared to have no impact of these findings: female entrepreneurs have led five of the twelve "winning" teams over the past four years.

Discussion

Where have our students and alumni derived the best high-growth venture ideas? Roberts (1991) and Allen (1999) suggest that entrepreneurs' personal experiences are the rock-bed for new ventures. Our data have been consistent with this finding. For example, entrepreneurs who are currently students tend to write plans for student-focused needs and issues – Web sites for night-clubs, for book exchanges, or, in the case of one of our more notorious Northeastern students, swapping royalty-free MP3 music clips. Our best

Teams versus Type of Business

Contingency Table		Team		
		ALL	Individual	Group
Type of Business	ALL	90	42	48
	Micro Business	52	38	14
	High Growth Venture	38	4	34
Chi-square	34.51453152			
DF	1			
p-value =	.00000000423			

Work Experience versus Type of Business

Contingency Table		Work Background		
		ALL	Yes	No
Type of Business	ALL	90	45	45
	Micro Business	52	17	35
	High Growth Venture	38	28	10
Chi-square	14.75708502			
DF	1			
p-value =	0.000122287			

Work Experience versus Teams

Contingency Table		Work Background		
		ALL	Yes	No
Teams	ALL	90	45	45
	Individual	42	17	25
	Group	48	28	20
Chi-square	2.857142857			
DF	1			
p-value =	0.090968968			

Figure 1. Analyses of factors associated with plan categorization four years of business plans.

plans, however, have come from people who have experience working in an industry or from faculty who are performing directed research for an industry and then come up with an idea for that industry.

Our team-related findings are also directly consistent with prior research. Utterback et al. (1988) studied sixty Swedish innovative startups. They found that two-thirds of the fast growing firms were formed by teams of founders (as opposed to individuals), the majority of whom were in their 30's and had substantial work experience prior to startup. It was found that "having little diversity of management skills, in this case meaning only technical and design skills, almost guarantees that the firm will grow slowly" (p. 19).

Roberts (1991) found that the probability of success for new ventures was strongly associated with teams of 2 or 3 individuals, each of whom represented different skill sets (engineering versus sales and business), and who collectively had substantial work experience in the industries targeted by their respective startups. In addition to robust technologies and value-added products, the "super successful" firms in Roberts sample had a clear market orientation, focusing their sales on growth markets and the development of strong channels.

Building experienced management teams with expertise across the various functions required in a venture continues to be a major emphasis of successful entrepreneurs and venture capitalists. Our

research would suggest, however, that even to come up with a good plan the team must be in place.

These findings pose a dilemma for those trying to use entrepreneurship as a vehicle for regional growth. Providing resources and training to a group of people will help them become more entrepreneurial, but their efforts are likely best applied to industries where they collectively already possess substantial work experience. If they have no industry experience, the entrepreneurial team will tend to form business ideas from what they have experienced as consumers. That is one reason why the empowerment zone programs have generated beauty salons, laundromats, and sandwich shops, but few new, high-growth ventures. Likewise, if people need industry experience, then one might expect to see a clustering of new businesses within a region from the same industry.

The other issue for regional development is that most of the programs have been directed to individuals; i.e., to train and help individuals start businesses. Our findings would suggest that more effort go into helping teams of people become entrepreneurs, and that these teams contain individuals with complementary skills. Most entrepreneurship programs assume that the teams can be formed as the business develops, but that may have to be rethought to bringing a couple of people together from the very beginning. For example, at the Northeastern center, we target students and alumni who have specific industry experience, as opposed simply to students with general entrepreneurial interest and desire. We also seek to place faculty members performing directed research for industry on entrepreneurial teams, ideally coupled with individuals with sales and marketing experience in related industries. We place our strongest emphases on understanding the market place and forming diverse teams, and attack these issues right from the very beginning. Instead of looking for individuals to come up with good business plans, we are now suggesting that teams come up with the plans. Also, instead of relying just on projections of market growth easily procured on the Internet, we force students to talk to customers to learn specific needs and frustrations. The findings reported here – the importance of cross-functional teams and industry experience for the development of high-growth ventures – have directly influenced our own approach to nurturing entrepreneurs.

Clustering of related companies is commonplace. During the 1960's and 1970's, Boston had a clustering of minicomputer companies. Today, Boston prospers with its telecommunication and biotech startups. In another study we are doing, we found that Providence, Rhode Island has a clustering of jewelry manufacturers (515 businesses) while an hour away in Boston there are only 15 such businesses. Other researchers, such as Porter (1998), have reported clusterings of businesses of the same type in a region.

Clustering of companies also suggests greater opportunity to develop forums, associations, and events of a local nature to encourage and nurture networking between fellow entrepreneurs. Within the Boston area, there are a number of examples, such as several major universities host annual business plan competitions as well as more frequent entrepreneurial forums. Industry groups also sponsor networking activities. The Massachusetts Technology Collaborative, the Massachusetts Software Council, and the Route 128 Ventures Forum are but a few of the many organizations that host conferences and meetings for entrepreneurs and investors.

Building upon regional technology strengths is a key policy implication that we recommend. A good ex-ante indicator of what types of businesses will be generated by providing resources and training to potential entrepreneurs is the industrial base that is already present in a region. A region that already has a technology base and an industrial base will generate more businesses of that type if entrepreneurial resources are provided. On the other hand, an area with little industry skill base is not likely to generate many new high-growth ventures. This explains the experiences of the empowerment zones. The locals have started small companies that have employed some family members but have created few jobs. The companies that have created some jobs have mostly moved in from outside of the region. But this brings us back to an exogenous approach rather than an endogenous growth approach.

What may be required in areas that are lagging economically because of an underdeveloped industrial base is a combination of both exogenous

and endogenous approaches. An example of a combined approach is the experience of Ireland. On a recent trip to Ireland, we saw a burgeoning high-tech industry formed within the context of an economy traditionally beset with underdevelopment, joblessness, and other economic and social woes. Those familiar with the Irish situation will point to two key factors underpinning growth (Industrial Policy Review Group, 1992):

- National economic tax policy to lure large technology-intensive multinationals to build manufacturing centers for the European market in Ireland.
- An aggressive government-supported educational initiative at the university level to produce substantial numbers of highly trained engineers to work in these manufacturing plants and design enhancements for products and systems necessary for the European market. Within Dublin alone, one can find excellent technical programs at Trinity, University College Dublin, and Dublin City University.

With the stage set as such, it was perhaps inevitable that Irish entrepreneurs would start companies to supply software, design services, and other forms of support to the locally situated multinationals. Many of these entrepreneurs have first worked for the multinational, learned its products, services, and management, and are thereafter well suited to make the former employer an industrial customer. With this first wave of sales in hand, the Irish venture could then look to other markets beyond the local multinational operation, including high-tech customers on the continent and increasingly, in the United States. Once the high-tech entrepreneur achieves initial success, it is equally inevitable in this day and age that venture money will soon find that entrepreneur and seek a partnership to first expand, and then, create wealth through stock offerings or acquisition.

However, a process such as the one described above takes time. People often forget that in the United States, the development of the high-tech entrepreneurial phenomenon really took hold during the 1970s, and was still arguably in its formative stages during the first part of the 1980s. The educational infrastructure for science and engineering was strong in California and Massachusetts. Large computer companies, such as Apple, Hewlett Packard, Sun Microsystems, and Digital Equipment Corporation, served as applied learning environments for technical graduates. Significant numbers of these then left their corporate employers, only to build products and provide services to sell directly back into their former employers. The same factors are also at play in new centers of entrepreneurship in the United States, such as Austin, where the University of Texas, large corporations such as Compaq, Dell, and IBM (RISC6000), and venture firms have all combined to help educate, fund, and buy products from technological entrepreneurs.

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