White Paper on Economic Growth Through Business Formation[1]

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Purpose

In recent years, Northeast Ohio (NEO) has seen a resurgence of high potential entrepreneurial activity that is due, in no small part, to efforts by the foundation community to stimulate it. However, this resurgence has not been complete, and the level of "attractive" entrepreneurial activity in the region remains below its peak.

Moreover, the causes of this resurgence are not well understood. This lack of understanding is problematic because area philanthropists would like to target their efforts to encourage "attractive" entrepreneurial activity to make these efforts more efficient and effective.

To better understand the types of interventions that encourage "attractive" entrepreneurial activity, the Fund for Our Economic Future (Fund) commissioned an effort to examine the effectiveness of different types of interventions to encourage the development of "attractive" entrepreneurial activity in NEO. This white paper is the result of that effort.

Summary of the Effort

The white paper explains why foundations and policy makers who seek to encourage economic development through entrepreneurship need to do more than encourage the creation of a large number of start-up companies. It also identifies four types of "attractive" entrepreneurial companies: venture capital-backed start-ups; companies financed by angel groups; young businesses that receive external equity financing; and gazelle companies – businesses that grow at more than 20 percent per year. It examines the efficiency and effectiveness of seventeen categories of interventions to change the industrial composition, human capital, financial capital, research and technology base, and government policies of the region. The white paper also recommends whether or not the Fund should encourage these types of interventions in the 16 county region of NEO, basing its recommendation on whether there is evidence that the intervention increases the level of "attractive" entrepreneurial activity in an efficient and effective manner; whether the intervention can be initiated through the research, grant making, and convening activities that are the domain of the Fund; and whether the intervention is of a magnitude that the Fund can support.

The analysis conducted for this white paper led to a division of the types of interventions into four groups: (1) interventions for which there is no evidence of an effect on the level of "attractive" entrepreneurial activity in a region; (2) interventions for which there is evidence of an effect, but which are more appropriate for other entities to conduct; (3) interventions that are appropriate for the Fund, but show relatively low potential returns; and (4) interventions that are appropriate for the Fund and show relatively high potential returns.

Caveats

Two important caveats need to be noted at the outset. First, the focus of this white paper is on interventions to increase the amount of "attractive" entrepreneurial activity in the region. Effective interventions to increase the amount of this activity may not be the same as those that help to achieve other goals, such as enhancing the quality of life in the region; making the workforce more attractive to large employers; or making the region more inclusive. Because the scope of this white paper is limited to the goal of increasing the amount of "attractive" entrepreneurial activity in the region, its recommendations should be read as being limited to that goal. The recommendations could easily have been different if the effects of interventions on other goals were being examined.

Second, the white paper examines the types of interventions individually. Existing data are insufficient to determine whether certain categories of interventions are complementary and should be undertaken together. The types of interventions not recommended in this white paper might enhance the performance of the recommended types of interventions. However, they might not. Because the cost and complexity of undertaking many types of interventions simultaneously is prohibitive, the choice was made to identify categories of interventions individually, given the absence of adequate information to figure out whether types of interventions are complementary or not.

Increasing the Aggregate Amount of Entrepreneurial Activity in NEO Should Not Be a Goal

The Fund should **not** seek to increase the amount of entrepreneurial activity that takes place in NEO. Contrary to much popular opinion on economic development, encouraging the total amount of entrepreneurial activity in a region is not a worthwhile goal for philanthropists or policy makers. The typical new business does not generate much economic value or create many jobs. The typical start-up is capitalized with about $25,000 of the founder's savings and operates in the retail or personal services sectors of the economy, sectors prone to high failure rates and low rates of growth and new business profitability. [2] The typical start-up only employs one person, and is a home-based business, [3] founded by someone who aspires to generate only around $100,000 in revenue in five years. [4]

The typical new company is not very productive. A study by John Haltiwanger, Julia Lane, and James Speltzer, using data from the U.S. Census and other sources showed that firm productivity **increases** with firm age.[5] This means that the average new firm makes worse use of resources than the average existing firm.

Moreover, contrary to popular opinion, places that have high rates of new business creation and self-employment do not have high rates of firm growth. For instance, San Jose, California has one of the country's lowest rates of self employment, yet is the epicenter of Silicon Valley.[6] And the metro areas that mark Silicon Valley – San Francisco and San Jose – aren't among the top places for new business start-ups, according data from the Census Bureau's Longitudinal Enterprise and Establishment Microdata file, the government's best data source on the per capita number of new businesses created every year in different metro areas. In fact, these two metro areas aren't anywhere close the number one metro area in terms of per capita firm formation.[7]

In fact, places that have a lot of self-employment and new firm formation actually have **lower** rates of high growth business activity. Examination of the data published by Zoltan Acs and his colleagues in a recent Small Business Administration working paper show that the rate at which MSAs have high growth firms is **negatively** and significantly associated with the rate of new firm formation in an MSA.

Furthermore, increasing the rate of new firm formation per se does not increase economic growth. Sociologists Dieter Bogenhold and Udo Staber reported that the correlation between real GNP growth rates and the rate of self-employment in France, West Germany, and Italy between 1953 and 1987, and in Sweden between 1962 and 1987 is **negative**.[8] Economist Danny Blanchflower found that the correlation is also negative between self-employment and economic growth in the 19 OECD countries for which data are available from 1975 to 1996.[9]

New companies also account for a small proportion of high growth companies. In a report for the Small Business Administration, Zoltan Acs and his colleagues found that less than three percent of "high impact" companies – businesses that increased their sales two-fold or more over a four year period – were younger than five years old.[10] "In fact the average age of a high impact firm is around 25."[11]

The typical new firm also is **not** an important source of jobs. According to analysis by economists Zoltan Acs and Catherine Armington on data from the U.S. Census, companies with at least one employee that are less than two years old, account for only 1 percent of all employment in the United States. By contrast, companies with at least one employee that are more than ten years old, account for 60 percent of all employment in this country.[12]

New businesses also create relatively few jobs. Data provided on its website by the Bureau of Labor Statistics shows that 31,472,000 jobs were created in the United States in 2004.[13] That year, 580,900 new firms with at least one employee were started, each of which had an average of 3.8 employees. Thus, in 2004, new firms created 2,207,420 jobs, or 7 percent of the total number of jobs created in that year.

Estimates of net job creation by new firms are remarkably similar to the estimates of gross job creation. A study by economists Steven Davis and John Haltiwanger shows that, in manufacturing, one year old firms created 6.4 percent of the net new jobs – an estimate that is consistent across industries, regions, firm size, and type of firm ownership.[14]

Far from being job creators, as a whole, new firms have net job **destruction** after their first year. According to data analyzed by Amy Knaup at the Bureau of Labor Statistics, the cohort of new employer firms founded in the United States in 1998 employed 798,066 people in its first year, but employed only 670,111 people in 2002.[15] In other words, the number of jobs lost by new firms that close down in their second year, third year, fourth year, and so on, exceeds the number of jobs added by the expansion of the new firms that survive.[16]

Because the average new firm creates few jobs, starting more of the average company is **not** a very efficient way to grow the number of jobs in a region. Estimates based on U.S. Census data and other sources show that to create one business employing at least one person in ten years, we need 43 entrepreneurs to begin the process of starting a company. And the typical business that is created will have nine employees in a decade. That is, 43 people have to try to start companies so that we can have 9 jobs a decade from now.

On average, jobs in new firms pay less, offer worse fringe benefits, and provide less job security than jobs in existing firms. The data show that jobs in new firms are more likely to be part-time than jobs in existing firms. Moreover, jobs in the average new firm do not pay as well as jobs in the average existing business. In their book, *The Entrepreneurial Process: Economic Growth, Men, Women and Minorities,* sociologists Paul Reynolds and Samis White found that the average new job paid 72 percent of the average wage in the state in the firm's first year and that the wages in those firms were still below the state average when they were four years old.[17]

Jobs in new firms also offer fewer benefits than jobs in existing firms. According to an analysis by David Bernstein of the Federal Reserve Board's Survey of Small Business Finances, businesses become more likely to offer a pension plan or health insurance coverage to their employees as they get older.[18]

The size of the difference in the tendency of new and existing firms to offer health insurance is substantial. A study by Alison Wellington showed that men who work for others are three times as likely, and women who work for others are six times as likely, to have health insurance, as those who work for themselves.[19] Moreover, preliminary data from Kauffman Firm Survey show that, in 2004, only 23.2 percent of new firms offered health insurance to their full-time employees.

Jobs in new firms are also less likely to be around in the future than jobs in existing businesses, largely because the survival rate of new firms is so low. In one study, economists Zoltan Acs and Catherine Armington showed that the probability that jobs created by new firms in the services sector would still be around four years later was 10 to 13 percent lower than the probability for all (new and established) businesses in that sector. In manufacturing, the numbers were worse. The probability that a job created in a new firm would still be around four years later was 20 percent below that of jobs created in all firms.[20]

Implication Number 1: Increasing the total number of new companies will not enhance economic growth and job creation in Northeast Ohio.

<u>Attractive Entrepreneurial Activity</u>

While the typical new business does not generate much economic growth or create many jobs, a small subset of start-ups does. In fact, this subset of start-ups generates so much economic growth, and creates so many jobs, that a region's economic vitality depends on its ability to stimulate the formation of these companies, which we call "attractive" entrepreneurial activity. But before we turn to **<u>how</u>** philanthropists and policy makers might intervene to stimulate the level of "attractive" entrepreneurial activity in the region, we need to define it.

Unfortunately, what constitutes "attractive" entrepreneurial activity is neither well known nor well understood. Interviews with key stakeholders conducted as part of the effort to develop this white paper showed great variance in how people define the concept, ranging from any company that invests money; to companies that provide a positive return on the owner's invested capital and create jobs; to companies that commercialize a product or service; to companies that are able to raise initial or follow-on money from investors; to ones that meet the milestones set by founders or investors; to companies that grow and become profitable; to ones that generate wealth for investors, entrepreneurs, and society through an exit.

Because there was no consensus among the stakeholders interviewed for this project on what "attractive" start-ups are, I turned to the literature to identify four groups of businesses that researchers and policy makers believe represent "attractive" entrepreneurial activity: venture capital-backed companies; angel-group-backed companies; new businesses financed by external equity; and gazelle companies. While these companies are not the **<u>only</u>** types of new companies that are "attractive", they are readily identifiable subsets of "attractive" start-ups. Because the purpose of this white paper is to identify possible interventions to increase the amount of "attractive" entrepreneurial activity in NEO, it is necessary to look at start-ups that can be identified as attractive at some time before they become successful. These four types of businesses are examples of such companies.

In the subsections below, I explain why these four categories of businesses represent "attractive" entrepreneurial activity.

Why Venture Capital Backed Companies?

Venture capital backed companies are the prototypical "attractive" start-ups. From 1970-2001, venture capitalists funded approximately 25,000 new companies in the United States. In 2003, these companies employed 10 million people, or 9.4 percent of the private sector labor force, and generated $1.8 trillion in sales, or 9.6 percent of business sales in this country.[21] In 2000, the 2,180 publicly traded companies that had received venture-capital backing between 1972 and 2000 comprised 20 percent of all public companies in the United States, and accounted for 11 percent of their sales, 13 percent of their profits, 6 percent of their employees, and one-third of their market value, a figure in excess of $2.7 **trillion** dollars.[22]

Why Angel-Group Backed Companies?
Companies backed by organized angel groups composed of accredited investors are another category of "attractive" start-ups. Effective angel groups invest in very high performing companies. For instance, since the group's founding in 1994, 4.6 percent of the companies in which the Band of Angels has invested have gone public and 17.5 percent of its investments have ended in an acquisition, giving the group an internal rate of return of 55 percent.[23] Moreover, a survey by Rob Wiltbank of Willamette University showed that the average investment by an angel group member generated a profit of $295,000 on an investment of $191,000 in 3.52 years.[24]

Why Gazelle Companies?
Gazelles are companies that grow their sales by 20 percent or more per year. According to research by Zoltan Acs and his colleagues, these companies "account for almost ALL employment and revenue growth in the economy."[25]

Why External Equity-Backed Companies?
External equity backed companies are a fourth category of "attractive" new businesses. These companies perform better than most start-ups. According to the 2003 Federal Reserve Survey of Small Business Finances, the typical (median) business that received an informal equity investment (includes those that received investments from family members) in the previous year had sales $435,000 and employment of seven. Data from the Kauffman Firm Study show that the valuation of the average company that was started in 2004 and received an external equity investment in that year was $1.4 million.

Implication Number 2: While the totality of "attractive" entrepreneurial activity is difficult to identify, it includes venture-capital and angel group backed start-ups, gazelle companies, and companies that receive external equity.

How Well is NEO Doing at Generating "Attractive" Entrepreneurial Activity?

To evaluate the potential for different interventions to increase the amount of "attractive" entrepreneurial activity in the region, it is useful to benchmark how the region compares to other places on the four measures of "attractive" start-ups: venture capital-backed companies; angel-group backed companies; companies with external equity investment; and gazelle firms. Below I compare NEO to other regions on these four dimensions.

Venture Capital-Backed Start-ups
Data from several sources indicates that venture capital activity in the region is proportional to the area's share of U.S. entrepreneurial activity. That is, while NEO is not an outlier region in terms of venture capital activity, like Silicon Valley, its level of activity is appropriate for its size.

We can obtain estimates of our proportional share of venture capital activity by looking at data on venture capital activity in the United States and prorating according to NEO's share of U.S. entrepreneurial activity. According to the National Science Foundation and the National Venture Capital Association, in 2006, 2,910 companies received $25.9 billion in venture capital financing in the United States.[26] According to data from the U.S. Census and the U.S. Small Business Administration on new business creation activity in the three metropolitan statistical areas (MSAs) that make up Northeast Ohio (Akron-Canton, Cleveland-Lorain-Elyria, and Youngstown-Warren), NEO accounted for approximately 1.2 percent of new business births in this country in the most recent year that data were available. If we apply the region's share of new businesses to the number of companies funded by venture capitalists in 2006, we see that NEO's proportional share is $311 million of venture capital invested in 35 companies. The National Venture Capital Association reports that the average venture capital firm funds 4.32 companies per year,[27] which suggests that the region would need 8.1 venture capital firms to generate this amount of venture capital activity.

The venture capital figures for NEO appear to be consistent with NEO's proportional share of U.S. entrepreneurial activity. According to the Venture Capital Report, produced by BioEnterprise, Nortech and JumpStart, in 2006 venture capitalists provided $157 million to 51 companies in the region, and in 2007, provided $318 million to 71 companies.[28] According to a study conducted by Innovation Works in Pittsburgh, Pennsylvania, the Cleveland-Akron combined MSAs were 37th in the country in terms of 2006 venture capital dollars, though this was a decline in ranking from 30th in 1997. Cleveland State University's study of dashboard indicators looked at the venture capital dollars per employee in 136 medium-sized MSAs, and found that a weighted average of the Cleveland-Lorain-Elyria, Akron-Canton, and Youngstown-Warren MSAs was $180.23 in 2006, well above the median of $49.54 for the MSAs examined in their study.

Angel Group Backed Companies

The amount of angel group activity in NEO appears to be a little above average for the United States. The Angel Capital Association reports that there were 137 U.S. angel groups in 2007.[29] That is an average of 0.47 angel groups per MSA. With Arch Angels and the North Coast Angel Fund in a region composed of three MSAs, NEO has a higher than average number of angel groups. (However, it is not a positive outlier region in terms of angel groups.)

According to the Angel Capital Association, in 2006, U.S. angel groups were composed of 6,250 accredited angel investors who made 1,000 investments in 617 companies, providing start-ups with a total of $266 million.[30] This is an average of 21.4 angel group members putting $911,000 into 2.1 companies per MSA. If NEO were proportional to the rest of the country in this activity, then the three MSAs that make it up should have had 64.2 accredited angel group members putting $2.73 million into 6.3 angel group-backed companies in 2006. NEO appears to have more than this level of investment, with 173 accredited angel group members putting between $4.7 and $5.7 million in 18 to 21 companies.

The region's relatively high performance on angel group activity appears to reflect its relatively large angel groups. According to the Angel Capital Association, in 2007, the average angel group had 55 members (median of 41) and made 7.3 investments in 4.5 companies for a total of $1.94 million dollars (median of $1.1 million).[31] In 2007, the North Coast Angel Fund's 99 members made investments totaling $2.7 million in six companies. Arch Angels' 74 investors made investments of between $2 and $3 million in 12 to 15 companies.

Gazelle Companies

A study by Zoltan Acs of George Mason University and his colleagues conducted on behalf of the Office of Advocacy of the U.S. Small Business Administration examined the distribution of "high impact" companies – companies that had sales of which have at least doubled over the most recent 4-year period and which had an employment growth quantifier of 2 or greater from 1998 to 2002 – across MSAs. On average, 2.2 percent of businesses in the United States were "high impact" firms.

NEO performs well on this measure. Acs' research shows that 2.33 percent of firms in the Cleveland-Akron area and 2.41 percent of firms in the Youngstown-Warren area were "high impact firms."

However, it is important to note that this high level of performance does not mean that there are a large number of "high impact" young companies in NEO. While the research by Acs and colleagues indicate that there are 3,938 NEO companies that are "high impact" businesses, this research also shows that <u>**only 2.8 percent**</u> of high impact companies were less than five years old. If the same percentage of NEO "high impact" firms is less than five years old as businesses in the rest of the country, then the region has 110 young "high impact" firms.

Young Companies with External Equity

NEO is performing acceptably when measured by the number of young companies with external equity. Data from the Census Bureau's Survey of Business Owners provides information on which new firms founded between 1997 and 2002 received an equity investment from someone who was not a manager, employee or relative of the founder from the time of founding until 2002. By aggregating the number of these companies in each metropolitan statistical area (MSA) and dividing that number by the population, we can measure the per capita number of young companies that received an external equity investment in each MSA.

To give a sense of where the Northeast Ohio region lies, the Boulder-Longmont, Colorado MSA has the highest per capita rate of external equity investing in the country, with 275 young businesses receiving such an investment for every million people in the MSA. At the other end of the spectrum, several areas, such as Brownsville-Harlingen-San Benito, McAllen-Edinburg-Mission, and Corpus Christi, Texas; Saginaw-Bay City-Midland and Lansing-East Lansing, Michigan; Valejo-Napa-Farfield, California; and Monmouth-Ocean, New Jersey showed <u>**no**</u> external equity investing during the 1997 to 2002 period.

The median value across the 292 MSAs on which data were available is 22. The values for the three Northeast Ohio MSAs were: 11.7 for Akron-Canton; 26.1 for Cleveland-Lorain-Elyria; and 30.8 for Youngstown-Warren. If these three MSAs were one area, their weighted average would be 23.1.

Again the relatively high performance of NEO on this measure does not mean that there are a lot of young companies in the region that have received an external equity investment. If we calculate the number of employer businesses less than six years old and younger in the region that received an external equity investment, we find 137 companies.

Implication Number 3: The rate of creation of venture capital-backed companies in the region is proportional to the area's share of U.S. entrepreneurial activity; the rate of angel group activity and the rate of creation of "high impact firms" are above average for the country; and the rate at which young companies receive external equity is above the U.S. median.

What can the Fund for Our Economic Future Do?

Given the performance of NEO at generating these four types of "attractive" entrepreneurial activity, what should the Fund for Our Economic Future do? What interventions, if any, can it undertake increase the level of "attractive" entrepreneurial activity in the region?

To answer these questions, it is important to recognize the resources and capabilities of the Fund. Unlike the state or local government, the Fund does not have legal or tax collecting authority over the activities of businesses in the region. Moreover, it has a limited amount of money – far less than most government entities. Furthermore, the Fund limits its activities to three areas: conducting research, providing grants, and convening people.

These characteristics suggest the following three decision rules when evaluating whether the Fund should undertake particular interventions to increase the level of "attractive" entrepreneurial activity in NEO.

1. There is evidence that the intervention is associated with increases in the level of "attractive" entrepreneurial activity in a region.
2. The intervention involves research, grant making, or convening.
3. The intervention is of a magnitude appropriate for the Fund's resources.

In the next section, I evaluate several categories of interventions according to these three criteria.

Implication Number 4: The Fund should only engage in interventions that have been shown to increase the level of "attractive" entrepreneurial activity in a region; can be undertaken through research, grant making, or convening; and cost an amount that the Fund can pay for.

Potential Interventions

To identify possible interventions to increase the amount of "attractive" entrepreneurial activity in NEO, I both reviewed the literature and interviewed 11 key stakeholders who are responsible for encouraging the development of this type of activity in the region. These stakeholders included leaders of angel groups, directors of business incubators, leaders of entrepreneurship intermediaries, university technology transfer office directors, and other stakeholders believed to have insight into ways that one might encourage the amount of "attractive" entrepreneurial activity in the region.[32]

I reviewed the academic and public policy literature on efforts to increase the amount of entrepreneurial activity in a region using standard library databases and Google Scholar.

Neither the review of the literature nor the interviews revealed many specific interventions that were suggested by more than one source. Because analysis of idiosyncratic interventions is not possible, I aggregated the suggested interventions into categories and looked at these categories of interventions. The seventeen categories of interventions include interventions to change the industrial composition of the region, its stock of human and financial capital, its research and technology base, and its political and cultural environment. For ease of exposition, I have organized the categories of intervention by these three five dimensions and have listed them below.

Changes to the Industrial Composition of the Region

- Interventions to change the industrial base to one centered on high tech industries in which high growth start-ups tend to form.
- Interventions to reduce the focus of the region on large scale manufacturing.

Changes to the Human Capital of the Region

- Interventions to build the amount of entrepreneurial talent in the region.
- Interventions to attract to the region entrepreneurs who can grow venture capital-backable companies.
- Interventions to build university entrepreneurship programs.
- Interventions to increase the pool of educated people who can work in businesses in new, high growth industries.
- Interventions to grow the pool of people with management talent.
- Interventions to increase the number of immigrants to the region.

Changes to the Financial Capital of the Region

- Interventions to increase the amount of angel group activity in the region.
- Interventions to increase the amount of venture capital activity in the region.

Changes to Research and Technology Creation in the Region

- Interventions to enhance the research base in are academic institutions.
- Interventions to increase the pool of technological inventions off of which new businesses can be built.
- Interventions to enhance pre-commercialization grant programs to develop and evaluate technologies.

- Interventions to increase the number and size of business incubators in the region.

Changes to Government Policies and Culture of the Region
- Interventions to reduce taxes on new companies and their investors.
- Interventions to create a culture that encourages people to start companies.

<u>Evaluation of the Interventions</u>
In this section I evaluate the merit of these different potential interventions. I do this by examining: (1) whether there is evidence that the intervention will increase the level of “attractive” entrepreneurial activity in the region; (2) whether the intervention involves research, grant making, or convening; and (3) whether intervention is of a magnitude such that the Fund can undertake it successfully.

I used several sources of evidence to evaluate these factors. First, I examined the statistical relationship between variation across MSAs in the factors that these interventions are designed to increase and the variation in four measures of “attractive” entrepreneurial activity: the per capita number of young companies in the MSA that receive external equity investment; the per capita number “high impact” businesses;[33] the per capita number of angel group backed companies; and the per capita number of venture capital firms in the MSA.

Second, I reviewed the literature for studies that evaluated the different categories of intervention. In this review process, I looked for evidence of statistical or case studies that showed the effect of the intervention on the level of “attractive” entrepreneurial activity in a region.

Third, I examined whether logic suggested a potential causal mechanism between the intervention and “attractive” entrepreneurial activity.

Finally, I examined whether such an intervention could be accomplished through research, grant making or convening of the magnitude that the Fund could pay for.

The premise of this effort was that the absence of a relationship between an intervention and changes in the level of “attractive” entrepreneurial activity, or evidence that the intervention could not be accomplished through research, grant making or convening, or that the magnitude of the effort needed is beyond the budget of the Fund indicate that the Fund should not undertake that intervention. (That is evidence of a relationship between the intervention that could be accomplished through research, grant making or convening that the Fund could undertake and changes in the level of “attractive” entrepreneurial activity is a necessary, but not sufficient, condition for a an intervention to be considered by the Fund).

<u>Categorizing the Types of Interventions</u>
The analysis conducted for this white paper led to a division of the types of interventions into four groups: (1) interventions for which there is no evidence of an effect on the level of “attractive” entrepreneurial activity in a region; (2) interventions for which there is

evidence of an effect, but which are more appropriate for other entities to conduct; (3) interventions that are appropriate for the Fund, but show relatively low potential returns; and (4) interventions that are appropriate for the Fund and show relatively high potential returns.

Interventions for Which There is No Evidence of an Effect

The analysis identified several categories of interventions for which there is no evidence of an effect on the level of "attractive" entrepreneurial activity in a region. These include interventions to develop university entrepreneurship programs, interventions to reduce state taxes, interventions to change the area's culture and attitudes toward entrepreneurship, interventions to create incubators, or interventions to increase the overall level of entrepreneurial activity in our region.[34]

Interventions to Increase University Entrepreneurship Programs

Some observers have argued that we might increase the level of "attractive" entrepreneurial activity in the region by investing in the development of entrepreneurship programs at area universities. As the Ohio Board of Regents strategic plan explains, "specific strategies can be pursued to accelerate the process of creating entrepreneurial environments in and around our campuses."[35]

Although there is no statistical data available to look at the relationship between the presence or absence of university entrepreneurship programs, or their size or quality, and the amount of "attractive" entrepreneurial activity in a region, we can evaluate whether logic suggests that investments in these programs will increase the level of "attractive" entrepreneurial activity in the region. Several factors suggest that the answer is "no". First, the distribution of venture-capital backed companies across the United States makes it very unlikely that this distribution is related to the presence or absence of university entrepreneurship programs, their size, or their quality. The National Venture Capital Association reports that 65 percent of all companies that received venture capital in 2007 were located in just five states: California, Massachusetts, Texas, Washington, and New York. These five states have nowhere close to two thirds of all the entrepreneurship programs in this country.

Second, people rarely start the kinds of "attractive" new businesses at any time close to their graduation from school. Data from the Census Bureau's Survey of Business Owners shows that over two-thirds of the entrepreneurs whose businesses had received an external equity investment and were less than six years old in 2002 were between the ages of 35 and 54 years at the time their businesses received that investment, and only 0.05 percent were less than 25 years old.[36] Therefore, even if university entrepreneurship programs influence people's ability to create "attractive" new ventures, the effect of those programs would not manifest itself for at least a decade after those entrepreneurs graduate.

Third, few college graduates remain in the place where they went to school. But, most entrepreneurs start businesses in the places where they are currently living. Therefore, efforts to stimulate the amount of "attractive" entrepreneurial activity in a region through college education will affect a much smaller proportion of entrepreneurs in the region than efforts to stimulate the amount of "attractive" entrepreneurial activity through efforts to help the entrepreneurs currently starting businesses in the region.

Fourth, research shows that people who study business are not significantly more likely to start new companies than people who study other things. Although business majors (entrepreneurship students are a subset of these) are more likely than many other majors to start their own businesses, they are no more likely than students who study health-related topics (things like medicine, nursing, and pharmacy). Moreover, those who study law, architecture, and agriculture are more likely than those who study other topics to start their own companies.[37]

Fifth, only a small portion of students at any given university take entrepreneurship courses, and only a small portion of them start businesses. These small proportions mean that the average entrepreneurship program trains very few people who start businesses, let alone those that create "attractive" entrepreneurial ventures.

Sixth, "attractive" entrepreneurial activity involves a large amount of learning-by-doing that cannot be taught effectively in a school setting to college-age students, or even MBAs. The research evidence suggests that many entrepreneurship skills are learned on the job, working for companies that are successful at this activity. For this reason, entrepreneurship students would be a poor source of assistance to help build "attractive" entrepreneurial activity in a region. Most students have little work experience, particularly experience in building "attractive" entrepreneurial ventures.

Implication Number 5: There is little evidence to suggest that interventions to develop university entrepreneurship programs would enhance the level of "attractive" entrepreneurial activity in the region.

Interventions to Reduce Taxes in the Region

Some observers have argued that efforts to reduce taxes will increase the amount of attractive entrepreneurial activity in the region, an argument that has led many states to put in place tax credits for making angel investments or starting new companies.[38] Taxes are believed to be a disincentive for people to start businesses since entrepreneurs' compensation declines in proportion to increases in their tax rate. Similarly, they are a disincentive for people to invest money in new companies because the profit from such activity is reduced by taxes.

Despite the widespread argument that state tax policies influence the level of "attractive" entrepreneurial activity in a region, the data show that they don't have much effect on variation in the amount of "attractive" entrepreneurial activity across metro areas. In fact, there is little evidence that entrepreneurs consider taxes when making decisions about starting and growing companies.

In addition, taxes have countervailing effects. While high taxes might be a disincentive to business activity, they might also encourage people to start businesses as a way to deduct personal expenses.[39]

Furthermore, variation in the amount of "attractive" entrepreneurial activity within states belies the argument that state taxes matter very much. For instance, the Austin, Texas metro area had the fifth highest rate of external equity investment among 155 U.S. metro areas with populations of more than 250,000 people during the 1997 to 2001 period, but the Brownsville-Harlingen-San Benito; McAllen-Edinburg-Mission; and Corpus Christi, Texas areas were all tied for the lowest rate of angel investing over the same period. Similarly, physically abutting the number six metro area in terms of angel investing – San Jose, California – is the Valejo-Napa-Farfield, California metro area, which is tied for last in the rate of angel investing. Differences in taxes cannot account for the wide variations in the amount of "attractive" entrepreneurial activity within states because Federal and state tax rates are the same across those places.

In fact, there is no evidence of a significant relationship between either state capital gains or wage tax rates for either the per capita number of firms receiving external equity investments or the per capita number of "high impact" firms. And state wage and capital gains tax rates are significantly **positively** correlated with the number of angel group-backed companies per capita and the number of venture capital firms per capita across MSAs. This, of course, makes sense, since California, a high tax state, accounted for 41 percent of all companies receiving venture capital funding in 2007.

Implication Number 6: There is little evidence to suggest that interventions to reduce taxes would enhance the level of "attractive" entrepreneurial activity in the region.

Interventions to Change the Culture of the Region

Some observers argue interventions to make a region's culture more supportive of entrepreneurship will increase its level of "attractive" entrepreneurial activity. A culture that supports entrepreneurship, observers explain, encourages "attractive" entrepreneurial activity because that culture leads people to think that becoming an entrepreneur is socially desirable vocation. This, in turn, increases the number of people in the area willing to start companies, and attracts to the area people who want to become entrepreneurs.[40] Having an entrepreneurial culture also makes it easier for people with available capital to invest some portion of their money in private companies because it makes this activity consistent with the norms and behaviors of other people. As a result, the entrepreneurs starting businesses have more capital available to them to start and grow companies.

However, the data do not suggest a relationship between the culture and the amount of "attractive" entrepreneurial activity in a region. Using a measure of entrepreneurial culture derived from the Entrepreneurship in the Untied States Assessment, a nationally representative survey conducted by the Kauffman Foundation in 2004, I found no correlation between the entrepreneurial culture scores of different MSAs and any of the four measures of "attractive" entrepreneurial activity. [41]

Implication Number 7: There is little evidence to suggest that interventions to make NEO's culture more entrepreneurial would increase the level of "attractive" entrepreneurial activity in the region.

Interventions to Increase the Amount of Business Incubation in the Region

Some observers explain that interventions to increase the amount of business incubation will increase the amount of "attractive" entrepreneurial activity in the region. They point to data from the National Business Incubator Association (NBIA), which reports that "for every $1 of estimated public operating subsidy provided the incubator, clients and graduates of NBIA member incubators generate approximately $30 in local tax revenue alone"[42] and that "in 2005 alone, North American incubators assisted more than 27,000 start-up companies that provided full-time employment for more than 100,000 workers and generated annual revenue of more than $17 billion."[43]

However, there is little evidence that business incubators enhance the amount of "attractive" entrepreneurial activity in a region. Despite the widespread adoption of business incubators as an entrepreneurial development policy, research has not shown their effects to be very large. For instance, one study that compared firms inside and outside incubators in the state of Pennsylvania showed that the firms inside the incubators experienced no greater sales or profit growth than those outside.[44] A study conducted in Italy showed that there are few differences between incubator and non-incubator firms in terms of a variety of firm performance measures. And a study in Israel showed no evidence of value-added or cost effectiveness for incubators. In fact, even the handful of studies that have shown that companies in incubators have greater performance than those outside incubators concede that the differences could be the result of selection of better companies by the incubators.[45] Moreover, other studies show no relationship between the presence of technology incubators and the amount of technology employment growth across MSAs.[46]

A closer look at the data from the NBIA indicates that the average incubator firm does not perform very well. According to the NBIA data, the average incubator company generated $630,000 in sales and had 3.7 employees in 2005. These numbers are lower than those for the average U.S. company, which had sales of $906,000 and employment of 20 in 2004.[47]

The incubator effort in NEO appears to be better than average for the country in terms of company sales but worse than average in terms of employment generated. In 2007, the 104 companies in incubators in NEO generated $104 million in sales, or an average of $1 million in sales each. These companies created 283 jobs or approximately 2.7 jobs per company.

Implication Number 8: There is little evidence to suggest that interventions to increase incubator activity would increase the level of "attractive" entrepreneurial activity in the region.

Interventions to Increase the Stock of Entrepreneurial Talent in the Region
Another set of interventions that are thought to increase the amount of "attractive" entrepreneurial activity in a region are those designed to increase the stock of seasoned entrepreneurs. Many observers have noted that most investors are reactive, not proactive. They will fund some portion of businesses that are presented to them, but they will not dream up the business ideas themselves and then find entrepreneurs to pursue them. Therefore, a region needs to have entrepreneurs who can identify "attractive" business opportunities to have businesses that pursue them. Moreover, entrepreneurs rarely identify business opportunities in one region and start companies in another. So if a region does not have the talent that can spot "attractive" entrepreneurial opportunities, it is unlikely to be able to import those businesses from elsewhere.

As Table 1 shows both the firm formation and self-employment rates are associated with the number of firms receiving external equity per capita and the number of high impact firms per capita. Therefore, our level of overall entrepreneurial activity might be holding back the amount of "attractive" entrepreneurial activity in the region. In fact, according to the Census Bureau, in 2005, 9.4 percent of the Akron MSA's labor force; 8.9 percent of the Cleveland MSA's labor force; and 8.8 percent of the Youngstown MSA's labor force were self-employed, all numbers below the average of 10.8 percent for medium-sized MSAs reported in the Fund's dashboard of economic indicators.

Table 1. The Correlations Between the Self-Employment and Firm Formation Rates in a Region and the Per Capita Number of Companies with External Equity Investments and the Per Capita Number of "High Impact" Businesses.

	Firms Receiving External Equity Per Capita	High Impact Firms Per Capita
Self-Employment Rate	0.20*	0.36*
Firm Formation Rate	0.30*	0.46*

However, interventions to increase the amount of overall entrepreneurial activity might not be an effective way to increase the amount of "attractive" entrepreneurial activity in the region. The data indicate **no correlation** between the number of angel group-backed companies per capita or the number of venture capital firms per capita and either the self-employment or firm formation rates, suggesting that efforts to increase the number of entrepreneurs in a region will not increase the number of angel group or venture capital backed companies. (In fact, the region of the United States with the highest number of venture capital backed companies – Silicon Valley – actually has relatively low rates of self-employment and new business formation.[48]) Because these latter two types of "attractive" start-ups have greater economic impact than "high impact" firms or firms receiving external equity, a focus on efforts that increase the latter, but not the former, is unlikely to be a good use of resources.

Moreover, the cost of interventions that increase the amount of "attractive" entrepreneurial activity by increasing the overall self-employment and firm formation rates might be too costly for the Fund to undertake. Each 18,000 people that transition to self-employment in the region would generate 44 high impact firms less than five years of age, and 20 businesses less than six years old that generate external equity. Given the average sales and job creation of "high impact" and external equity funded companies, increasing the number of self-employment by 18,000 people would generate 140 jobs at companies receiving external equity and 1,021 jobs (over four years) at young high impact firms, and would generate $8.7 million in sales at firms receiving external equity and $443 million in sales at young high impact firms. Because people transitioning to self-employment people earn approximately two-thirds of what they earned when wage-employed,[49] on average, this transition would cost $180,000,000 in lost wages at the median salary of $30,000.

Implication Number 9: Interventions to increase overall entrepreneurial activity in our region would increase the level of "attractive" entrepreneurial activity; however, these interventions would not increase the most attractive types of new ventures, and would be costly.

Interventions that are More Appropriate for Other Entities

The analysis identified several categories of interventions that are more appropriate for other entities than the Fund to undertake. These types of interventions either do not involve grant making, research or convening, or cost too much for the Fund to bear. In general, these interventions are more appropriate for the state government to undertake, given its greater budget and the ability to uses tax breaks and subsidies to encourage the reallocation of resources. These categories of interventions that are more appropriate for other entities include interventions to increase the share of businesses in the region in high technology industries; interventions to transition economic activity in the region out of large scale manufacturing; interventions to enhance the level of education of the area population; and interventions to increase the proportion of the population in management jobs.

Interventions to Increase the High Tech Industrial Base of the Region

One possible type of intervention involves transforming the region's industrial base to one centered on the high technology industries which high growth start-ups tend to form. Examples of this type of intervention include the Technology Leaders Initiative, which seeks "to develop critical mass and create economy sustaining technology industries"[50] or efforts to build the power and propulsion, nanotechnology, or polymer industries.

Much evidence indicates that "attractive" entrepreneurial activity is found disproportionately in places with a concentration of economic activity in high technology industries. For instance, one study showed that the percentage of an industry's employment that is technically trained is the primary predictor of the proportion of start-ups in the industry that make the Inc. 500 list of the fastest growing private companies.[51] Moreover, as research by Zoltan Acs and his colleagues shows, the percentage of "high impact" firms varies significantly across industries and is much higher in high technology industries, like scientific instruments, than in low technology industries, like general merchandise retail.[52]

The correlation between percentage of establishments in high technology industries, which here are defined as: R&D in the Physical, Engineering, and Life Sciences; Software Publishers; Computer and Peripheral Equipment Manufacturing; Navigational, Measuring, Medical and Control Instruments Manufacturing; Other Communications Equipment; Other Information Services; Telephone Apparatus Manufacturing; Pharmaceutical and Medicine Manufacturing; Computer Systems Design and Related Services; Semiconductor and Other Electronic Component Manufacturing; and Radio and Television Broadcasting and Wireless Communications Equipment, and the per capita number of businesses that receive an external equity investment is 0.38 for MSAs of 250,000 or more people. Similarly, the correlation between the per capita number of angel group backed companies and the percentage of companies in these industries is 0.29. And the correlation between the number of venture capital firms per capita and the percentage of establishments in these industries is 0.34. All of this evidence points to the importance of an industrial base focused on high technology to have a high level of “attractive” entrepreneurial activity in a region, and suggests the value of interventions to increase the focus of a region on high technology businesses.

However, efforts to increase the amount of “attractive” entrepreneurial companies in the region through interventions designed to change the industrial composition of the region might not be appropriate for the Fund. First, the historical record on these efforts indicates that they take many years – over 20 years in the case of places like Silicon Valley, Research Triangle, and San Diego. Second, they take very large sums of money.

To provide a sense of the magnitude of efforts necessary to increase the amount of “attractive” entrepreneurial activity in a region through industrial transformation, I looked at the effect of changes in the proportion of business establishments in different MSAs on the amount of “attractive” entrepreneurial activity. Each one percent increase in the proportion of companies found in high tech industries in an MSA – a change equivalent to the addition of 807 high tech establishments in NEO – would increase by only 15 the number of companies less than six years receiving an external equity investment per year. Similarly, this one percent increase in the proportion of companies found in the high tech industries listed above would increase the number of firms receiving an angel group investment per year by only one company. And each one percent increase in the proportion of companies found in the high tech industries listed above increases the number of businesses receiving venture capital financing by 29 companies.

Although the magnitude of the effect of adding an additional 29 venture capital backed companies would increase employment by 11,400 and sales by $2 billion (adding additional 15 companies receiving external equity would increase employment by 75 people and sales by $6.5 million, increasing by one the number of angel group backed companies would have a negligible effect, and changing the industrial composition of the region would not influence the number of “high impact” firms in the region), adding 29 venture capital backed firms through efforts to change the industrial composition of the region would be very expensive. Estimates suggest that the cost of replacing an existing establishment with a new high tech establishment is over $1 million (when the adjustment costs and investment costs are combined), making the cost of an effort to change increase the share of establishments in the region in high technology by one percent over $800 million, an amount clearly beyond the budget constraints of the Fund.

Implication Number 10: Interventions to increase the share of businesses in the region in high technology industries would increase the level of "attractive" entrepreneurial activity in NEO, but the cost of these interventions would likely be beyond the scope of the interventions that the Fund can undertake.

Another issue with efforts to increase the amount of "attractive" entrepreneurial activity through interventions to transition the regional economy toward more high technology industries concerns the narrow set of industries on which the region would need to concentrate its efforts to effect this transformation. Many of the current interventions employed in the region focus on the development of important high technology industries, such as polymers, nanotechnology, and industrial manufacturing. While these high technology industries are an important source of wealth and jobs in the region, they are not the type of industries in which many "attractive" high technology companies are founded. From 1982 to 2002, a full quarter of all Inc. 500 companies have been computer-related.[53] More importantly, over the past two decades, approximately 81 percent of all venture capital dollars are invested in just five industries: computer hardware, computer software (including the Internet), semiconductors and other electronics, communication, and biotechnology, and 73 percent of recipient companies operate in these industries.[54]

Part of the reason for this concentration of venture capital has been the odds of companies going public, which varies dramatically across industries. Because venture capitalists favor IPOs as an exit outcome, they are biased in favor of industries in which more companies go public. As Table 2 shows, over the past decade, only six industries have had more than two percent of their start-ups go public. Therefore, interventions to increase the amount of "attractive" entrepreneurial activity in a region through efforts to transform the local industrial base towards high technology, would require a focus on drugs, medical devices, computers, scientific instruments, communications equipment, and electronics. With the exception of medical devices, the region currently lacks a strong base in these industries. Moreover, the high tech industries in which it has expertise, like manufacturing and polymers, are not ones in which efforts to increase the number of establishments is likely to lead to growth in the number of "attractive" start-ups.

Table 2. Industries in Which More Than 2 Percent of Start-ups Founded Each Year Go Public

SIC Code	Industry	IPOs as a Share of Starts
283	Drugs	20.3%
366	Communications Equipment	8.7%
357	Computer And Office Equipment	6.0%
384	Medical Instruments And Supplies	4.7%
367	Electronic Components And Accessories	3.4%
382	Measuring And Controlling Devices	3.3%

Source: Calculated from data provided by Jonathan Eckhardt and Thomson Financial, Securities Data Company. (Includes only industries with an average of at least one IPO per year, and 75 start-ups per year. IPOs exclude unit offerings, American depository receipts, financial firms, closed-end mutual funds, real estate investment trusts, spin-offs, reverse leverage buyouts, foreign firms listing in U.S., subsidiary IPOs, agency offerings, utilities and public offerings of firms with primary shares outside of the United States.)

Implication Number 11: Interventions to increase the share of businesses in the region in those high technology industries in which the region has a strength would be unlikely to increase the level of "attractive" entrepreneurial activity in NEO, and the high tech industries in which interventions would increase the level of "attractive" entrepreneurial activity are ones in which NEO has little strength.

Interventions to Reduce the Focus of the Region on Large Scale Manufacturing

Another possible intervention would be to transform the local economy away from one based on large scale manufacturing. For instance, government agencies could provide incentives in the form of grants and subsidies to attract non-manufacturing high-tech companies, particularly those companies in industries that generate a large number of spinoffs (e.g., software).

Such interventions could be expected to increase the amount of "attractive" entrepreneurial activity in the region. Several observers have pointed out that MSAs that are highly dependent on large manufacturing companies tend to have less "attractive" entrepreneurial activity because large manufacturing companies tend to compete on the basis of economies of scale, a type of competitive advantage that is of little value to start-up companies. Moreover, many high growth business opportunities today are not found in large scale manufacturing.

The evidence on differences across MSAs in the proportion of local establishments engaged in large scale manufacturing supports this proposition. Although there is no relationship between the number of angel group backed companies and the proportion of an area's businesses in large scale manufacturing, the percentage of firms in the manufacturing sector with more than 500 employees correlates -0.20 with the per capita number of young companies receiving external equity, -0.27 with the per capita number of "high impact" firms, and -0.17 with the number of venture capital firms per capita.

Again, this pattern would initially suggest a focus on interventions that transition the region out of manufacturing, particularly large scale manufacturing.

However, efforts to increase the amount of "attractive" entrepreneurial activity in a region through interventions to transition the local economy out of large scale manufacturing suffer from three important limitations. First, they require interventions at odds with interventions designed to support important local industries. For instance, funding for MAGNET, an organization designed "to support, educate and champion manufacturing"[55] would be at odds with efforts to encourage the growth of "attractive" entrepreneurial activity in the region, which, instead, would demand efforts **not to** finance manufacturing businesses. Because interventions, like MAGNET, to support local manufacturing are important to encouraging the continued performance of **existing** manufacturing businesses, any choice about interventions would have countervailing effects that would undermine their effectiveness.

Second, these interventions would have a very high adjustment cost. Large manufacturing companies currently employ a large number of people in the region and the "attractive" entrepreneurial companies that we seek to develop would be unlikely to add enough jobs to compensate for the job loss that would come from shedding large manufacturing firms. The history of places like Los Angeles and San Diego that transformed from large scale manufacturing experienced heavy adjustment costs.

Third, the cost of shifting the region's industrial base out of large scale manufacturing is likely too high for this to be an effective type of intervention for the Fund to undertake. Each one percent decrease – a reduction of 807 businesses – increases number of companies less than six years old receiving an external equity investment over a five year period by 20, the number of venture capital backed companies by 14, and the number of high impact firms under five by 33. The cost of replacing 807 manufacturing businesses – which tend to be capital-intensive entities – is likely to be well beyond the budget of the Fund.

Implication Number 12: Interventions to transition economic activity in the region out of large scale manufacturing would increase the level of "attractive" entrepreneurial activity, but the cost of these interventions would likely be beyond the scope of the interventions that the Fund can undertake.

Interventions to Improve the Education Level of the Population of the Region

Some observers suggest that we should invest in education to increase the amount of "attractive" entrepreneurial activity in our region. They explain that education is related to "attractive" entrepreneurial activity. For instance, the odds of being self-employed and earning more than $110,000 per year increase with a person's education level[56] And having more educated people in an area increases the pool of talented people who can work for new companies.[57]

The data suggest that we could increase the amount of "attractive" entrepreneurial activity in the region by increasing the average level of education. Across MSAs, the per capita number of "high impact" firms is correlated -0.26 with the percentage of the population with only a high school diploma, and 0.35 with the percentage of the population with a college degree. The per capita number of young companies that have received an external equity investment is correlated -0.21 with the percentage of the population with only a high school diploma and 0.23 with the percentage of the population that had a college degree. And the correlation of the per capita number venture capital firms in the region and the percentage of the population that graduated college is 0.39. In short, there is a relationship between the level of education in a region and the level of "attractive" entrepreneurial activity.

The average level of education in our population might be holding back the level of "attractive" entrepreneurial activity in our region. According to the Census Bureau, in 2007, 18.4 percent of the population of the Akron MSA; 11.7 percent of the population of the Youngstown MSA; and 16.6 percent of the Cleveland MSA had a Bachelor's degree. Both the Youngstown and Cleveland MSAs are below the average of 17.4 percent for medium sized MSAs.

However, it is not clear that the Fund should try to increase the level of "attractive" entrepreneurial activity through educational interventions. Increasing the percentage of the region's population with a college degree by one percent requires graduating 30,000 people. A four year degree at a public institution in Northeast Ohio costs about $66,000, including room and board. Therefore, the cost of increasing the percentage of the population with a college degree by one percent is $2 billion.

The data indicate that this $2 billion investment would generate an increase of 23 companies per year with external equity, 43 "high impact" firms less than five years old, and 33 venture capital backed companies. The benefits that would come from increases in creation of companies under six with external equity – 161 jobs and $10 million in sales – and young high impact firms – 989 jobs and $43.3 million in sales – are quite modest, the benefits from increases in the number of venture capital-backed companies – 12,992 jobs and $2.3 billion in sales – are more substantial. Nevertheless, a comparison of the costs and benefits of educational interventions education on "attractive" entrepreneurial activity do not suggest a particularly high return. A $2 billion investment to create 13,000 jobs and $2.3 billion in sales – the profits would be far less, given the margins in the typical industries in which venture capitalists invest – does not seem to provide a very high benefit to cost ratio. (The investments in education might have other benefits than enhancing attractive entrepreneurial activity, making them worthwhile. However, increasing education as a way to enhance attractive entrepreneurial activity per se does not make economic sense.) Moreover, a $2 billion investment in education seems to be beyond the scope of interventions that the Fund could undertake.

Implication Number 13: Interventions to increase the proportion of the population in our region with a college education would increase the level of "attractive" entrepreneurial activity; however, these interventions are not particularly cost effective and beyond the scope of interventions that the Fund could undertake.

Interventions to Increase the Stock of Management Talent in the Region

Some observers explain that interventions to increase the stock of management talent in the region should increase our level of "attractive" entrepreneurial activity. Many investors, customers, and employees are looking to put their money and time into companies worthy of their investment. Companies are more worthy of the investment of time and money if they can attract the management talent necessary to grow. Therefore, places which have a deeper pool of management talent are thought to be more likely to have more investment-appropriate companies, and, consequently, a higher rate of "attractive" entrepreneurial activity.

The data support the value of this type of intervention. The percentage of the labor force in management jobs is positively related to the per capita number of firms receiving external equity investments (0.29); the per capita number of venture capital firms (0.56), the per capita number of high impact firms (0.32) and the per capita number of angel group backed companies (0.12). In fact, increasing the proportion of the labor force engaged in management jobs is the only factor that is positively and significantly correlated with all four measures of "attractive" entrepreneurial activity.

Although the effect of a one percentage point increase in the proportion of the labor force in management – 18,000 managers – would have a trivial effect on the number of angel group-backed companies (an increase of 0.4 companies), and the effect on the number of companies under six receiving external equity would be small (an increase of 28 companies, which would generate 196 jobs and $12.2 million in sales), the effect on the number of VC-backed companies (an increase of 47), and the number of high impact firms less than five years of age (an increase of 39) would be more substantial.

However, the positive relationship between interventions to increase the stock of management talent and the level of "attractive" entrepreneurial talent notwithstanding, it is not clear that the Fund should undertake this type of intervention. The scope of the effort necessary increase the proportion of the labor force in management jobs by 18,000 people is likely to be beyond the scope of interventions that the Fund can undertake. Moreover, the strong correlation between the percentage of people in an MSA with management jobs and the percentage of people in an MSA with a college degree (0.72) suggests that the primary mechanism to increase the stock of management talent is to increase the number of people with a college degree, which is subject to the limitations mentioned earlier in this white paper.

Implication Number 14: Interventions to increase the stock of management talent in the region would increase the level of "attractive" entrepreneurial activity, but are beyond the scope of interventions that the Fund could undertake.

<u>Interventions that are Appropriate for the Fund But are Relatively Low Return</u>

Several types of interventions would increase the amount of "attractive" entrepreneurial activity in the region, but are not recommended because they are not as cost effective as other types of interventions. These include interventions to enhance overall immigration into the region; interventions to increase the level of technological invention in the region; and interventions to augment local academic research.

Interventions to Attract Immigrants to the Region

Some observers have argued that interventions that increase the proportion of the population that is foreign born will increase the amount of attractive entrepreneurial activity in an area. Immigrants are believed to be carriers of an entrepreneurial spirit that leads them to start new businesses, spurring our country's economic growth. The popular wisdom is that immigrants have the work ethic, gumption, willingness to take risks, and a host of other things that enable them to start businesses at a rate higher than the native born population. Moreover, immigrants have social networks that allow them to source raw materials and produce products in other countries where labor costs are lower.[58] As a result – the story goes – we can boost the amount of "attractive" start-up activity in an area by bringing in more immigrants from other countries.

The data, however, do not suggest a strong relationship between the four measures of attractive entrepreneurial activity in an MSA and the percentage of the population in the MSA that was foreign born. No statistical relationship exists between the number of angel group-backed companies or the number of "high impact" firms per capita and the proportion of the population that immigrated to the United States. The correlation between the per capita number of companies that receive external equity per capita and the percentage of the population that immigrated to the United States is only weakly correlated (0.13). However, the per capita number of venture capital backed companies and the immigrant proportion of the population is correlated at 0.30.

The effect of immigrants on the number of companies that have received external equity is negligible. A one percentage point increase in the immigrant population – 30,000 immigrants in NEO – would increase the number of companies less than six years old with external equity by 12. Because these companies have sales of $435,000 and employment of seven, the addition of 30,000 immigrants would add 84 jobs and $5.2 million in sales through this mechanism.

A more substantive effect would occur through the effect of greater immigration on the number of venture capital-backed companies formed in the region every year (and increase of 25 for every 30,000 immigrants). The addition of 30,000 immigrants would add 8,540 jobs and $1.8 billion in sales at venture capital backed companies.

However, the Fund might not want to encourage the development of "attractive" entrepreneurial activity through efforts to increase the amount of immigration to the region for several reasons. First, at a ratio of 5,160 immigrants for each venture capital firm that operates in a region, it is not clear that encouraging immigration to the region is the most effective way to enhance venture capital-backed company formation. Even at a cost of just $5,000 to attract and settle each immigrant, this approach is likely to cost far more than a direct subsidy to convince a venture capital firm to set up operation in the region. Second, even an effort to add only 5,160 immigrants, at a cost of $5,000 per immigrant, is likely to be an intervention beyond the budget of the Fund.

Implication Number 15: Interventions to enhance immigration to the region would increase the number of venture capital backed start-ups and companies with external equity financing in the region; however, these interventions are more costly than other ways to increase "attractive" entrepreneurial activity.

Interventions to Enhance Technology Creation in the Region
Some observers argue that interventions to increase the amount of technology created will enhance the amount of "attractive" entrepreneurial activity that occurs in a region. Technological change creates opportunities for new companies. It allows people to do things that could not be done before or only could be done in a less efficient manner.[59] Moreover, it can be disruptive and undermine the competencies and capabilities of existing companies, thereby creating advantages for new firms.

The data support the idea that increasing the amount of new patented technology in a region will increase the amount of "attractive" entrepreneurial activity. Although the number of patents per capita is not significantly related to the number of high impact companies per capita, it is significantly related to the number of companies that receive external equity investment per capita (0.19), the number of angel group-backed companies per capita (0.15), and the number of venture capital firms per capita (0.53).

However, interventions to increase the amount of technology invented in the region are not an effective use of the Fund's resources. In addition to the fact that the amount of technology in the region is not associated with the number of "high impact" companies, the size of the effect on angel group-backed companies and companies with external equity is negligible. It will take an extra 1,000 patents to increase the number of angel group backed companies by one. And each additional 100 patents per year will increase the number of companies with an external equity investment by 4, generating 28 jobs and $1.7 million in sales.

An additional 100 patents will increase the number of venture capital backed companies by 9. While more substantial an effect than that on external equity or venture group-backed companies, the effect on venture capital backed firms is still low relative to the costs. The R&D cost of creating each U.S. patent in 2004 was $1.7 million. Therefore, the cost of generating the technology necessary to increase the number of patents in the region by 100, and thereby increase the number of venture capital backed companies by nine, would be $170 million. Stated differently, the amount of R&D necessary to add the number of patents necessary to generate one venture capital backed company would be $19 million. Clearly, there are less expensive ways to add an additional venture capital backed company.

Implication Number 16: Interventions to increase the amount of new technology invention in the region would increase the level of "attractive" entrepreneurial activity; however, these interventions are more costly than other ways to increase "attractive" entrepreneurial activity.

Interventions to Enhance the University Research Base of the Region

Some observers argue that interventions to enhance the amount of research conducted at area universities, such as through grants and programs to attract eminent researchers to the region, would increase the amount of “attractive” entrepreneurial activity in the region. The argument behind programs to encourage “attractive” entrepreneurial activity through support for academic research is threefold. First, academic research exposes a region to leading technological ideas, which helps to foster the development of new, high tech companies. Second, it supports the development efforts of small and start-up firms which tend to conduct a good portion of their R&D in conjunction with universities.[60] Third, it helps university researchers found companies that commercialize their research. Because a strong relationship exists between the size of university research budgets and the number of spin-off companies that they create,[61] increasing the amount of university research funding is said to be a way to increase “attractive” entrepreneurial activity in a region.

Research shows that that university spinoff companies tend to be very high performing start-ups. According to the Association of University Technology Managers, from 1980 to 1999, American university spinoffs generated $33.5 billion in economic value added and 280,000 jobs.[62] That is, the average American university spinoff generated approximately $10 million in economic value and 83 jobs.[63]

Moreover, this economic activity tends to stay close to home. University spinoffs tend to locate very close to the universities that spawn them, while other licensees of university technologies are less geographically proximate. For instance, a study conducted by Lori Pressman reports that, in the United States, 80 percent of all spinoffs operate in the same state as the institution that they came from.[64]

However, interventions to enhance the amount of university research may not be a cost effective way to increase the amount of attractive entrepreneurial activity in a region. First, several studies show that there is no relationship, across MSAs, between the amount of university R&D and the number of technology jobs created over time.[65]

Second, the number of university spinoffs created annually is quite small, and is concentrated in a small number of industries, with data from the Association of University Technology Managers showing an average of only 2.7 new businesses per institution in 2005.[66] In fact, with 12 of the 418 U.S. university spinoff companies founded in this country region in 2006, this region, we are already at more than twice our proportional level.[67]

Third, and most importantly, university spinoffs are very expensive to produce. Across the universities and research hospitals in NEO, in 2006, it cost $46.3 million in research funding to create a single university spinoff.[68] And this rate of spin-off company creation per dollar of research was not below the national average.

Implication Number 17: Interventions to increase the amount of university and hospital research in the region would increase the level of “attractive” entrepreneurial

activity; however, these interventions are more costly than other ways to increase "attractive" entrepreneurial activity.

Interventions that are Appropriate for the Fund and are Relatively High Return

Four types of interventions are recommended because they are appropriate for the Fund and would show relatively high returns: interventions to attract experienced, successful venture capital-appropriate entrepreneurs to the region; interventions to increase the amount of angel group and venture capital activity; and interventions to augment the amount of pre-seed grant funding available to prove potentially commercializable technologies.

Interventions to Attract Venture Capital-Appropriate Entrepreneurial Talent

Some observers argue that interventions to attract venture capital-appropriate entrepreneurial talent to the area would increase the level of "attractive" entrepreneurial activity in the region. Because it takes a long time to grow this type of talent organically, interventions to attract venture capital-appropriate entrepreneurial talent from places like Boston and Silicon Valley, where such talent is more plentiful, would be a more effective way to increase our stock of talent than by growing it.[69] This type of intervention might include such efforts as:

- Opening an office in Silicon Valley to recruit C-level talent with an Ohio connection (e.g., person used to live here or went to school here, has family here, or has a spouse seeking employment here) to the region.
- Paying the cost of retained searches to bring C-level executives to start-up companies in the region.
- Creating an eminent entrepreneurs program to bring experienced and successful venture capital-backed entrepreneurs to the region.

It is important to note that interventions to attract experienced, successful, venture-capital appropriate entrepreneurs to the region from other countries would be considered part of this category of intervention, rather than as part of interventions to enhance immigration to the region. This category of intervention is focused on efforts to attract more entrepreneurs with experience building and successfully exiting from venture capital-backed start-up companies, whether those entrepreneurs built their earlier companies in Silicon Valley, Israel, or Bangalore, India, and whether those entrepreneurs themselves were born in the United States or in India, Taiwan, or other countries.

Increasing the stock of experienced, successful, venture capital-appropriate entrepreneurs in the region is a small numbers game. The North American Venture Capital Association (NVCA) notes that, in 2007, only 1,279 companies received a first round of venture capital financing (only 3,200 companies received a venture capital investment at all). According to data from the NVCA and the National Science Foundation (NSF), over the past two decades only about 2 percent of venture capital-backed companies have gone public and only about 13.5 percent of them were acquired.[70] Stated differently, the United States produces approximately 200 venture capital-backed businesses that experience a positive exit every year. If each venture has a founding/management team of four people, this means that only 800 people – out of a country of 300 million –

become successful, experienced entrepreneurs of venture capital-backed companies every year. Given its share of the U.S. population, NEO should add eight such entrepreneurs per year if this talent were distributed proportionately to the population.

The cost of doubling this rate of increase in the number of successful, experienced venture capital-backable entrepreneurs would be relatively modest. Opening and staffing a recruiting office in Silicon Valley would cost $250,000 per year, while the cost of eight successful retained searches would be approximately $1 million per year. And at $1 million per entrepreneur, an eminent entrepreneur program would cost $8 million per year.[71]

If successful, experienced venture capital-appropriate entrepreneurs have twice the odds of new venture success as the average venture capital-backed entrepreneur, then the cost per job created or dollar of sales generated from this program would not be very high. The average number of jobs in 2002 of a venture capital backed companies started over the 1970 to 2001 period was 393 and the average amount of revenues was $71 million[72] Therefore, the cost of a Silicon Valley recruiting office would be $23 per job created; the cost of a retained search effort would be $108 per job created; and the cost of a $1 million per person eminent entrepreneur package would cost $853 per job created. (These costs would be lower if the effort to attract venture capital-appropriate entrepreneurs had spillover effects on other types of "attractive" entrepreneurial activity.

Implication Number 18: Interventions to increase the number of experienced, successful venture capital-appropriate entrepreneurs in the region would increase the level of "attractive" entrepreneurial activity in the region in a cost effective manner.

Interventions to Increase the Number of Angel Groups in the Region

Some observers argue that interventions to increase the number of "angel groups" and other efforts to encourage the start-up investment activity of high net worth individuals will increase the level of "attractive" entrepreneurial activity in a region. "Attractive" start-ups are often financed by accredited investors who make equity investments in these companies. Research shows that people are more **likely** to make these investments if they have more money because the amount of money that people are willing to invest in risky asset classes increases with their net worth.[73]

Moreover, these investments tend to be local. Most studies have found that individual investors in start-ups make between 70 and 85 percent of their investments within fifty miles of their homes.[74] For instance, data from the Entrepreneurship in the United States Assessment shows that 72.7 percent of the investments made by angels are in businesses located within fifty miles of the investors. Therefore, the more people in an area who have the money to invest in other people's companies, the more start-up investing will take place.

Angel groups make it possible to increase the number of accredited investors that finance start-ups by reducing the amount of money a person needs to invest in high-potential companies. Because of the cost of managing investors, it is difficult for businesses that need a lot of capital to grow to obtain their capital from a large number of small investors.[75] So increasing the average size of angel investments would be beneficial.

But few angels can make large investments alone. Given the risk and illiquidity of investments in start-ups, the typical business angel puts no more than 5 percent of his net worth into this asset class.[76] To be diversified an angel needs have at least ten investments in private companies.[77] Moreover, to provide follow-on money, an angel needs to reserve for future investment an amount equal to twice what he initially invests.[78] If angels need to make ten $10,000 investments (the size of the typical angel investment in the United States) and reserve an additional $20,000 per investment for additional financing, then they need to have $300,000 available for angel investing. If people limit their angel investments to 5 percent of their net worth, this means that angels need to have $6 million in net worth to make investments in high-potential companies effectively.[79] It turns out that there are fewer than 366,000 households in the United States worth at least this much money. (There are 366,000 households worth $5 million or more.)

However, if angels are members of groups, they can make these same investments even if they have significantly lower net worth because the group can pool funds and provide the follow-on money and diversification at smaller amounts per angel. Under current SEC rules, angel group members need to be accredited investors. This means that the opportunity to join an angel group affects the probability that accredited investors with a household net worth between $1 million and $5 million will make the kind of high-potential angel investments that the best accredited angel investors tend to make.

IRS data on household net worth shows that the number of households that have a net worth of at least $1 million is much larger than those that have a net worth of at least $5 million. In fact, the creation of angel groups has the potential to increase by a factor of 8.6 the number of accredited angel-investing households that make these kinds of investments, if these households are not currently making angel investments.

Furthermore, the number of angel group-backed companies in an MSA and the number of venture capital firms in an MSA are correlated 0.17, which suggests that the two entities might be complementary. (Increases in the amount of angel group activity in a region increase the amount of venture capital activity in that region and vice versa. However, the amount of angel group activity in a region is unrelated to the number of companies that receive external equity or are "high impact" firms.)

Finally, the cost of creating companies through the formation of angel groups is not that high. The total amount of foundation and government support of North Coast Angel Fund, one of the two angel groups in the region, is $180,000 per year. Moreover, the state supports the North Coast angel fund through two Third Frontier grants that provide a dollar-for-dollar match on private investments. Last year, the North Coast Angel Fund invested an average of $450,000 per company, yielding approximately $225,000 of state money per business, bringing the total amount of state and foundation support to $255,000 per company. Because we do not know the sales or employment of the average angel group backed company, we cannot ascertain what returns on this investment will be. But if the average angel-group backed company performs at only half the level of the average venture-capital backed company, then this $255,000 will generate a company with sales of $35 million and employment of 197.

Implication Number 19: Interventions to facilitate the formation of angel groups would increase the level of "attractive" entrepreneurial activity in the region in a cost effective manner.

Interventions to Attract Venture Capital Firms to the Region

Several observers have argued interventions to increase the amount of venture capital in a region – such as the State of Ohio's effort to encourage the formation of venture capital firms through a fund of funds backed by state tax credits and through Third Frontier Project grants for early stage venture capital firms – will increase the amount of "attractive" entrepreneurial activity. First, many "attractive" entrepreneurial companies cannot be bootstrapped and must be built through large investments by institutional investors. And most venture capitalists invest locally to monitor their investments against malfeasance by entrepreneurs and to provide assistance to them. Therefore, the greater the number of venture capital firms in an area, the easier it is to get the capital necessary to create high growth companies.

Second, among the four types of "attractive" entrepreneurial activities examined in this study, venture capital backed start-ups have the greatest economic benefit. As was mentioned earlier, from 1970 to 2001, venture capitalists funded 25,420 new companies, which, in 2003, accounted for 9.4 percent of the private sector labor force and 9.6 percent of business sales in this country.[80]

Third, the on per job created basis, the cost of interventions to increase the number of venture capital firms in a region is relatively low. According to the National Venture Capital Association, in 2007, the average venture capital firm funded 4.32 companies. Moreover, over the 1970-2001 period, the average venture capital-backed company generated 393 jobs and $71 million in sales.[81] Therefore, an increase of one venture capital firm in the region should add 1,700 jobs and $309 million in sales.

The state's main grant program for encouraging the creation of venture capital firms is the Pre-Seed Fund Initiative (PFSI). The average recipient of a PSFI grant from the Third Frontier project received $1.14 million.[82] If the receipt of a PFSI grant is the necessary condition for the formation of a venture capital firm in the state, then we can estimate that it takes approximately $1.14 million to generate 1,700 jobs and $309 million in sales.

Fourth, studies show a strong positive relationship between the number of venture capital firms in an MSA and technology employment growth.[83] (However, at the state level some research has shown that the direction of causality runs from firm formation to capital availability and not the other way around.[84])

Implication Number 20: Interventions to facilitate the formation of venture capital firms would increase the level of "attractive" entrepreneurial activity in the region in a cost effective manner.

Interventions to Augment Pre-Seed Stage Grant Funding in the Region
Some observers have argued that interventions that increase the amount of pre-seed stage grant funding to companies not yet ready for the private sector – such as efforts to increase the region's share of Federal SBIR and STTR funding that the region gets or to create additional pre-seed funding efforts, such as Tech Genesis funds, which provide Columbus-area firms with money to test pre-commercial ideas – will increase the level of "attractive" entrepreneurial activity in a region. These programs make it possible for entrepreneurs to undertake R&D that would otherwise be undertaken and fill a financing gap before the private sector is interested in funding their companies; provide a demonstration effect to potential entrepreneurs; and signal the quality of start-ups to the private sector.[85]

Research shows the benefit of these programs. A statistical relationship exists between the amount of technology grant and loan activity in an MSA and the growth in technology employment in that MSA.[86] Moreover, firms that receive SBIR grants have higher growth and survival than a matched sample of companies that did not receive these grants.[87]

Some evidence suggests that the low level of pre-seed stage grant funding holds back the amount of "attractive" entrepreneurial activity in the region. According to the Fund's economic indicator dashboard, the average amount of SBIR and STTR program funding per employee across medium sized MSAs in 2005 was $15.7. All three MSAs that make up this region were below average on this measure: Youngstown-Warren MSA had zero dollars of SBIR and STTR funding per capita, while the Akron-Canton MSA had $6.5 and the Cleveland-Lorain-Elyria MSA had $10.9.

Implication Number 21: Interventions to increase the amount of pre-seed grant activity in NEO would increase the amount of attractive entrepreneurial activity in the region in a cost effective manner.

Next Steps

The creation of this white paper suggests several next steps for the Fund. First, the fund should collect more primary data about the factors that affect the level of "attractive" entrepreneurial activity in the region to make accurate decisions about where to focus its resources.[88] The quality of publically available information is uneven, forcing the evaluation of some possible interventions to be ignored for lack of data.

Moreover, no overall model is available to indicate which combination of interventions is best for encouraging "attractive" entrepreneurial activity. In particular, if different interventions are complementary to each other (one intervention increases the effectiveness of another) or if interventions to encourage "attractive" entrepreneurial activity impact other desired goals of the Fund, the Fund should factor that information into its grant making.

For a small investment in research, the Fund could gather and analyze the data that would allow it to identify the best combinations of interventions, and how the interventions it undertakes to encourage "attractive" entrepreneurial activity might influence other goals. Such an effort would make the Fund's other grant making activities more effective, reducing its need to make decisions on which interventions to encourage in the absence of solid information on which to make those choices.

Implication Number 22: The fund should collect more primary data about the factors that affect the level of "attractive" entrepreneurial activity in the region to make more accurate decisions about where to focus its resources.

Second, the Fund should collect data on measures of "attractive" entrepreneurial activity to develop a dashboard to monitor how well the region is doing at enhancing the level of "attractive" entrepreneurial activity. The standard measures of self-employment and new firm formation that have been used in the past by this and other regions are insufficient because the typical new business does not generate much wealth or create many jobs. More importantly, at the MSA level, measures of "attractive" entrepreneurial activity correlate **negatively** with measures of new firm formation and self-employment.[89] This negative correlation means that the Fund should **not** use measures of self-employment and new firm formation as indicators of the amount of "attractive" entrepreneurial activity in an MSA or as outcome measures by which its interventions are judged.

Creating a dashboard of indicators of "attractive" entrepreneurial activity would neither be difficult nor costly. For instance, the Fund could collect, on an annual basis, data on such things as the number of new gazelle companies, young externally-financed companies, Inc 500 companies, IPOs and acquisitions of young companies, and angel-group and venture capital activity in this and other regions.

These data could be collected and analyzed at minimal cost. Data on new gazelle companies and young externally funded companies are available from the Census Bureau through special tabulations for a few thousand dollars. Data on venture capital activity is already being collected for the Fund by BioEnterprise and JumpStart and could be used at no additional cost. Data on angel group activity is available from the Angel Capital Association at a nominal cost. Data on Inc 500 firms can be constructed easily and cheaply from Inc. Magazine's publication by a student intern, and data on acquisitions and IPOs of young companies in the region could be gathered from Pratt's Stats through a simple download upon payment of a nominal subscription fee to the database provider. In short, for a small investment of resources, the Fund could create an annual dashboard of "attractive" entrepreneurial activity in the region that measures three dimensions of financing: venture capital activity, angel group activity, and external equity investment activity, and three measures of high growth companies: Inc 500 firms; gazelle companies; and young company acquisitions and IPOs. The Fund could also track this activity in other regions seen as benchmarks against which we would like to compare our progress.

Implication Number 23: The Fund should collect data on measures of "attractive" entrepreneurial activity to develop a dashboard to monitor how well the region is doing at enhancing the level of "attractive" entrepreneurial activity.

The purpose of this white paper was to identify the broad categories of interventions on which the Fund should focus its attentions. This effort successfully identified four primary areas of focus: attracting experienced, successful venture capital-appropriate entrepreneurs to the region; augmenting the amount of pre-seed grant funding available to prove potentially commercializable technologies; and increasing the amount of angel groups and venture capital activity in the region. The specific interventions necessary to encourage the latter three activities are well known and are, in fact, part of the Third Frontier project.

However, the specific interventions necessary to attract experienced, successful venture-capital appropriate entrepreneurs to the region have not been clearly identified. The review of the literature and the interviews with key stakeholders undertaken as part of this white paper revealed a paucity of specific ideas. Coming up with these ideas is a clear next step in the process to enhance the level of "attractive" entrepreneurial activity in Northeast Ohio. Therefore, the Fund should create a task force to identify specific interventions to attract the type of high-growth venture capital-appropriate entrepreneurial talent that the region needs. This task force should benchmark efforts undertaken elsewhere to attract this type of talent and put together a list of specific interventions that the Fund might undertake to attract this type of high level entrepreneurial talent to the region.

Implication Number 24: The Fund should create a task force to identify specific interventions to attract the type of high-growth venture capital-appropriate entrepreneurial talent that the region needs.

The Fund should also create a task force to identify interventions that would encourage the growth of existing businesses. While efforts to grow existing businesses were beyond the scope of this white paper, the data show that most high growth businesses are **not** new businesses. As Zoltan Acs and his colleagues point out in a recent report for the U.S. Small Business Administration, "The average high impact firm (a firm that grows 20 percent per year or more for four consecutive years) is NOT a new start-up. In fact the average age of a high impact firm is around 25. These firms have existed for a long time before they make a significant impact on the economy."[90] To have many more high growth companies in NEO will require interventions that go beyond those that are used to encourage "attractive" entrepreneurial activity. The creation of a task force charged with identifying interventions to increase the number of high growth **established** businesses would be a valuable step towards increasing the number of high growth companies in the region.

Implication Number 25: The Fund should create a task force charged with identifying interventions to encourage the growth of established businesses.

Finally, the Fund should coordinate its efforts to encourage "attractive" entrepreneurial activity in the region with those of the Lt. Governor's office. Better results would be achieved through greater coordination with the state on this activity. This is particularly true, given the identification of several types of interventions that are more appropriate for the state to undertake.

Implication Number 26: The Fund should coordinate its efforts to encourage "attractive" entrepreneurial activity in the region with those of the Lt. Governor's office.

Conclusions

This white paper explored ways in which the Fund could use entrepreneurship to improve the lives of the residents of Northeast Ohio. It showed that philanthropists who seek to encourage economic development through entrepreneurship need to do more than develop policies and programs to encourage the creation of new companies. The data show that only a small portion of new businesses create jobs and enhance economic growth, and that the typical new business does neither. Therefore, simply increasing the total number of new companies will not enhance economic growth and job creation in NEO.

To use entrepreneurship to improve the lives of NEO residents, philanthropists need to undertake interventions that increase the amount of "attractive" entrepreneurial activity. While the totality of "attractive" entrepreneurial activity is difficult to identify, it includes venture-capital and angel group backed start-ups, new gazelle companies, and companies that receive external equity.

This white paper examined the efficiency and effectiveness of seventeen categories of interventions to enhance the level of "attractive" entrepreneurial activity in the region. The white paper divided these types of interventions into four groups: (1) interventions that are appropriate for the fund and show relatively high potential returns. (2) interventions that are appropriate for the Fund, but show relatively low potential returns; (3) interventions for which there is evidence of an effect, but the intervention is beyond the scope appropriate for the Fund and; (4) interventions for which there is no evidence of an effect on the level of "attractive" entrepreneurial activity in a region.

Recommended Interventions

Using the criteria of interventions that have (1) been shown to increase the level of "attractive" entrepreneurial activity in a region; (2) can be undertaken through research, grant making, or convening; and (3) cost an amount that the Fund can pay for, the white paper recommended specific interventions for the Fund to undertake, this white paper recommends that the Fund focus on interventions that:

- Attract experienced, successful venture capital-appropriate entrepreneurs to the region.
- Augment the amount of pre-seed grant funding available to prove potentially commercializable technologies.

- Increase the number of angel groups and venture capital firms operating in the region and the magnitude of their investment activity.

Interventions Not Recommended Because they Are Not an Efficient Use of Resources

The white paper also recommended that the Fund **not** undertake certain categories of beneficial interventions because those interventions are not cost effective. For instance, the white paper recommends that the Fund not engage in interventions to enhance overall immigration into the region; increase the level of technological invention in the region; or augment local academic research even though these interventions would have a beneficial effect on the level of “attractive” entrepreneurial activity in the region because such interventions are not among the most cost effective ways to increase the amount of “attractive” entrepreneurial activity in NEO.

Interventions Recommended for Other Entities

The analysis revealed several categories of intervention on which the Fund should **not** focus its attention, but were appropriate for other entities (most notably the state) to focus on. These include interventions to enhance the level of education of the area population; increase the proportion of the population in management jobs; or transition economic activity in the region out of large scale manufacturing. While all three of these types of interventions would increase the amount of “attractive” entrepreneurial activity in the region, their cost is too high for the Fund to undertake them effectively. Similarly, the Fund should not engage in interventions to increase the share of businesses in the region in high technology industries even though such interventions would increase the amount of “attractive” entrepreneurial activity in the region because the cost of these interventions is too high, and because such efforts would require focus on industries in which the region has little strength.

Interventions that are Unlikely to Have an Effect

While the types of interventions mentioned above are inappropriate because they are too expensive or offer a worse cost-benefit tradeoff than other types of interventions, several others are not recommended because there is little evidence of their effectiveness. For instance, the Fund should not focus on interventions to develop university entrepreneurship programs, reduce taxes, create incubators, or change the area’s culture and attitudes toward entrepreneurship because there is no evidence that such interventions will increase the region’s level of “attractive” entrepreneurial activity.

The Fund also should not engage in interventions to increase the overall level of entrepreneurial activity in our region because such interventions would not increase the most attractive types of new ventures even though they would increase some types of attractive new ventures.

Interventions not Discussed

It is important to note that this white paper examined those categories of intervention discussed in the public policy and academic literature on economic development and that were suggested by key stakeholders in interviews with the author. There are, no doubt, a variety of possible interventions that the stakeholders, policy makers, and academics did not think of. The absence of a discussion of these types of interventions should not be construed as a statement of their lack of potential value.

Next Steps

This white paper suggested several next steps to take in enhancing the amount of "attractive" entrepreneurial activity in the region. The Fund should collect primary data to understand better how to encourage the development of "attractive" entrepreneurial activity in the region. The Fund should create a dashboard of measures of "attractive" entrepreneurial activity to measure how well the region is doing in enhancing the level of "attractive" entrepreneurial activity. The Fund should create a task force to identify specific interventions to attract high-growth venture capital-appropriate entrepreneurial talent to the region. The Fund should also create a task force to identify interventions to encourage the growth of existing businesses. Finally, the Fund should coordinate its efforts with those of the Lt. Governor's office.

[1] Some portions of this white paper were taken from my books Illusions of Entrepreneurship: The Costly Myths that Entrepreneurs, Investors, and Policy Makers Live By (Yale University Press, 2008) and Fool's Gold: The Truth Behind Angel investing in America. (Oxford University Press, 2009).

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[71] We should also endeavor to keep the successful, experienced, venture capital and angel group-backable entrepreneurs that we are creating locally in the region. The Fund might do this by supporting an entrepreneur-in-residence program keeps them engaged and gives them access to a pipeline of their next potential ventures.
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