PRACTICE MAKES PERFECT?

A Longitudinal Investigation of Junior Achievement (JA) Sweden Alumni and Their Entrepreneurial Careers, 1990-2007

Foreword

This report, ”Practice Makes Perfect? A Longitudinal Investigation of Junior Achievement (JA) Sweden Alumni and Their Entrepreneurial Careers, 1990-2007”, is a unique study of the long-term effects of practical exercise in entrepreneurship during high school. The report was written by Karl Wennberg, PhD, at the Center for Entrepreneurship and Business Creation at Stockholm School of Economics and compares JA Sweden’s anonymous register of alumni with Statistics Sweden’s register on individual’s labor market activities and enterprise information. This report fulfills two goals: first, it shows how JA’s high school educational initiative called “JA Company Program” (JACP) positively benefits our society. Secondly, it compares the relative entrepreneurial performance of those students who participated in JACP (group referred to as JA Sweden Alumni) and similar individuals who did not participate in a JACP when starting and developing new businesses. The author is sole responsible for the content and conclusions of the report.

The results shows that as a group, JA Sweden Alumni contribute significantly to societal welfare by creating thousand of new businesses, generating tens of thousands of new jobs, and billions Swedish Krona in revenues. Furthermore, the results show that businesses started by JA Sweden Alumni perform significantly better than comparable businesses whose founders lacked JACP experience.

We hope that readers of this report will see the vast benefits when it comes to young entrepreneurship, and the overall potential that the JA educational concept has for promoting entrepreneurship in Sweden as well as globally.

On behalf of JA Sweden (UF)

Jonas Hehrne
JA Sweden
Stockholm, Sweden, February 25, 2011

SUMMARY

In this report we analyze the direct effects of entrepreneurship among Junior Achievement (JA) Sweden Alumni on job creation and growth and the comparative effects of experience from the "JA Company Program"(JACP) during high school on subsequent entrepreneurial performance. The report has been written by Karl Wennberg, PhD, at the Center for Entrepreneurship and Business Creation at Stockholm School of Economics.

The report is motivated by the lack of academic and policy studies evaluating the relative importance of education and practical experience for successful entrepreneurship. To address this need, we conducted a comparison study of companies in the same industry started by JA Sweden Alumni and those started by individuals with the same age, gender and education without JACP experience.

The results show unanimously that creation of new firms, firm survival, and job creation within these firms is stronger among JA Sweden Alumni than comparable individuals. This highlights the positive effects of practical experience in entrepreneurship. Since we investigated the performance among relatively young individuals, it is likely that the impact will be even greater later in their careers.

This report has implications for educational policy, enterprise policy, and design of education and training programs at both the high school and university levels. As authorities have limited resources for education and training efforts in entrepreneurship, this report provides some clues as to what efforts may best yield societal returns on resources spent on entrepreneurship education and training. The study results indicate that practical experience may be more beneficial for entrepreneurship than solely focusing on theoretical knowledge. The benefits of public education and financial support for various types of educational programs within entrepreneurship can be measured in terms of the number of businesses started, job creation, salary growth, and tax payments to the state. Hence, more knowledge about the benefits of education and training efforts in entrepreneurship is needed. This report is a first example of this kind.

1. INTRODUCTION

Today, it is agreed upon that entrepreneurship, defined as the creation and development of new firms, is an important factor for economic development and job creation.

There is an apparent lack of academic and policy studies that uses quantitative measures to evaluate the connection between education, labor market experience, and the creation of new firms and job growth within these firms. Authorities have limited resources for education and therefore have a need to evaluate the impact of different types of educational and training efforts to determine which efforts will more greatly impact society in terms of the number of new firms started, job creation, salary growth, and tax payments to the state. In this report, we analyze the relative effects on new firm development stemming from the founder's participation in the educational concept provided by Junior Achievement Sweden (JA Sweden) during their high school years.

The report contains:

1. A summary of research to date concerning the role of education and learning in entrepreneurship.
2. An investigation of all Swedish businesses started by individuals who participated in "JA Company Program" (JACP, henceforth this group will be referred to as JA Sweden Alumni). Specifically:
    - Number of new firms started by individuals with a JACP background
    - New jobs created by firms started by individuals with a JACP background
    - Tax payments by firms started by individuals with a JACP background
3. Comparison of firms started by JA Sweden Alumni and similar firms whose founders who lacked JACP experience, based on the following variables:
    - Firm survival
    - Number of employees
    - Firm revenue

The basis of this report is JA's database containing 166,606 persons who have participated in JACP during high school between 1980-2009, together with Statistic Sweden's information on all firms subsequently started and managed by these individuals between 1990-2009.

Within this report, we will summarize first the research as to how and why entrepreneurship is important for economic development and secondly the research concerning the role of education and learning in entrepreneurship. After which, we can conclude that there is a lack of studies that systematically investigate the relationship between various types of education and practical training efforts and subsequent entrepreneurial outcomes.

The method section describes how databases from Statistics Sweden may be utilized to investigate the relationship between education and training efforts and subsequent entrepreneurial outcomes.

In addition, we will present the data used to analyze entrepreneurship among JA Sweden Alumni and a control group.

Presentation of the data is divided into two sections, first an investigation of the overall performance among all Swedish firms started by JA Sweden Alumni and secondly an investigation of the development of new firms conditional on them having a founder who has JACP experience or not. We will look specifically at survival rates among the firms, as well as job creation, revenue growth, and generation of tax contributions to the state. The report finishes with a discussion of the results, and what conclusions that may be drawn from the data.

2. ENTREPRENEURSHIP, LEARNING AND EDUCATION

The increasing importance of new and small firms for economic vitality has gain attention during the last decades in academic and public debate. Prominent researchers such as Prof. David Audretsch at Indiana University hold that the increasing importance of new and small firms depends on larger economy-wide changes as we move from ”an industrially based economy” to ”an entrepreneurial economy”. Our view of entrepreneurship has gained prominence for several reasons in the last decade due to economical and political development. Researchers hold that a central explanation for the rising importance of new and small firms is the increased decentralization within industry and the increasing reliance on knowledge as a competitive resource. Small scale production and knowledge as a competitive resource are common hallmarks of entrepreneurship. Italian researchers, Michael Piore and Charles Sable, further suggest that the economic instability during the 1970s oil crises caused changes in production methods and increased flexibility among larger firms, leading them to rely on smaller subcontractors or a network of subcontractors instead of producing ‘everything themselves’. This development also led to the increased prevalence of entrepreneurship in the form of small and new firms.

As a result, small and new firms have become an ever-increasingly important complement to the production capabilities of large industrial firms. These smaller and newer firms as a group contribute more to the aggregate creation of new jobs than the larger established firms. Furthermore, new small firms often contribute to the commercialization of new types of innovations and business models.[1]

Given this development, one may ask which factors shape an individual’s willingness to engage in entrepreneurship by starting a firm, instead of seeking paid employment. In order to contextualize and offer an interpretative lens for the empirical investigation that follows, we need to outline those important factors that prior research has found to matter greatly: economic conditions, opportunity costs, education and knowledge, and practical learning from prior experience.

1 Audretsch DB, Acs ZJ. 1990. The entrepreneurial regime, learning, and industry turbulence. Small Business Economics 2(2), 119–128

Factors enhancing the creation of new firms

Contrary to what one might believe is the proportion of entrepreneurs – measured as self-employed individuals – is not very high in developed nations. According to the Organization for Economic Cooperation and Development (OECD) figures, the three nations with highest Gross National Product (GNP) per capita also are the same three nations with lowest proportion of entrepreneurs. These three nations are Luxemburg (6.1% entrepreneurs), Norway (6.8% entrepreneurs) and the USA (7.2% entrepreneurs). Other nations with high BNP/capita such as Canada, Germany and Sweden have similar low rates of entrepreneurs (Canada and Sweden 9.7%, Germany 9.9%).[2]
If one looks at more recently industrialized or industrializing nations such as Korea, Mexico and Turkey, we find that over 25% of the population are self-employed entrepreneurs. Judged by these numbers, it is obvious that nations with a larger agricultural sector have a higher proportion of self-employed entrepreneurs per capita. Even if we discount the agricultural sector from these nations, the proportion of self-employed entrepreneurs is higher in industrializing or more recently industrialized nations than in the wealthy nations in the West. In economic terminology, citizens of wealthier nations have higher opportunity costs than those in less wealthy nations. A Swedish person that ponders becoming entrepreneur by starting a firm on his or her own has, generally, more alternative job opportunities than a person in Mexico. From an economic perspective, there is a cost associated with disregarding these other opportunities when choosing the riskier path as self-employed.

Other factors that affect the level of entrepreneurship positively are geographic factors. Regions with high urban density, faster population growth, and high mobility across occupations and geographic areas generally exhibit higher levels of entrepreneurship than other regions.[3]
Higher levels of education also lead to more entrepreneurship. At the same time, however, studies have shown that unemployed persons and other groups with fewer labor market contacts often engage in entrepreneurship, especially during economic downturns (so called push-employment). Entrepreneurship can reach higher levels within certain groups during economic downturns is often ascribed to individuals becoming unemployed and who seek any type of earnings, or people that become dissatisfied with their current occupation. The latter group includes people with high education and good career opportunities.

What is, then, the connection between education and entrepreneurship? There is still very limited research regarding the relationship between education, training, and entrepreneurial outcomes. We will here summarize the key questions posed and the general conclusions from the latest decades of research on these issues.

2 All figures were taken from OECD (2008). Figures for proportion of entrepreneurs per capita vary somewhat depending on year and data source, and specifically if one with entrepreneurship measures all types of self-employed regardless of company form (as we do) or if one only measures self-employed proprietors or with a partnership, excluding those with incorporated firms (a common distinction in anglosaxian countries).
3 Fredriksen, L. & Wennberg, K (2009). Mobility and Entrepreneurship. Paper presented at the 2009 Copenhagen Conference on Strategic Entrepreneurship, November 14-15, Copenhagen Business School.

Education and Learning

In the academic literature, there is no clear evidence indicating a clear-cut association between individuals' education level and the probability of becoming an entrepreneur. Rather, available research indicates that it is the most educated and the least educated that are most likely to engage in entrepreneurship. Economic theory explains this through two opposite effects of how education level affects the choice to engage in entrepreneurship. First, leadership skills and external knowledge tend to improve through education, which increases the probability that an individual will choose to engage in entrepreneurship. Higher education also gives people better access to information that allows them to identify valuable opportunities. However, at the same time, higher education also leads to improved job market opportunities, which leads many highly educated persons to seek other types of employment and decreasing the probability that the person will engage in entrepreneurship.

However, if they do eventually enter into entrepreneurship, people with extensive education are generally considered more likely to perform better.[4] Research is, however, quite limited in its understanding of which types of education are most important in order to become a successful entrepreneur. One popular explanatory theory proposed by Ed Lazear at Stanford University is that entrepreneurs are "jack-of-all-trades". According to this theory, a wide range of experience and skills, rather than a specific type of education or degree, are judged as vital for future entrepreneurial success in that they help shape the "broad mixture of skills" necessary for building a new enterprise and getting it to grow. Empirical results collected by Lazear as well as by Thomas Åsterbro at HEC Paris support the notion that entrepreneurs could be considered as jack-of-all-trades. However, neither Lazear nor Åsterbro have so far studied what effects specific training in entrepreneurship may have on future entrepreneurial careers.

A recent study by Christian Vintergaard at the Danish Entrepreneurship Fund surveyed former graduates from the Young Enterprise (YE) Company Program, the Danish version of JACP. The study found that those persons having taken part in the YE Company Program were twice as likely as similar persons to later in their lives re-engage in entrepreneurship. These persons also ranked their YE practical experience as the key basis for their future enterprising career. What does academic research have to say about the importance of practical experience in order to learn about entrepreneurship?

Entrepreneurial Learning

A common saying is that "practice makes perfect". Research in entrepreneurial learning indicates that relevant skills to succeed in entrepreneurship are accumulated primarily through experience. This implies that a critical source of entrepreneurial learning may stem primarily from prior entrepreneurial endeavors. Industry experience and good business knowledge among entrepreneurs are seen as two key factors for new ventures to succeed by investors.[5] Several academic studies on entrepreneurism show that prior entrepreneurial experience is a strong predictor of subsequent success.[6] Renowned entrepreneurship Professor Scott Shane suggested that prior entrepreneurial experience provides the entrepreneur with skills and knowledge such as how to organize and finance a new firm and how to hire and lead people, but did not explicitly investigate which of these skills were most important.[7]

This leaves an important question unanswered, what type of activities are critical to become a successful entrepreneur? Models of entrepreneurial learning and career experiences have suggested that owner-manager activities such as business planning, hand-to-hand marketing and negotiation skills may be important, but detailed empirical research on this topic is still lacking. This highlights the key role of learning from prior venturing, suggesting that the skills and knowledge relevant to successfully managing and operating a business are gained through practical experience.

Such practical knowledge may primarily be gained through prior entrepreneurial experience but may also be enhanced by specific practical training. Thus, evaluation of practical training programs such as JA Company Program offered by JA is very important from a research perspective.

After this theoretical outline of the research to motivate the report from a research perspective, we now move on to describe the JACP and how it works. An outline of the methods and data used will be described followed by a discussion of the results and what conclusions can be drawn.

Background: JA Sweden (Ung Företagsamhet)

JA Sweden is a non-profit organization whose purpose is to cooperate with schools in order to promote entrepreneurship and facilitate a relationship between the business community and the school system.[8] JA Sweden is part of the international organization Junior Achievement Worldwide (JAW) and is an active member of Junior Achievement Young Enterprise Europe (JA-YE Europe), an association of organizations in 40 nations that provide locally the same educational concepts. JA Sweden provides primary and secondary school students the opportunity to train and develop their creativity, entrepreneurship, and practical business skills. Through the educational program JA Company Program (JACP), high school students are given the chance to start, develop and run their own company with the help of regular tutoring and pedagogic material. The program is based on students experiencing the whole life of an enterprise, from start-up to sales and marketing, followed by dismantling of the firm. Standardized educational material is distributed to schools around Sweden and the JACP is now firmly established in over 550 high schools in Sweden

4 See e.g. studies av Bates, T. 1990. Entrepreneur human capital and small business longevity. The Review of Economics and Statistics, 72(4): 551-559 or Brüderl, J., et al. 1992. Survival Chances of newly founded business organizations. American Sociological Review, 57(April): 227-242.

5 Gompers, P., et al. 2005. Entrepreneurial Spawning: Publ Gompers, P., et al. 2005. Entrepreneurial Spawning: Public Corporations and the Genesis of New Ventures, 1986 to 1999. Journal of Finance, 60(2): 577-614.
6 See e.g. Wennberg, 2009. Entrepreneurial Exit, Stockholm: EFI, for a detailed outline
7 Shane, S. & Khurana, R. 2003. Bringing individuals back in: the effects of career experience on new firm founding. Industrial and Corporate Change, 12(3): 519-543.
8 www.ungforetagsamhet.se

(2010/2011 school year). Approximately 1,600 high school teachers work with the concept and around 20,000 high schools students are concurrently running a JACP Enterprise. Of these students, around half are enrolled in occupational training programs (e.g. agriculture, hotel and tourism, construction, etc.) in high school and half are enrolled in theoretical high schools (i.e. programs dedicated to natural or social sciences, etc.). Since JA Sweden's start in 1980, more than 214,000 persons have run a JACP Enterprise.

3. METHODS AND DATA

What makes this study unique is that we utilize public databases that are linked to each other through different levels of analysis. That is, we use databases with information about individuals, which is connected to databases with information about the firms these individuals work at or run as entrepreneurs. In economic research, this is called "matched employee-employer databases".

The analysis in this report is based on three primary data sources: one on the individual level, one on the firm level, and one with accounting data for each firm. On the individual level, we utilize Statistics Sweden's database LISA which contains all individuals between 16 and 64 years of age residing in Sweden. LISA contains information about the individual's occupation, related housing- and family information, as well as detailed information on education, the latter which is of particular interest for the current study. Since these databases are longitudinal in nature, we can follow individuals over time and investigate changes in their occupation and income. On the firm level, we use Statistics Sweden's company register FDB which contains all registered firms in Sweden regardless of whether they are incorporated firms, partnerships, or sole proprietorships. The firm-level information is linked to information from the tax authorities which allow us to investigate economic activities such as turnover and salaries paid to employees in each firm.

Researchers in Sweden and other countries often draw upon Statistics Sweden's registers as they are internationally renowned as a high-quality data source. Thanks to the Swedish civic registration number that each individual has and the firm registration number, individuals and firms can be followed over time without risk for confusion in their identity or being lost when they move or change name which are common problems in countries that do not have such information. For reasons of research ethics, our data material is anonymous. We can follow individual persons and firms though the data, but we cannot identify them. Our base for the analysis is JA's anonymous database of all 194 000 persons that have run a JACP Enterprise. This is the target population in our study. Statistics Sweden was asked to match these individuals against their public records. For reasons of secrecy, Statistics Sweden does not disclose information about specific individuals. This is not a concern as we are only interested in JA Sweden Alumni as a group. Due to the fact that Statistics Sweden's databases sometimes lack information on individuals who for example moved abroad, and it contains only rudimentary information until 1986, our final sample of individuals that could be matched to the public databases were 166,606. This is the final population of investigation in our study.

In order to investigate scientifically whether the firms started by JA Sweden Alumni at a later stage in their careers differ from other firms, we cannot merely compare them with some official data on Swedish enterprises that represents some sort of "mean" value. This mean value would not account for differences in what types of firms are started, in what industry, the founder's education, gender, age, etc. For these reasons, Statistics Sweden was asked to create a "control group" of individuals that may be matched to the JA Sweden Alumni based on variables denoting the type of firm (incorporated firms, partnerships, or sole proprietorships), the industry started in, the founder's education level, gender and age. This control group contains in total 221,120 individuals (somewhat more than the total group of 166,606 JA Sweden Alumni).

Our analysis focuses on newly started enterprises. We therefore included all firms started and employing at least one person at some point during the time period 1986-2007.[9] Statistics Sweden collects information about firm revenue from 1997 onwards. Hence our analysis of firm revenues is limited to the later period of investigation. Data for number of jobs created is based on the period 1986-2009 for entrepreneurs with partnership or proprietorship, and 1993-2009 for entrepreneurs with an incorporated firm. In total, our sample contains 166,606 JA Sweden Alumni and 221,120 individuals in the control group. We use the term "JA Sweden Alumni" to describe those persons who during high school ran a JACP Enterprise.

4. RESULTS

Entrepreneurship among JA Sweden Alumni

In this first section, we describe the overall sample population and outline the prevalence of entrepreneurship within this group as a whole. The left hand column of Table 1 below describes those 166,606 JA Sweden Alumni that constitutes the sample for our study. As a comparison we also show in the right column the control group that we matched to the JA Sweden Alumni to compare the potential learning effects of running a JACP Enterprise during high school on subsequent entrepreneurial performance.

Table 1: Background facts: sample and control group

	JA	Control Group
Number	166 606	221 120
Number of women	49,5%	49,5%
Number of men	50,5%	50,5%
Proportion of entrepreneurs	4,8%	3,8%
– with incorporated firms	1,7%	1,0%
Mean age	24,4	24,4
Mean age when starting firm	23,6	24,2

9 Hence we exclude part-time entrepreneurs or those "combiners" that concurrently hold a paid job and are active in a firm – the latter which constitute a large "hidden group" in official statistics on employees and entrepreneurs., See. e.g. Folta, T. B., Delmar, F., & Wennberg, K. 2010. Hybrid Entrepreneurship. Management Science, 56(2): 253-2694

Table 1 shows that almost half of the sample is constituted by women and in general is fairly young, with a mean age of 24.4. Among the total sample of 166,606 persons that ran a JACP Enterprise during high school sometime between 1980-2007, on average 4.8% were active as full-time entrepreneurs during any of the years 1986-2008. The comparative figure for the control group is 3.8%. These figures are rather low – in fact they are somewhat lower than the proportion of entrepreneurs in the general population of Sweden. However, we should keep in mind that this is a relatively young group with a mean age of 24.4. This data should be compared to the surveys conducted among JA Sweden Alumni where 5-6% of JA Sweden Alumni age 21-24 answered that they were again engaged in entrepreneurship during the mid 1990s and higher percentage of 8-9% in the mid 2000s.[10] The focus on only full-time entrepreneurs and only among the younger group of Alumni in this study hence gives a conservative estimate, and the real figures are likely to be higher if one also includes part-time entrepreneurs and follow Alumni for a more extended period of time. Since most individuals who start a firm do so between 35-45 years old, the figure of 4.8% in this study is hence not directly comparable to the proportion of entrepreneurs in the general population, but rather the figures in this report should be compared to the proportion of entrepreneurs among the general population of 20-30 year olds in Sweden with the same age and level of education. It is for this purpose that we created such a control group in this study.

Table 1 also shows that JA Sweden Alumni are on average 20% more likely than the comparable group to engage in entrepreneurship under the early part of their career. An important question that follows: How successful are then the firms started by these JA Sweden Alumni? Are there differences between men and women with JACP experience? Are the firms started by JA Sweden Alumni more successful than similar firms started by individuals without JACP experience? All of these questions will now be scrutinized in different empirical analyses.

JA Sweden Alumni Entrepreneurship among Men and Women

It is well documented that entrepreneurship is more common among men than women. Yet, this is changing with women constituting a growing proportion of all new entrepreneurs – from about a fourth to more than a third during the last decade. If one seeks to increase the number of start-up companies in the economy – as many policy makers are trying to do – then investigating factors that may facilitate the increase in women entrepreneurs is essential. It is therefore of interest also in this study to investigate if there are differences in entrepreneurial behavior among men and women with or without JACP experience.

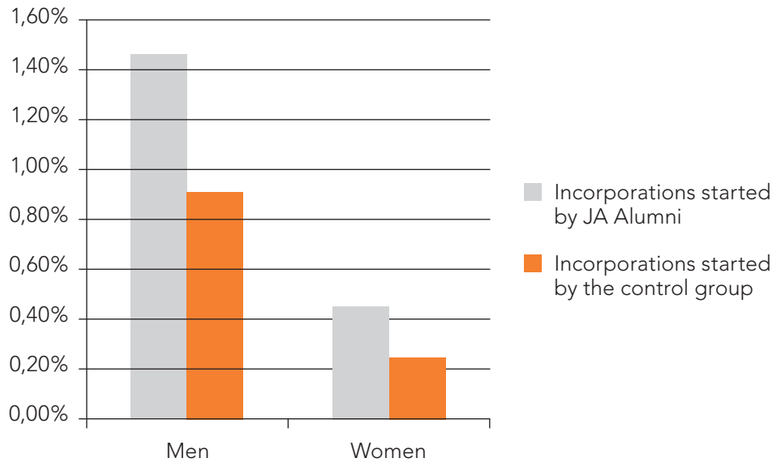
10 Tatsiana Ksionda, T. (2010). JA Sweden – Vad hände sedan? www.ungforetagsamhet.se

Table 2: Differences in entrepreneurial entry among men and women

	Entrepreneurs with proprietorship/partnership		Entrepreneurs with incorporation	
	JA	Control group	JA	Control group
Men	2,02%	1,99%	1,46%	0,91%
Women	1,50%	1,17%	0,45%	0,25%

Table 2 shows a breakdown of entrepreneurial entry rates based on gender, JACP experience, and type of firm started. Looking at the left hand side of Table 2, we find that the rate of entrepreneurship among men starting a sole proprietorship or a partnership only differ marginally between JA Sweden Alumni and the control group. However, among women the difference is much larger in that female JA Sweden Alumni are 35% more likely than women without JACP experience to start a sole proprietorship or a partnership. Still, research stresses that these types of startup are less likely to grow and provide great economic value creation compared to firms started as corporations.[11] Looking at the right hand side of Table 2, we find that the rate of entrepreneurship among those starting a corporation differ significantly between JA Sweden Alumni and the control group. Specifically, male JA Sweden Alumni are 60% more likely than the control group to engage in entrepreneurship by starting a corporate firm. The results for women are even stronger, in that female JA Sweden Alumni are 80% more likely than the control group to engage in entrepreneurship by starting an incorporated firm. These differences are illustrated below in Figure 2.

Figure 2: Newly started incorporations among JA Sweden Alumni and control group



As we see in Figure 2, corporations are much more commonly started by men than women, however the relative difference between entrepreneurs with JACP experience and the control group is markedly larger among women. Taken together with the results in table 1, this data indicates that

11 Delmar, F., Sjöberg, K., Wennberg, K., & Wiklund, J. (2005). The evolution of the firms created by self-employed among the Swedish science and technology labor force between 1990 and 2000. Stockholm: ITPS.

even if JA Sweden Alumni in general are not more likely to re-engage in entrepreneurship during their early career years than the general population, JA Sweden Alumni are much more likely to start more ambitious firms (i.e. corporations). Hence, we now move on to investigate the differences in terms of job creation and revenue among JA Sweden Alumni.

Job Creation among JA Sweden Alumni

Research has shown that the majority of all new jobs are created in small- and medium-sized enterprises. Hence, policy makers often see job creation among new firms as a primary motivation for trying to increase the level of entrepreneurship in modern economies. In this analysis, we will investigate the number of employees in the new firms created by JA Sweden Alumni. Since the turnover of these firms are high (i.e. many are started but they are often closed down), we will not specifiy the exact number of jobs created by each firm during their life span, rather we will focus on the number of annual jobs created among (1) firms started as sole proprietorships or partnerships by JA Sweden Alumni, and (2) firms started as corporations by JA Sweden Alumni. This type of analysis (firm-year job creation) is a fairly standard metric in the academic literature.[12]

Table 3: Size of new enterprises started by JA Sweden Alumni

	Incorporations year 1-10	Proprietorships/ Partnerships year 1-10
Number of Employees	Sum	Sum
1-4	1 903	14 580
5-9	803	262
10-19	383	60
20-49	126	11
50-199	48	1
200+	2	0
Mean size	9	2
Max size	959	78
Total number of employees in all firms	22 759	20 282

Table 3 above shows the size of firms started either as sole proprietorships or partnerships by JA Sweden Alumni and firms started as corporations by JA Sweden Alumni. We also show firms' mean size in number of employees, and on the bottom row the total of all firms' annual job creation. Table 3 reveals that the mean size of firms stared by JA Sweden Alumni as sole proprietorships or partnerships is only 2 employees, but the mean size of firms started by JA Sweden Alumni as corporations is 9 employees. Both figures are significantly larger than the mean size of new firms in the Swedish economy in general.[13] The majority of all firms remains small and

12 Delmar, F. & Wennberg, K. 2010. Birth, Growth, and Demise of Entrepreneurial Firms. Edward Elgar.
13 Delmar, F., Sjöberg, K., Wennberg, K., & Wiklund, J. (2005). The evolution of the firms created by self-employed among the Swedish science and technology labor force between 1990 and 2000. Stockholm: ITPS.

can be grouped in sizes '1-4 employees' (especially for firms started as sole proprietorships or partnerships) or '5-9 employees'. There are also a number of larger firms with 100+ employees. This is especially true for the firms started as corporations. The bottom row also reveals that taken as a whole, the population of JA Sweden Alumni and their companies contribute significantly to job creation in the economy. In total, all firms created 43 041 annual jobs during their first 10 years. Since this is based on the period 1986-2007 and the JA-concept has existed over 30 years, we can conservatively estimate that the total number of jobs created by JA Sweden Alumni amounts to 43 041 x 3 = 129 129. It should be pointed out that this is a rough approximation and not an absolute number. For example, we have no data on firms that grow so rapidly that they become acquired or are merged with others companies. Such "gazelles" likely represent an important source of new job creation.[14]

Revenues in New Enterprises Started by JA Sweden Alumni

So far in this report, we have focused on job creation as a measure of firm growth. One can assume, however, that some firms will hire many employees and still fail to take a significant market share or reach a strong financial position. And vice versa it is possible that other firms employ rather few persons and show rapid revenue growth, thus contribute to economic change through taxes payments based on their transactions and profitability.

Since profits, return on capital invested, and other measures of performance are easily affected by the specific accounting practices of the firm, such measures of performance are ill suited to be used on the population level. For example, it is common that in growing firms, large investments are done during the first years and hence those years tend to exhibit a weak or even a negative results despite increases in revenue. Also, measures such as job creation may not reflect the real-world goals of entrepreneurs. While individual entrepreneurs might well seek to grow their firms by employing others, this is seldom a central goal since most entrepreneurship tends to focus on making a healthy profit on the capital and work effort put into the firm than to employ large staff and pay taxes.[15] From a societal perspective, job creation, tax payments based on economic revenues, and other types of external 'spillovers' are the results from entrepreneurship that directly create wealth also for other stakeholders in society. Hence, in this analysis we will focus on the revenue generated by firms started by JA Sweden Alumni which is an indirect measure of tax payments to the state since value added tax (VAT) is paid by entrepreneurs each month based on their revenue and cannot be manipulated by accounting practices such as profits might be. In Table 4 below, we show revenues among the firms started by JA Sweden Alumni. The first row in the table shows the number of firms started as proprietors or partnerships, and how many continue to operate for each year. The second row shows the total sum of revenue generated by all firms in the JA Sweden Alumni population. The third row shows the mean revenue for each firm.

14 Henrekson, M. & Johansson, D. 2010. Gazelles as job creators: A survey and interpretation of the evidence. Small Business Economics, 35: 227-244.
15 Davidsson, P., Steffens, P., & Fitzsimmons, J. (2009). Growing profitable or growing from profits: putting the horse in front of the cart? Journalof Business Venturing, 24(4), 388–406.
of Business Venturing, 24(4), 388–406.

Table 4: Revenues in new firms started by JA Sweden Alumni

	First year of existence	Second year of existence	Third year of existence	Fourth year of existence	Fifth year of existence	Sixth year of existence
Number of firms	5 912	3 268	2 040	1 355	931	647
Total revenues in the population (*thousand Swedish krona*)	1 953 005	1 512 503	1 144 321	934 973	611 797	454 579
Mean revenues per firm (*Swedish krona*)	595 973	773 263	887 071	1 070 989	1 031 698	1 171 595

The second row in Table 4 shows that the total sum of revenues generate among the whole population of firms started by JA Sweden Alumni amounts to almost two billion Swedish Krona during the firms' first year of existence, and hover around one billion during the subsequent three years. The aggregate figure decreases as the number of firms decrease. Hence, as the number of firms decrease, the total impact as a group on society diminishes. However, as the bottom row in Table 4 reveals – among the firms that do survive, their mean revenue grows as their competitive ability increases.[16] This development mirrors the industrial dynamics of most firms started in Sweden, and is in accordance with what we could expect of firms founded by highly educated persons.

After this analysis of job creation and revenue among firms started by JA Sweden Alumni, we now move on to analyze the direct tax payments among these firms.

Tax Payments in New Enterprises Started by JA Sweden Alumni

The main tax contributions from new firms to society come from value added tax (VAT) payments based on the firms' revenues, company tax based on the firms' profits, income taxes and social security contributions for employees. As explained earlier, firm profits to a significant degree are depended on firm accounting strategies, and thereby are an unsuitable measure on the population level. Hence, our measure of tax payments of new firms is limited to VAT payments, income taxes and social security contributions for employees.

Swedish VAT has for a long time been set at 25% for most good and services. However, for some goods and services such as food, public transportation, culture and books, VAT is lower. In addition, housing and health care is more or less exempt from VAT. Since only 10% of the firms in our sample are in industries supplying the above mentioned good and services with lower VAT rates (see appendix 1), we use 25% as our basis for calculating VAT. Social security contribution for employees was at its highest rate in 1990 at 38.97% but has since gradually been lowered to 31.42% in 2009. This study is based on employment data of proprietorships or partnership started

16 Delmar, F., Sjöberg, K., Wennberg, K., & Wiklund, J. (2005). The evolution of the firms created by self-employed among the Swedish science and technology labor force between 1990 and 2000. Stockholm: ITPS.

by JA Sweden Alumni between 1986-2009 and for firms started as corporations between 1993-2009. We use an approximation for calculating social security contributions for employees amounting to 33.84% which is the mean value during the period of study. As basis for employment income taxes, we use only the municipality tax for conservative reasons. As an approximation of municipality tax, we use the figure 30% which is below the mean level of municipality income tax during the period of study.

Table 5: Tax payments in new enterprises started by JA Sweden Alumni

	First year of existence	Second year of existence	Third year of existence	Fourth year of existence	Fifth year of existence	Sixth year of existence	Total first 6 years
Total profits for the population	N/a	N/a	N/a	N/a	N/a	N/a	N/a
Total VAT payments for the population (*thousands Swedish krona*)	390 601	302 501	228 864	186 995	122 359	90 916	1 322 236
Total social security contributions for the population (*thousands Swedish krona*)	894 699	627 387	435 732	308 289	212 848	121 714	2 600 669
Total income tax for employees in the firms (*thousands Swedish krona*)	688 760	482 977	335 436	237 328	163 855	107 902	2 016 258
						Total tax payments (thousand SEK):	5 939 163

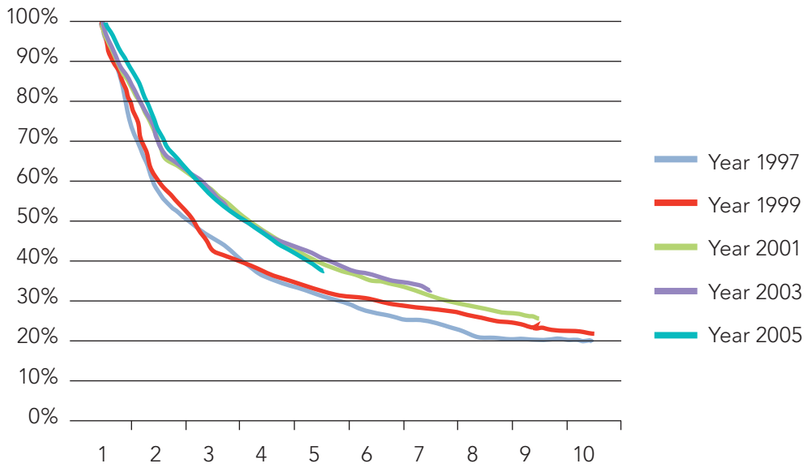
Table 5 shows that the total population of firms started by JA Sweden Alumni contributes nearly 400 million Swedish Krona (SEK) in VAT taxes during their first year of existence. Their payment to social security contributions and income tax amounts to over 1.5 billion SEK during their first year of existence, and over 1 billion SEK in their second year. During the firm's first six years of existence their total tax payments to the state amounts to almost 6 billion SEK. Despite the fact that this calculation is based on a number of simplifications in estimating VAT and social security contributions, it nevertheless is a strong indication on the positive impact on public finances that these firms generate. In fact, the real tax payments of the firms are higher if we would also account for company tax based on the firms' profits.

Evolution of New Firms Started by JA Sweden Alumni

The JA concept has existed for more than 30 years and has grown and adapted during this time. An interesting question is to what extent there may be differences in performance of firms started by JA Sweden Alumni depending on when these firms were started. In addition to firms being

exposed to economic fluctuation, it is possible that as the JA concept has grown and improved and as former JA Sweden Alumni age and accumulate other work experience, it is possible to conceive that firms being started more recently could achieve higher performance. In order to investigate this point further, we selected a number of cohorts (one cohort is all firms started in a particular year) to investigate their relative survival and growth in revenues based on when they were started. This is illustrated in Figure 2 and Table 6 below.

Figure 2: Survival of new firms started by JA Sweden Alumni, based on cohort



In Figure 2, we see clearly that less than 50% of the firms started by JA Sweden Alumni survive 5 years or longer. This may be perceived as negative but the figures are in fact similar to the general patterns of survival of firms started by educated persons in Sweden as well as internationally.[17] Economic research has shown that around half of all newly started enterprises tend to disappear within five years. The figure is high partly since this includes both voluntary closures such as liquidation or sale of the firm, and involuntary closures such as bankruptcy. Research has also shown that higher education tends to increase the performance in new firms, but decrease the likelihood of continuation.[18] This fact is related to highly educated individuals often having attractive employment opportunities elsewhere. In addition, we see clearly that the earlier cohorts of 1997 and 1999 exhibit a lower rate of survival than the latter cohorts of 2001, 2003 and 2005 in figure 2. Hence, it seems to support the notion that JA Sweden Alumni benefit from waiting a few years after they finish their high school degree before starting a new firm. This is of course based on simple mean values in survival, and not based on a more rigorous statistical analysis. In order to further investigate this pattern further, we also investigated revenues for a number of cohorts of firms started by JA Sweden Alumni. As explained in the methods section, we only have access to

17 Wennberg, 2009. Entrepreneurial Exit, Stockholm: EFI.
18 Gimeno, J., et al. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. Administrative Science Quarterly, 42(4): 750-783.

revenue data from year 1995. Further, we found that a smaller number of firms with highly fluctuating revenues in cohorts 1997 and 2001 (possibly due to the economic downturns starting in those years). We therefore chose to investigate revenues in the cohorts of 1995, 1998, 2004, 2007 and 2009 (the most recently started cohort). The results are displayed in Table 6 below. Also here we see that even if the pattern of revenues fluctuate somewhat it is obvious that revenues increase more rapidly in firms started later within the period of investigation. Hence, also this analysis supports the idea that on average, JA Sweden Alumni are better off in waiting a few years after graduation before starting a new firm.

Table 6: Revenues in firms started by JA Sweden Alumni, based on cohort

JA-Year	First year of existence	Second year of existence	Third year of existence	Fourth year of existence	Fifth year of existence	Sixth year of existence	Tenth year of existence
1995	737 928	739 408	818 488	877 222	1 148 216	1 028 275	1 493 889
1998	652 874	899 339	1 064 732	1 317 893	1 477 048	1 515 391	3 663 000
2004	635 874	849 448	1 058 085	1 302 286	3 423 250	4 259 000	
2005	1 630 286	1 927 200	2 125 000	1 893 000	4 654 000		
2009	2 106 167						

In the theoretical background at the start of this report, we outlined how research has shown that higher education as well as practical experiences of entrepreneurship in general tend to contribute to the development of new firms. However, there is a lack of studies on and evaluations of specific education- or training programs in entrepreneurship. We therefore now proceed with our last analysis by investigating if firms started by JA Sweden Alumni are more successful than firms started by individuals without JACP experience.

Differences between Firms Started by JA Sweden Alumni and Similar Firms

The final analysis in our report focuses on performance differences in firms started by JA Sweden Alumni compared to firms started by individuals without JACP experience. For sake of comparability, we utilize the control group described in the methods section. In this comparison, we investigate the same variables as in the prior analysis of the aggregate impact of JACP Enterprises: survival, job creation, and revenues.

Figure 3a: Job creation in incorporations started by JA Sweden Alumni or control group

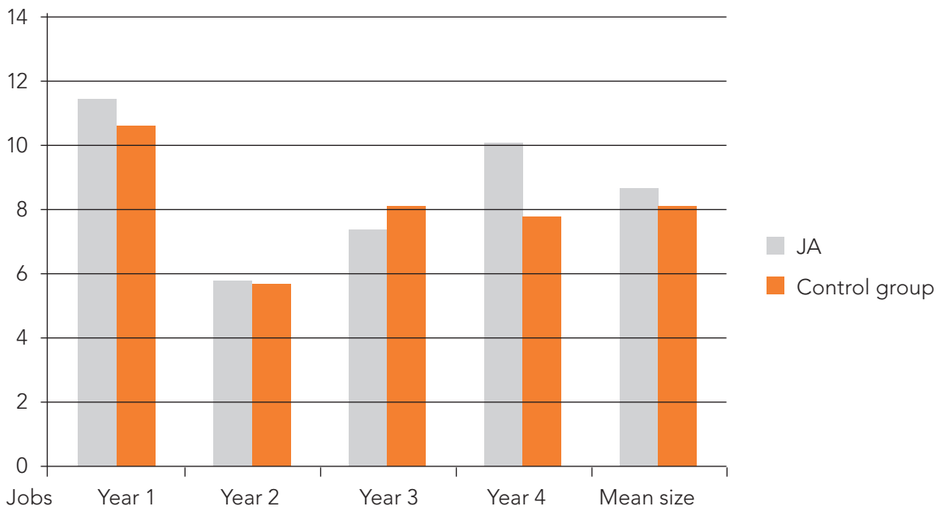
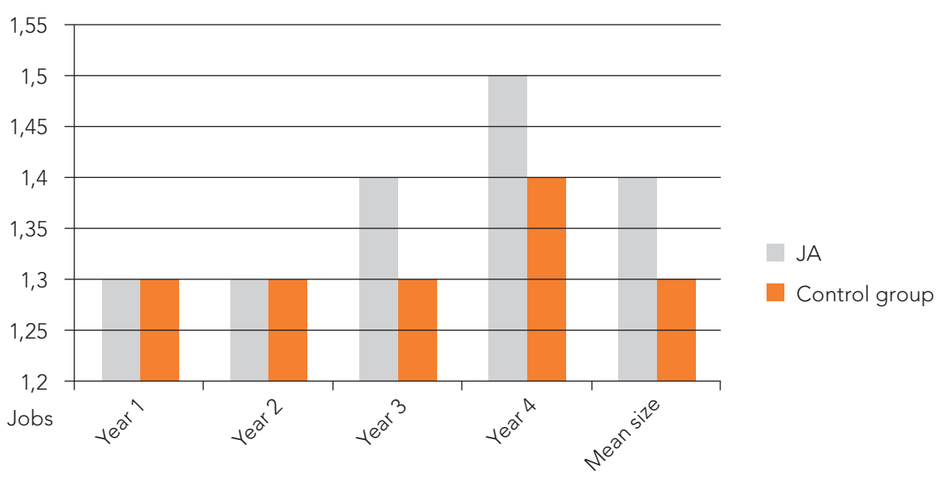


Figure 3b: Job creation in proprietorships/partnerships started by JA Sweden Alumni or control group



Figures 3a and 3b show that among corporations as well as among proprietorships/partnership, job creation is higher among the firms started by JA Sweden Alumni. The mean size of the firms vary somewhat depending on the year of investigation (primarily because there is a 'selection' of large corporations among both groups during the second year), but seen over the first four year of investigation, corporations started by JA Sweden Alumni are on average 7.5% larger in terms of job creation compared to the control group. The difference between JA Sweden Alumni and the control group in job creation of proprietorships/partnerships amounts to 3.5%. This represents the

smallest margin between the two groups in this report, and this data supports earlier research, job creation per se is not a central goal for entrepreneurs. A 3-7% difference in job creation may not sound like a significant finding considering that these figures are based on thousands of firms in each group. The positive effects of JACP experience are still important on a population level. Our analysis hence shows that firms started by JA Sweden Alumni are on average somewhat larger than firms started by the control group, and specifically that the job creation within corporations started by JA Sweden Alumni is higher compared to similar firms started by individuals without JACP experience. We now move on to investigate differences in revenues generated in firms started by the two groups.

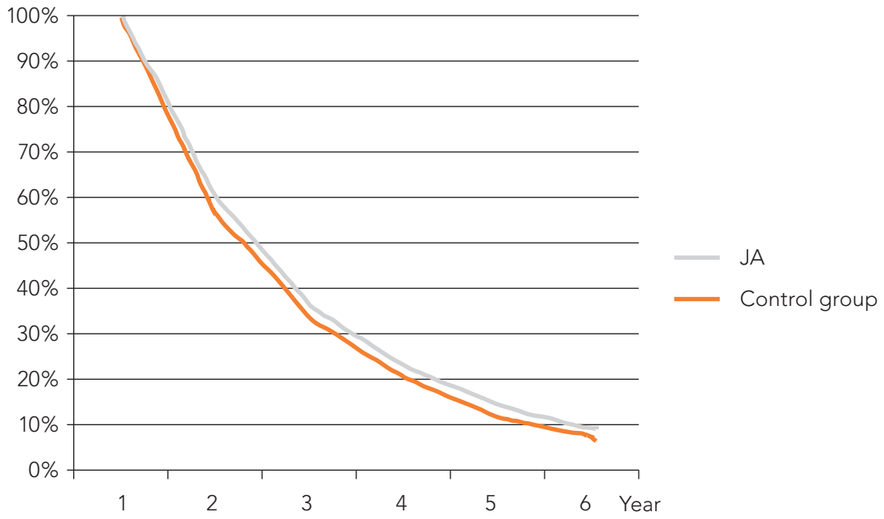
Table 7: Revenues in firms started by JA Sweden Alumni or control group (first 4 years of existence)

	Incorporations	Proprietorships/ partnerships
JA	6 329 744 kr	828 535 kr
Control group	5 021 829 kr	786 736 kr

Table 7 above shows mean revenues during the first four year of firm existence started by JA Sweden Alumni and the control group. We chose to focus on corporations in particular since corporations provide a "stronger" test of differences in performance as corporations are not tied to the founder's private economy. Table 7 shows that corporations started by JA Sweden Alumni exhibit revenues that on average are 20% higher than comparable firms started by the control group. The differences among the two groups for firms started as proprietorships/partnership is however only 6% higher for the JA group. In summary, we find that revenues are higher among firms started by JA Sweden Alumni than firms started by the control group.

As a final control of differences between firms started by the JA group and the control group, we also investigated survival of the firms in both groups. Figure 4 in an illustration of differences in survival between firms started by JA Sweden Alumni and firms started by the control group.

Figure 4: Differences in survival of firms started by JA Sweden Alumni or control group



In figure 4, we see the differences in survival rates of firms started by JA Sweden Alumni compared to the control group. It is apparent that firms founded by JA Sweden Alumni have slightly higher survival rates, but the year-to-year differences between the two groups is small. Differences in survival rates range from one to three percentage points. It should be noted that these figures include voluntary as well as involuntary disbandments.

5. CONCLUSIONS AND DISCUSSION

In this report, we have analyzed the societal outcomes of entrepreneurship among individuals with experience running a JACP Enterprise during high school – JA Sweden Alumni. We have focused on the economic outcomes of job creation, generated revenue, and tax payments. The analysis clearly reveals that the societal outcome in terms of jobs created and taxes paid by these firms is significant. As a group, JA Sweden Alumni have created tens of thousands of new jobs already as young entrepreneurs, and the tax payments from their companies amounts to billions SEK each year.

We can therefore with a high level of confidence conclude that the JA concept has had strong positive effects on economic outcomes in society. It should be stressed that the effects investigated in this report are based on a sample of young persons who recently finished their education. Studies from Denmark on an older population of the Danish equivalent to JA Sweden Alumni reveal even stronger effects in terms of increased entrepreneurial tendencies. Hence, it is likely that also the positive effects of JA training in Sweden will be even stronger later on in the careers of the JA Sweden Alumni investigated.

In the analyses where firms started by JA Sweden Alumni were compared with a control group of firms started in the same industry by individuals with identical age, gender, and length of education, we find that job creation as well as revenues generated are significantly higher among the firms started by JA Sweden Alumni. We also find that the new firms started by JA Sweden Alumni exhibit equal or higher survival rates compared to firms started by the control group. Taken together, these comparative findings provide strong support for the notion that the JA concept, to allow high school students to "experience" entrepreneurship by setting up, organizing, running, and finally dismantling an independent enterprise, seems a fruitful educational tool that improves both the quantity of entrepreneurship in society and the quality of entrepreneurial efforts. This is interesting for both educators and public policy makers since the relative costs and benefits from public education and support for various types of education and training efforts in entrepreneurship affects the societal returns of these efforts in terms of new firms, job creation, salary growth, and tax payments to the state. Hence, to prioritize and effectively organize such training programs, more knowledge about the benefits of both education and training efforts in entrepreneurship is needed. This report is a first effort in this direction.

Finally, we also found that the women with JACP experience where significantly more likely than other women to start ventures as entrepreneurs in adulthood, specifically in terms of the more ambitious entrepreneurial efforts of starting corporations. This provides an indication that JA and similar training efforts in elementary, high school, and even university studies may facilitate female entrepreneurship. Prior research has indicated that networking, entrepreneurial role models, and access to capital are important factors for female entrepreneurship. We know that role models are important for all budding entrepreneurs – not only women – and that role models have been indicated as particularly important for women entrepreneurs since the language and stereotypes surrounding entrepreneurship are still strongly male oriented.[19] It is possible that JACP experience encourages young women to challenge traditional stereotypes and interests them in a broader range of career options by letting them "try out" life as an entrepreneur and leader.

19 Holmquist, C. & Sundin, E. (Eds.). 2002. Företagerskan: Om kvinnor och entreprenörskap. Stockholm: SNS

Appendix 1: Industry classification of firms in the sample

INDUSTRY	JA	Control group
Company Services	16,8%	15,0%
Other services	10,6%	9,9%
Retail commerce	11,4%	8,6%
Unknown	8,6%	8,6%
Construction	5,6%	10,6%
Computers and computer consultancy	7,3%	7,2%
Recreation, culture, and sports	6,2%	7,5%
Hotel and restaurant	5,7%	7,2%
Wholesale	5,3%	3,6%
Farming	4,0%	3,7%
Transportation and shipping	2,6%	3,4%
Motor vehicle retail, gasoline retail	2,1%	2,2%
Forestry	1,9%	1,7%
Letting of premises	2,0%	1,5%
Publishing	1,2%	1,1%
Metalworks	1,1%	1,1%
Medical and health care	0,8%	1,2%
Education	0,7%	0,8%
Other manufacturing	0,7%	0,6%
Employment services	0,7%	0,4%
Wood manufacturing	0,5%	0,5%