On the determinants of entrepreneurial activity: Social norms, economic environment and individual characteristics

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Summary

■ This paper reviews the literature on the determinants of entrepreneurial activity and investigates to what extent differences in population, business environment and cultural values contribute to explaining differences in entrepreneurial activity across Swedish municipalities. Individual characteristics and business environment are the most important factors in explaining entrepreneurial choice. However, we find that cultural values and, most likely, social norms also matter. The data suggest that individuals are more likely to become entrepreneurs where there are more entrepreneurs, even if entrepreneurial income is lower. We explain why and to what extent this may be interpreted as evidence of social norms. ■

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Entrepreneurial activity and new firm formation are unquestionably considered to be engines of economic growth and innovation (Baumol, 1990; Murphy et al., 1991). As such, they are among the ultimate determinants of the large differences we observe in economic performance across countries and regions. The importance of new firm formation for growth has been recognized since Schumpeter (1934). Nevertheless, the economic profession is still far from a complete understanding of what drives an individual to start a new business.

The aim of this paper is to contribute to the understanding of the wide cross-sectional differences in entrepreneurial activity. There exists a large literature both in economics and management analyzing how different individual characteristics (such as initial wealth or risk aversion) and characteristics of the area where an individual lives (such as taxes) affect occupational choices. We review this literature. Then, using Swedish data, we analyze to what extent differences in individual characteristics and characteristics of the economic and social environments affect entrepreneurial activity. In particular, we try to evaluate the importance for entrepreneurial choice of cultural values *and* social norms that affect the way entrepreneurial activity is perceived in one's own reference group.

This analysis is useful for two reasons. First, Swedish data allow a detailed analysis of entrepreneurial choice. In particular, we have enough information on both individual and municipality characteristics to enable us to analyze how the community where an individual lives affects the decision to become an entrepreneur. Hence, to the

best of our knowledge, we are the first to be able to quantify to what extent the characteristics of the population and of the economic and social environment matter for explaining the observed differences in entrepreneurial activity. Second, the analysis is valuable from an economic policy point of view because it may help identify whether any economic policy instruments are available for spurring entrepreneurial activity. In fact, if we found that access to funds matters the most for the decision to become self-employed, the best means to spur entrepreneurship would be to provide subsidies and subsidized finance. If social norms matter, providing role models may be an equally effective way of spurring entrepreneurial activity. Any measures favoring entrepreneurial activity, however, such as subsidized financing, can be even more effective if occupational choice is subject to social influence, as the choice of a few individuals may have a major effect on the rest of the population.

This paper is organized as follows. Section 1 reviews the existing literature on the determinants of entrepreneurial choice, distinguishing between individual characteristics, economic characteristics of the area where an individual lives, and cultural values of the community to which an individual belongs. Section 2 describes the relative importance of different determinants of entrepreneurial activity (identified in the review section), for entrepreneurial activity in Sweden. Section 3 presents the results of Giannetti and Simonov (2003) showing that the observed effect of cultural values on individual occupational choice may depend on social norms. Section 4 concludes.

1. The determinants of entrepreneurial activity: A review of the literature

This section selectively reviews the available empirical evidence on the determinants of the decision to become an entrepreneur. These determinants have been categorized as follows: individual characteristics that make an individual more inclined to entrepreneurial activity; economic characteristics of the area where an individual lives that may affect the *income* from entrepreneurial activity and, consequently, the decision whether to become an entrepreneur; and cultural values of the community where an individual lives that may affect the *utility* (rather than the income) of the entrepreneurial activity, for instance, by influencing the prestige that is attributed to being an entrepreneur.

In what follows, the potential importance of cultural values and the social environment in general for studying cross-sectional differences in entrepreneurial activity first emerges from the puzzles—first of all the apparent large non-pecuniary benefits from the entrepreneurial activity—faced by studies considering only individual characteristics and economic environment. We then review some studies that start to take into account the effect of cultural values on the decision to become an entrepreneur.

1.1. Personal characteristics

One of the first papers analyzing the process of selection into self-employment is Lucas' (1978) model, showing that individuals who have higher entrepreneurial productivity start their own firms. In fact, both the economy's output and individual profits are maximized if more productive individuals organize the production by others. For the same reason, Lucas' model predicts that more productive entrepreneurs run larger firms. However, Lucas (1978) is silent on the individual characteristics that make an individual's productivity higher in entrepreneurial activity. Hence, his work has spurred several empirical studies analyzing which individual characteristics, associated with individual risk attitude or human capital, increase the probability of an individual becoming an entrepreneur.

In one of the first studies, Evans and Leighton (1989) find, using US data, that the probability of switching into self-employment is roughly independent of the total labor market experience. Additionally, poorer wage workers—that is, unemployed workers, lower-paid wage workers, and individuals who have changed jobs a lot—are more likely to enter into self-employment, thereby corroborating the idea that "misfits" are pushed into entrepreneurship. However, the relation between educational level and the propensity to become an entrepreneur remains dubious. In a sample of Swedish data, Wärneryd et al. (1987) find that better educated individuals are more likely to be involved in entrepreneurial activity, while Johansson (2000a) finds that in Finland, less educated individuals are more likely to become entrepreneurs. The effect of education on the decision to become an entrepreneur may ultimately differ across sectors, an issue that has so far been neglected in the literature.

A high propensity to take risks is also considered to be an important characteristic of entrepreneurs. Kihlstrom and Laffont (1979) show that, on balance, more risk averse individuals are expected to

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become workers, while the less risk averse become entrepreneurs. To try to test the implications of this model, empirical researchers have investigated whether an individual's age, which is believed to be negatively correlated with the degree of risk aversion, is negatively correlated with the decision to become an entrepreneur (see again Evans and Leighton, 1989). The data suggest a life cycle of entrepreneurial activity, with individuals becoming more likely to start a business as they approach the age of forty, and then less likely to do so. Hence, age does not seem to be a good proxy for capturing the individual propensity for risk-taking, but seems more related to wealth accumulation over the life cycle.

A key finding of Evans and Leighton (1989), which stimulated much of the ensuing literature, is that individuals with greater assets are more likely to switch into self-employment, all else equal. This result is consistent with the view that entrepreneurs face liquidity constraints, but it is difficult to interpret due to endogeneity problems. In principle, wealthier individuals could make better entrepreneurs or could have accumulated wealth in the prospect of starting a business. Therefore, a positive correlation between wealth and the propensity to become an entrepreneur is not definitive evidence of binding liquidity constraints. Evans and Jovanovic (1989) tackle the endogeneity issue using a structural model with predictions on the relation between the level of entrepreneurial earnings and initial assets, and the proportion of assets that more and less constrained entrepreneurs invest in their own businesses. They find that entrepreneurs with more initial assets earn a higher entrepreneurial income, suggesting that they can run businesses with a more efficient level of capital. Moreover, poorer individuals do devote a larger fraction of their wealth to their businesses, suggesting that liquidity constraints are indeed binding.

Holtz-Eakin et al. (1994) further explore the issue of whether liquidity constraints prevent entry into entrepreneurial activity using *exogenous* increases in wealth due to inheritances. In support of the existence of binding liquidity constraints, they find that an inheritance significantly increases the probability of an individual becoming an entrepreneur. Additionally, the relaxation of liquidity constraints increases the probability of an individual remaining in entrepreneurial activity. Similarly, Lindh and Ohlsson (1996) show that Swedish individuals who have received an inheritance or won the lottery are more likely to be self-employed. The importance of liquidity constraints and

access to capital is also supported by the empirical evidence presented by Blanchflower and Oswald (1998), and Guiso et al. (2002).

There is, however, still lack of agreement on whether liquidity constraints matter for entrepreneurial choice. In a recent paper, Hurst and Lusardi (2004) reconsider the effect of liquidity constraints on the transition to entrepreneurial activity. Using the US Panel Study of Income Dynamics, they find that the relation between wealth and the probability of becoming an entrepreneur is very weak and only holds for households in the top deciles of wealth distribution. They argue that this is extremely unlikely to be evidence of liquidity constraints as starting capital requirements are generally very low. Instead, very wealthy households may be more likely to start their own business because this provides some sort of private benefits.

It remains to be investigated why the empirical evidence on the relation between initial wealth and the decision to become an entrepreneur is so diverse. This relation may well differ depending on the institutional environment. Access to start-up capital may represent an obstacle to starting one's own business in countries with a less developed financial system than the US.

Other factors besides access to capital may be important in the decision to undertake entrepreneurial activity. In a recent paper, Lazear (2002) shows that skills matter, and proposes that "entrepreneurs are jacks-of-all-trades who may not excel in any one skill, but are competent at many." Hence, individuals with experience of many different roles would be more likely to become entrepreneurs. Compatibly with these theoretical implications, Lazear finds that MBAs with a more diverse curriculum are more inclined to become entrepreneurs. The obvious implication is that a less specialist and more versatile education may help spur the level of entrepreneurial activity.

The individual characteristics of entrepreneurs have also been analyzed by a rich management literature. Here, we just mention a few studies. Several researchers have documented that psychological factors, such as believing that one's own performance depends largely on one's own actions, positively affect the decision to become an entrepreneur (Reynolds, 1995). It is not clear, however, whether these factors matter because they are related to different preferences or because they are related to individual overconfidence as behavioral theories would suggest.

Our understanding of the determinants of the decision to become an entrepreneur is still far from complete. Survey evidence (Blanch-

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flower and Oswald, 1998) shows that entrepreneurs are happier than employees. This finding is corroborated by the studies analyzing income and return from entrepreneurial activity (Hamilton, 2000; Moskowitz and Vissing-Jorgensen, 2002). These studies go against the common wisdom that individuals who expect higher income from self-employment than from paid-employment start their own business (see, for instance, Johansson, 2000b). Both Hamilton (2000) and Moskowitz and Vissing-Jorgensen (2002) identify significant non-pecuniary benefits of entrepreneurial activity, as entrepreneurs seem to earn less than they would in paid employment. The existence of non-pecuniary benefits of entrepreneurial activity is compatible with the survey evidence showing that self-employed people enjoy greater job satisfaction. This, in turn, is likely to be related to the fact that individuals value autonomy and being "one's own boss" (Blanchflower and Oswald, 1998; Benz and Frey, 2004). Nevertheless, the origin of these non-pecuniary benefits is still largely unexplained. Non-pecuniary benefits could be individual- or location-specific. In the latter case, they might contribute to determining the observed differences in entrepreneurial activity. In Section 1.3, we come back to these issues and suggest that private benefits from entrepreneurial activity may be related to cultural values and social interactions.

1.2. Characteristics of the economic environment

While most of the literature to date has tried to identify the individual characteristics of the entrepreneur, certain strands of the literature also explain how the *economic* environment can affect entrepreneurial activity.

Government regulations, taxes, and laws may, of course, matter. Kihlstrom and Laffont (1983) show that in general equilibrium, high taxes do not necessarily lead to lower entrepreneurial activity and smaller firm size, as common sense would suggest. First, increases in the marginal tax rate on capital income cause investors to be less risk averse. If taxes also increase on other sources of income, more individuals will choose to become entrepreneurs. Second, since taxation on capital income has the effect of making individuals less risk averse, higher capital income taxes may actually increase firm size. Several empirical studies using US data show that taxes affect the decision to become self-employed. Carroll et al. (2000), Cullen and Gordon (2002) and Schuetze and Bruce (2004) show that more individuals choose to become self-employed and entrepreneurial companies grow

faster when personal income is relatively more heavily taxed than corporate income.

Regulations, such as the cost of entry, have also been shown to have a significant effect on the level of entrepreneurial activity. Djankov et al. (2002) reveal large cross-country differences in start-up costs. Fonseca et al. (2001) show that indeed, in OECD countries, fewer individuals become entrepreneurs where start-up costs are higher. Also, Klapper et al. (2004) find that bureaucratic regulations inhibit entry in a sample of European countries. However, regulations that expand access to finance by protecting investors and intellectual property rights are found to have a positive effect on entry.

Protection of creditor rights and the level of enforcement of law—as well as financial development in general—also matter because they affect the ability of potential entrepreneurs to access start-up funds (Giannetti, 2003). Additionally, the empirical evidence shows that individuals who work in areas where they are more exposed to a network of venture capitalists (such as Silicon Valley) are more likely to start their own businesses (Gompers et al., 2004).

Personal bankruptcy laws may also matter for different reasons. Fan and White (2002) find that, on the one hand, small firms are more likely to be turned down for loans if they are located in US states with higher bankruptcy exemptions. On the other hand, higher bankruptcy exemption levels benefit potential entrepreneurs who are risk averse by providing partial wealth insurance. Overall, the latter effect seems to prevail in the data: Entry is higher in states with high bankruptcy exemptions. Interestingly, incentives to risk-taking seem to matter more than access to start-up funds.

Finally, considering theories of agglomeration economies, we would predict that entrepreneurial activity is more concentrated in areas that exhibit a *regional advantage* (Krugman, 1991). As the literature on agglomeration economies shows, there might be knowledge spillovers across individuals, and individual productivity may be higher in areas where human capital is more concentrated (Glaeser et al., 1992; Rauch, 1993). In addition, the size of the market and the availability of inputs may spur the agglomeration of economic activity because they allow firms to minimize transport costs. This may, of course, spur entrepreneurial activity as well.

There is empirical support for the fact that some of these mechanisms may actually drive differences in entrepreneurial activity. Using Swedish data, Davidsson et al. (1994) show that the rate of new firm

formation depends on market conditions: market size, measured by population size and density, and market growth, measured by population and employment growth, have a positive impact on new firm formation. Consistent with the existence of Marshallian externalities, a pool of capable and experienced workers (measured by the overall and within-industry number of establishments) also has a positive impact on the formation of new firms.

Local labor demand may also be important. High unemployment can depress aggregate demand in a region, weakening the economic incentives to create new businesses (Storey and Johnson, 1987). On the other hand, when unemployment is high, individuals may be pushed into entrepreneurial activity; Martinez-Granado (2002) finds that unemployed people are more likely to start their own businesses. The evidence on the effect of unemployment on new businesses creation is largely mixed. Storey (1991) and Lindh and Ohlsson (1996) note that time-series analyses point to unemployment being, *ceteris paribus*, positively associated with the creation of new businesses, whereas cross-sectional studies appear to indicate the opposite.

To the extent that the economic environment is significant, there are a number of policy implications that could favor entrepreneurial activity. For example, more favorable corporate tax rates would probably encourage self-employment. Similarly, less regulation and red tape, and stronger protection of creditor rights could spur entrepreneurial activity and firm growth.

1.3. Characteristics of the social environment

More recently, economists have begun to recognize that social interactions can affect economic choices. Hence, they may also affect the decision to become an entrepreneur. Social interactions may be significant for several reasons. First, they may affect the stock of knowledge available in a community. In this case, individuals benefit from the business experience of other individuals in their community; they become more productive and hence more inclined to become entrepreneurs. To the extent that they create knowledge spillovers, social interactions create a regional advantage and act exactly like the agglomeration economies that we surveyed in the previous section.

Social interactions may also matter because they create *social norms*. Some influential papers have shown that social norms can affect disparate economic phenomena such as unemployment (Akerlof, 1980), saving behavior and growth (Cole et al., 1992), and participation in

welfare programs (Lindbeck et al., 1999). The argument is generally the following: the utility of an economic decision (e.g., how hard to look for a job) does not only depend on the monetary income and the level of effort involved in the economic choice, but also on the way the economic decision or outcome is regarded by the community where an individual lives. For instance, unemployment may be associated with a stigma effect in a society where the level of unemployment is low. In this case, an unemployed individual may try hard to find a job even if looking for a job involves large disutility of effort and low expected income. The opposite may happen in high unemployment communities, where the local social norm may not be to spend long hours in the workplace.

This way of reasoning may easily be applied to occupational choice and in particular to the decision of becoming an entrepreneur. Landier (2002) takes a first step in this direction. To explain the dramatic differences in innovation between the US and Europe, he models a situation in which there is a *stigma of failure* in some countries. Failure signals bad luck in some countries where there is no stigma effect, and incompetence in others. In fear of being considered incompetent, individuals may make a conservative decision regarding whether to continue a low productivity project. Consequently, they may become less entrepreneurial and forgo high productivity projects so as not to interrupt their current projects. This obviously does not happen in countries where failure just signals bad luck, and failed entrepreneurs can easily find funds to start a new project. Hence, they do not hesitate to foreclose low productivity projects and start new ones.

The reasons why social norms may matter, however, are broader. For instance, they may affect the status attributed to different occupations. In this respect, social norms can help explain the origin of nonpecuniary benefits from entrepreneurial activity. Social scientists other than economists have long recognized that the prestige that different social norms attribute to occupations can affect occupational choice. Balazs (1964), for instance, does not only explain the low level of entrepreneurship, but also the failure of China to achieve an industrial revolution despite the apparent prosperity of the Sung period (960-1270), using the desire for prestige, popularity and esteem.

The management literature also offers anecdotal evidence that status and recognition matter (Bhidé, 2000). However, the literature lacks an econometric investigation of these issues. It is difficult to

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conclude from the mere observation of the correlation between individual and aggregate occupational choices that social interactions matter. More individuals may decide to become entrepreneurs in a community because they have characteristics that make them more prone to entrepreneurial activity. Additionally, some communities could have certain characteristics, such as easier access to funds, which generate the correlation between individual and aggregate occupational choices.

There is indirect empirical evidence that social norms may matter. First, some studies (Lentz and Laband, 1990; Hout and Rosen, 2000; Dunn and Holtz-Eakin, 2000; Fairlie and Robb, 2003) have analyzed the effect of family background on the decision to become self-employed. The common finding is that individuals with relatives who are or were self-employed are more likely to become self-employed themselves. This correlation can be due to the fact that individuals share preferences for self-employment. The empirical evidence is definitively compatible with the existence of social norms. However, there may be other explanations. For instance, self-employed parents may transmit skills or other aspects of human capital. Alternatively, parents' or other relatives' assets may help relax the liquidity constraints of would-be entrepreneurs. The existing empirical evidence suggests that common preferences for entrepreneurial activity are the most likely explanation. Dunn and Holtz-Eakin (2000) find that parents' assets have a low explanatory power in the probability of someone becoming an entrepreneur. What matters most is whether the parents were self-employed. Furthermore, Fairlie and Robb (2003) find that although the children of self-employed people are more likely to become self-employed, their income is not higher than that of other self-employed individuals. Hence, they do not appear to have inherited superior skills.

A second strand of the literature analyzing the effects of cultural values on entrepreneurial activity may also provide some insights into social norms. In fact, social norms are part of the cultural values of a community and, as such, they are expected to be correlated with other cultural values that are more easily observable. Some researchers have shown that cultural values indeed affect the individual decision to become an entrepreneur. Guiso et al. (2003) show that in countries where the population is more religious, there is a greater acceptance of capitalism and, as a consequence, a more favorable environment for entrepreneurial activity.

Management scholars have analyzed similar issues using surveys. Using Swedish data, Davidsson (1995) and Davidsson and Wiklund (1997) compare values and beliefs among the population in different regions and relate the differences to regional variations in new firm formation rates. To identify values and beliefs that could be expected to have an effect on entrepreneurial behavior, they conduct a survey among 35-40-year-olds. The survey includes questions concerning achievement motivation, perceived profitability of entrepreneurial activity, and social status attributed to entrepreneurial activity. After controlling for other regional economic characteristics (population density, growth, unemployment rate, etc.), the overall results show that cultural values (defined from the average response within a region) are correlated with the growth of new enterprises in the way they would expect. Similarly, Uhlaner et al. (2002) study the effect of cultural variables on entrepreneurial activity in 14 OECD countries and show that greater life dissatisfaction, higher church attendance and left-right extremism are correlated with higher levels of self-employment.

Unfortunately, the results of these studies are not sufficient to establish a nexus of causality, as greater life satisfaction or even religious attitudes can be influenced by the level of entrepreneurial activity. Another serious limitation of these studies is that they are carried out with data aggregated at the regional level. Hence, they cannot control for individual characteristics that have an independent impact on the decision to start one's own business. If richer or better educated individuals share some cultural values, and at the same time are more inclined to run their own businesses, following the above-mentioned studies, we would conclude that cultural values matter. However, they could merely be correlated with omitted characteristics of the population, such as education and wealth.

To tackle these issues and understand whether cultural values indeed matter because they are related to social norms, it is necessary to do a natural experiment and analyze, for instance, whether communities with *ex ante* different cultural values react differently to economic reforms that make running one's own business more profitable. Giannetti and Simonov (2003) try to go in this direction. Their results suggest that social norms play an important role in the decision to become an entrepreneur. Before examining their work in more detail, however, it may be useful to take a closer look at the data to under-

stand the origins of the differences in the level of entrepreneurial activity in Sweden.

2. The determinants of entrepreneurial activity in Sweden

In this section, we combine different sources of data to evaluate the importance of individual characteristics, characteristics of the economic environment and cultural values to explain differences in entrepreneurial activity across Swedish municipalities. By focusing on differences in entrepreneurial activity within a relatively homogeneous country like Sweden, we neglect the effects of laws and regulations. However, we can better identify differences in cultural values which could otherwise depend on omitted institutional differences in a cross-country study.

2.1. Data

Our main data source is *Linda*, a register-based longitudinal data set for Sweden, providing information about household organization, employment status, sources of income, wealth, housing, and other socio-economic characteristics. *Linda* is a representative sample including some 300,000 households, or approximately 4 percent of the Swedish population. We match the individual data provided by *Linda* with information about the 289 Swedish municipalities (*kommuner*) provided by *Statistics Sweden*.[1] In addition, we use *Market Manager*, a data set collecting the balance sheets of all private and public limited liability companies in Sweden to obtain information about the number of limited liability firms in different municipalities and how they fund their operations.

Starting from 1995, *Linda* provides detailed information on whether an individual reports any capital income she has received from a company in which she works at least part-time and which she controls to the tax authority. This enables us to define entrepreneurial activity using tax returns, as did Holtz-Eakin et al. (1994). For this reason, we limit our sample to 1995-2000. Additionally, thanks to the detailed information reported in *Linda*, we can identify individuals

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[1] Until 1999, there were 288 municipalities, but one was subsequently divided bringing the total number to 289.

who receive salaries from a firm they own. We also classify these individuals as entrepreneurs.

Our definition of entrepreneur includes all individuals who report any capital income from a company in which they work at least part-time and which they control. Similarly to Holtz-Eakin et al. (1994), it includes both individuals who are truly self-employed and those who run their own business as a second job. We include these individuals because all businesses, even the most successful ones, are generally started with very small investments, and it is very difficult to predict *ex ante* which businesses will indeed be successful (Bhidé, 2000). Therefore, even individuals who run their own business on the side may become very successful entrepreneurs.

We include only individuals aged between 18 and 60 and delete farmers from the sample. According to our definition, and similarly to previous studies, approximately 5 percent of the population are involved in entrepreneurial activities not related to farming. This estimate is comparable to that of the OECD labor force statistics. For instance, Blanchflower (2004) reports that self-employment is 8.5 percent of total employment. The difference is imputable to the fact that in our sample, the population includes unemployed individuals and individuals who are not part of the labor force.

We study the decision to *become* self-employed, looking at individuals who, according to our definition, can be classified as entrepreneurs in year t but not in year t-1. This feature of entrepreneurial activity is less likely to depend on unobserved historical factors than the decision to *be* an entrepreneur. The individuals who become self-employed represent approximately 1 percent of the working-age population each year. We use a dummy variable equal to 1 if we observe that individual i becomes an entrepreneur, and equal to zero otherwise, as the dependent variable to estimate the probability of an individual becoming an entrepreneur.[2] We also study entrepreneurial income and the decision to abandon entrepreneurial activity.

To enable an analysis of whether individual and aggregate occupational choices are correlated, we need a proxy for entrepreneurial activity within the municipality. We use the proportion of entrepreneurs in the municipality population. To limit endogeneity problems, we use t-1 values of the proxy for entrepreneurship and the other independent variables to explain the probability of an individual becoming an

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[2] Individuals who already are entrepreneurs at t-1 are excluded from the sample.

entrepreneur at time t, entrepreneurial income at time t, and the probability of abandoning the entrepreneurial activity at time t. For this reason, we lose one year. This leaves us with 553,970 individuals, and a total of 2,166,780 individual-year observations from 1996 to 2000.

Table 1 shows that both the fraction of individuals who are entrepreneurs and those who become entrepreneurs vary substantially across municipalities. Some municipalities have almost 20 percent of the population involved in entrepreneurial activities, others less than 2 percent. Although the statistics presented include both cross-section and time-series variation, most of the variation comes from the cross-sectional differences among Swedish municipalities.

Table 1. Cross-municipalities differences in entrepreneurial activity

	Mean	Median	Mini-mum	Max.	Standard Deviation	Inter-quartile Range
Entrepreneurship	0.057	0.052	0.015	0.183	0.023	0.029
Entry rate	0.241	0.239	0.000	0.750	0.145	0.124
Exit rate	0.224	0.204	0.000	0.600	0.144	0.149
Entrepreneurial income (SEK 000)	103.81	99.43	14.48	444.35	29.81	24.72

Notes: The variable Entrepreneurship is the ratio of entrepreneurs to the population of a municipality; Entry rate is the ratio of new entrepreneurs relative to the number of entrepreneurs in a municipality; Exit rate is the ratio of entrepreneurs abandoning entrepreneurial activity to the number of entrepreneurs in a municipality. Entrepreneurial income is the average income per entrepreneur within the municipality. All individuals aged between 18 and 69 who have some entrepreneurial income are classified as entrepreneurs. Farmers have been excluded.
Sources: The statistics include observations for all 289 municipalities from 1999 to 2000 (288 from 1995 to 1998).

Table 2 presents definitions and summary statistics for the other independent variables. These can be classified into cultural and economic characteristics of the municipality and individual characteristics. Individual characteristics include salary, wealth, age, and some demographic characteristics. The municipality economic characteristics include income per capita, rate of unemployment and some vari-

ables capturing the municipality sectoral specialization. We review these variables in detail in the appendix. Here, we describe in detail the cultural characteristics of the municipality that constitute the main focus of our analysis. All information on municipality characteristics is from *Statistics Sweden* unless noted otherwise. The variables we include to capture differences in cultural values are the following:

- The proportion of individuals who are members of the state church, calculated as a municipality average from *Linda*. In Sweden, all individuals are born members of the state church and have to contribute a small amount of money, unless they leave the church.[3] To this extent, being part of the state church proxies for how religious an individual is. It is an imperfect proxy of religiosity to the extent that an individual may be very religious but have a different religious affiliation and thus withdraws from the state church. This is, however, the only individual and municipality level proxy for religious attitude we could find. We believe it is very important to analyze the relation between religiosity and entrepreneurial activity because, as Weber (1905) first argued, religious beliefs are associated with different economic attitudes. In a recent paper, Guiso et al. (2003) find that religion is positively associated with attitudes that are conducive to market-oriented institutions.

- The proportion of individuals who vote for right-wing parties, which also proxies for how business-oriented individuals are in a municipality.

- The trade credit of the median company, which may be related to the way business is conducted in different communities and has been calculated using company balance sheets from *Market Manager*. There is evidence that trade credit often proxies for informal finance made available through informal networks (Fafchamps, 2000). It may proxy for the level of trust within a community.

- The proportion of children enrolled in child day care centers relative to the municipality population. This variable captures how oriented towards market activities households in a municipality are. The number of children enrolled in child day care centers is larger if women have higher labor force participation. This, in turn, is related to the cultural values of a community.

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[3] In Sweden, individuals who are members of evangelical churches are often also members of the state church.

- The level of entrepreneurial activity within the municipality is also considered as a cultural characteristic. We are aware that this variable may be the result of unobserved differences in the population or in the economic characteristics of the municipality, and may capture effects that go well beyond the cultural characteristics of the municipality. However, in Section 3, we explain how, using appropriate instruments, its coefficient can provide a way of evaluating the importance of social norms, which are definitely part of the cultural values of a community.

2.2. Results

Table 3 presents the parameter estimates and sheds light on the relative importance of the determinants of entry in the entrepreneurial activity. Overall, notwithstanding if we include a large number of explanatory variables, less than 1 percent of the variance of the decision to become an entrepreneur is explained. This suggests that a lot remains to be done to uncover the determinants of occupational choice. Individual characteristics account for 78 percent of the explained variance in the probability of becoming an entrepreneur. Most of the variables have the sign we would expect from previous studies. We find that individuals who perceive a high wage premium, high salaries or who belong to households whose members earn high incomes are less likely to become entrepreneurs. Surprisingly, the individual's employment status has no effect on the decision to become an entrepreneur. Individuals with higher levels of education are significantly more likely to become entrepreneurs.

As previous studies have pointed out, it is likely that wealth increases the probability of an individual becoming an entrepreneur because liquidity constraints are less likely. However, the square of the wealth logarithm is generally negative and significant, suggesting that very wealthy individuals have weaker incentives to become entrepreneurs. The share of wealth invested in liquid assets does not seem to matter, as its coefficient is generally not significant at conventional levels.

The impact of age on the probability of an individual becoming an entrepreneur is non-linear: the linear term is positive and significant indicating that individuals are more likely to become entrepreneurs as they get older, but less likely after they reach the age 39 as the quadratic term is negative and significant. The life cycle in the probability of becoming an entrepreneur seems to be more related to wealth ac-

cumulation than to risk aversion, as young individuals are expected to be less risk averse but also less well off. Men and married individuals, and individuals with a larger number of children, are more likely to become entrepreneurs in almost all specifications. The same holds for individuals whose household composition has recently changed. These household characteristics do not seem to be positively related to risk aversion. If anything, individuals with larger households seem to need more resources and, consequently, are more likely to start their own businesses.

Economic characteristics of the municipality where an individual lives account for a further 16 percent of the explained variance. Interestingly, individuals are not more likely to become entrepreneurs in high unemployment regions, in fact they are even less likely to become entrepreneurs. Also, a high proportion of unemployed people enrolled in entrepreneurship programs does not significantly increase the probability of any individual becoming an entrepreneur. The remaining municipality characteristics that seem to matter most are related to industrial structure. First, any individual is more likely to become an entrepreneur in municipalities where the entry rate is, in the aggregate, higher. Second, the level of specialization, measured by the share of the top five industries in local employment to the share of the top five industries in national employment, matters. Compatibly with the existence of agglomeration economies, we find that any individual is more likely to become an entrepreneur in more specialized municipalities. Finally, competition, measured by the number of limited liability firms per employee in a municipality relative to the number of firms per employee in Sweden, has a positive effect on the decision to become an entrepreneur. This is also in line with the existence of positive technology spillovers.

Table 2. Descriptive statistics

Panel A. Municipality characteristics

Variable	Mean	Median	Minimum	Maximum	Standard Deviation	Interquartile Range
Characteristics of the social environment						
Proportion of individuals member of the state church	0.889	0.897	0.597	1.000	0.050	0.053
Trade credit of the median company	0.183	0.183	0.079	0.351	0.032	0.037
Proportion of children attending child day care centers	0.032	0.031	0.006	0.061	0.008	0.011
Proportion of votes for right-wing parties	0.434	0.435	0.101	0.855	.120	0.163
Characteristics of the economic environment						
Proportion of unemployed in entrepreneurship programs	0.00252	0.00219	0.00027	0.01147	0.135	0.00136
Unemployment rate	6.335	6.129	1.216	13.789	2.172	3.148
Proportion of financial sector employees	0.01	0.009	0.003	0.117	0.007	0.003
Specialization	0.451	0.438	0.341	0.706	0.066	0.078
Competition	1.96	1.944	0.703	3.561	0.503	0.644
Proportion of public sector employees	0.068	0.069	0.038	0.104	0.010	0.014

Panel A. continued……

Variable	Mean	Median	Minimum	Maximum	Standard Deviation	Interquartile Range
Characteristics of the economic environment						
Fraction of individuals born abroad	0.041	0.033	0.007	0.264	0.028	0.025
Income per capita	156662	154339	600	340051	21467	22817
Wealth tax per capita	1137	1030	300	6986	594	757
Distance from the closest airport	9.273	9.563	5.893	10.873	1.074	0.946

Notes: We report statistics for the proportion of individuals who are members of the state church, and the proportion of votes for right-wing parties in the 1998 parliamentary elections. Proportion of children attending child day care centers is the proportion of children attending child day care centers relative to the municipality population; Trade credit of the median company is the median ratio of trade credit to sales for the limited liabilities companies in municipalities (only companies with more than 4 employees were considered); Proportion of unemployed in entrepreneurship programs is the share of unemployed enrolled in entrepreneurship programs in the population; Unemployment rate is the rate of unemployment; Proportion of financial sector employees is the share of employment in the financial sector; Specialization is the share of employment in the five most important industries; Competition is the number of firms per employee in the municipality relative to the number of firms per employee in Sweden; Proportion of public sector employees is the share of employment in the public sector; fraction of individuals born abroad is the share of individuals born abroad in the population; Income per capita is income per capita; Wealth tax per capita is wealth tax per capita; Distance from the closest airport is the logarithm of the distance from the closest civilian airport

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Panel B. Individual characteristics

Variable	Mean	Median	Minimum	Maximum	Standard Deviation	Interquartile Range
Labor income	165803	162638	0.000	20373042	140689	156115
Income of other hh members	155115	135144	0.000	20373042	174085	237988
Wealth	573225	362003	0.01	485226445	2192395	637291
Share of liquid assets in hh wealth	-1.209	-0.561	-6.695	0.777	1.796	1.261
Age	40.488	40.000	19.000	69.000	11.776	17.000
Male	0.498	0.000	0.000	1.000		
Mover	0.093	0.000	0.000	1.000		
Changes in family structure	0.173	0.000	0.000	1.000		
Number of children	1.111	1.000	0.000	12.000	1.184	2.000
Married	0.551	1.000	0.000	1.000		
Divorced	0.072	0.000	0.000	1.000		
Unemployed	0.135	0.000	0.000	1.000		
Born abroad	0.096	0.000	0.000	1.000		
Wage premium	0.011	0.035	-6.663	4.175	0.569	0.390

Panel B. Continued….

Variable	Mean	Median	Minimum	Maximum	Standard Deviation	Interquartile Range
Church	0.824	1.000	0.000	1.000		
High school	0.482	0.000	0.000	1.000		
College	0.343	0.000	0.000	1.000		
Duration of self-employment > 1 year	0.586	1.000	0.000	1.000		

Notes: Labor income is the logarithm of the salaries of individual i; Income of other hh members is the income of the other members of the household; Wealth is the total taxable wealth in SEK; Share of liquid assets in hh wealth is the logarithm of proportion of individual wealth invested in bank accounts or securities; Age is an individual's age; Male is a dummy variable equal to 1 for males, and equal to zero otherwise; Mover is a dummy equal to 1 if the individual moved from a municipality to another during the previous year, and equal to zero otherwise; Changes in family structure is a dummy equal to 1 if there have been any changes in family structure during the previous year, and equal to zero otherwise; Number of children is the number of children; Married is a dummy equal to 1 if an individual is married, and equal to zero otherwise; Divorced is a dummy equal to 1 if an individual is divorced, and equal to zero otherwise; Unemployed is a dummy equal to 1 if an individual is unemployed, and equal to zero otherwise; Born Abroad is a dummy equal to 1 if an individual is born outside Sweden, and equal to zero otherwise; Wage premium is the residual of a regression including individual age and its square, the variables regarding the family status mentioned before, a dummy equal to 1 for individuals born abroad, a dummy equal to 1 for individuals who are registered as unemployed, and dummy variables controlling for an individual's education level, industry of employment, occupation, and seven dummies for the Swedish macro-regions; Church is a dummy variable equal to 1 if the individual is a member of the Church of Sweden, and equal to zero otherwise; High school is a dummy equal to 1 if the individual has a high school degree, and equal to zero otherwise; College is a dummy equal to 1 if the individual has a college degree, and equal to zero otherwise; Duration of self-employment > 1 year is a dummy variable equal to 1 if an individual has been self-employed for at least two consecutive years, and equal to zero otherwise. All observations from 1995 to 2000 are included.

Table 3. The decision to become an entrepreneur

	Estimate	*t*-stat
Characteristics of the social environment [fraction of explained variance =6.8%]		
Entrepreneurship	15.646	(19.86)
Proportion of children attending child day care centers	-1.919	(-0.99)
Proportion of individuals member of the state church	-0.037	(-0.10)
Share of votes for right-wing parties	-0.002	(-1.23)
Trade credit of the median company	0.218	(0.48)
Characteristics of the economic environment [fraction of explained variance =16.7%]		
Specialization	0.322	(1.60)
Competition	0.084	(2.71)
Population density	0.054	(0.61)
Unemployment rate	-0.013	(-1.22)
Fraction of unemployed in entrepreneurship education programs	11.420	(0.86)
Share of employees in financial sector	0.690	(0.62)
Fraction of public sector employees in population	1.344	(1.09)
Average income per capita	0.000	(-1.28)
Average wealth tax per capita	0.000	(1.57)
Unemployment rate*unemployed	-0.017	(-2.56)
Fraction of individuals born abroad * born abroad	-1.335	(-1.62)
Entry rate	6.191	(28.78)
Exit rate	0.097	(0.43)
Individual characteristics [fraction of explained variance =78.2%]		
Income of other hh members	-0.054	(-10.12)
Labor income	-0.086	(-7.47)
Wealth	0.043	(8.52)
Wealth**2	0.000	(-1.43)
Share of liquid assets in hh wealth	0.009	(1.47)
Age	0.156	(21.32)
Age**2	-0.002	(-17.81)
Male	0.882	(38.68)
Mover	0.000	(-0.01)
Changes in family structure	0.051	(1.71)
Number of children	0.065	(5.89)

Table 3. Continued….

	Estimate	*t*-stat
Characteristics of the social environment [fraction of explained variance =6.8%]		
Married	0.246	(8.71)
Divorced	0.036	(0.87)
Unemployed	-0.023	(-0.34)
Born abroad	-0.124	(-1.77)
Wage premium	-0.232	(-10.88)
Church	-0.060	(-1.82)
High school	0.104	(2.90)
College	0.491	(13.47)
Adj R2	0.0062	
N	1440097	

Notes: The dependent variable is a dichotomic variable with a value equal to 1 if individual i becomes an entrepreneur at time t, and equal to zero otherwise. Individuals who were already entrepreneurs at time *t*-1 are excluded. Entrepreneurship is defined as the proportion of individuals in a municipality who are entrepreneurs. The explanatory variables are defined in Tables 1 and 2. All equations include four year dummies, seven regional dummies, and eleven dummies that refer to the sector where an individual is employed. The equation is estimated using a linear probability model (LPM), which is estimated using Huber-White estimates. The standard errors are corrected for heteroskedasticity and take into account that observations for the same municipality may be correlated. T-statistics are reported in parentheses. We also report the Adjusted R-Squared and the fraction of explained variance for each group of variables. Estimates are multiplied by 100.

Yet, there exists a residual 7 percent explained by the level of entrepreneurial activity and the proxies for the cultural values of the municipality. This suggests that differences in culture, and social norms in particular, can potentially account for some of the observed differences in entrepreneurial activity. The cultural values of the municipality, however, do not enter significantly in the regression. Hence, if culture matters, it should be proxied by the level of entrepreneurial activity. Our proxy for entrepreneurial activity can be correlated with other individual or municipality characteristics that we do not observe but that affect occupational choice. In the next section, we will explain Giannetti and Simonov's (2003) methodology, suggesting that the level of entrepreneurial activity may proxy for social norms.

The analysis of the determinants of entrepreneurial income suggests a picture compatible with the interpretation that in high entrepreneurship municipalities, the decision to become an entrepreneur may be driven by non-economic considerations. We estimate the equation for entrepreneurial income using a two-stage procedure to correct for self-selection. In the first stage, we estimate the probability of individual *i being* an entrepreneur, using the same specification that we use to estimate the probability of individual *i becoming* an entrepreneur. To correct the bias due to self-selection, we use the first-stage estimates to compute the Mill ratio. In the second stage, we include the inverse Mill ratio in the equation for individual income—along with our main variable of interest, i.e., capturing social interactions—and control variables that pick up heterogeneity in individual and municipality characteristics expected to influence entrepreneurial income.[4] The parameter estimates are presented in Table 4.

The selection equation shows that the probability of being an entrepreneur substantially has the same determinants as the decision to become an entrepreneur. In particular, the level of entrepreneurial activity within the municipality is unsurprisingly positively related to the probability that an individual is an entrepreneur.

More importantly, we find that entrepreneurial income is lower in high entrepreneurship municipalities and more than 10 percent of the explained variance in individual entrepreneurial income are explained by differences in cultural values and entrepreneurial activity across municipalities. Interestingly, in this case too, the other variables related to cultural values within the municipality—other than the proxy for entrepreneurial activity—only marginally contribute to explaining entrepreneurial income. It emerges, however, that entrepreneurial income is lower in municipalities where entrepreneurs make more use of trade credit, indicating that informal networks can help fostering entrepreneurial activity.

Note that the result that entrepreneurial income is lower in high entrepreneurship municipalities cannot be affected by the fact that entrepreneurs underreport income. In fact, we do not compare the income of the self-employed with the income of individuals in paid-employment. We compare entrepreneurial income across municipalities. To the extent that individuals have similar incentives to avoid

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[4] The system is identified because in the second stage, we do not include the individual's salary and the income of the other household members, which should be unrelated to the productivity of the entrepreneurial activity.

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taxes across different municipalities, there is no reason why tax avoidance should systematically lower entrepreneurial income within a municipality.

There is also no evidence that entrepreneurial activity is lower in high entrepreneurship municipalities because of competition. First, to account for this effect, we include a variable measuring the number of firms per employee in a municipality relative to the number of firms per employee in Sweden, which Glaeser at al. (1992) use as a proxy for competition. This variable is indeed negative and significant, and should capture the effect of competition on profits. Second, we re-estimate the entrepreneurial income equation including the square of the proportion of entrepreneurs: the linear term remains negative and significant, while the quadratic term is positive. The positive effect, however, prevails only for very high values of the proportion of entrepreneurs. Most importantly, it suggests that profits are higher particularly when competition should be stronger, invalidating the hypothesis that high competition can explain the negative coefficient of our variable of interest. If anything, it seems that only in municipalities where entrepreneurship is very high are entrepreneurial choices driven by profits.

Table 4. Income from entrepreneurial activity

	First Stage			Second Stage			
	Estimate	t-stat	100xME	Estimate	t-stat	Estimate	t-stat
Characteristics of the social environment [fraction of explained variance =11.5%]							
Entrepreneurship	3.3762	(27.21)	33.278	-4.2344	(-13.48)	-8.5783	(-9.29)
Entrepreneurship**2						20.4867	(4.90)
Proportion of children attending child day care centers				0.7172	(1.03)	0.7193	(1.03)
Proportion of individuals member of the state church				-0.3192	(-2.29)	-0.1651	(-1.17)
Share of votes for right-wing parties				-0.0011	(-1.84)	-0.0008	(-1.30)
Trade credit of the median company				-0.5438	(-3.49)	-0.5264	(-3.38)
Characteristics of the economic environment [fraction of explained variance =23.6%]							
Unemployment rate*unemployed	-0.0015	(-0.71)	0.003	0.0063	(1.52)	0.0064	(1.56)
Fraction of individuals born abroad * born abroad	-0.1668	(-0.73)	-2.033	-0.5203	(-1.13)	-0.5327	(-1.15)
Fraction of unemployed in entrepreneurship education programs	-0.96	(-0.33)	1.140	0.0242	(0.42)	0.0375	(0.65)
Unemployment rate	-0.0019	(-0.90)	-0.141	0.0125	(2.81)	0.0089	(1.96)
Specialization	-0.0535	(-1.10)	-0.398	-0.1012	(-1.05)	-0.1264	(-1.31)
Competition	0.0073	(1.15)	0.345	-0.0484	(-3.74)	-0.0400	(-3.06)
Population density				-0.0675	(-2.60)	-0.0600	(-2.31)
Fraction of public sector employees in population				-0.9743	(-2.24)	-0.8569	(-1.95)
Average income per capita				0.0000	(-0.61)	0.0000	(-0.70)
Average wealth tax per capita				0.0000	(1.67)	0.0001	(1.83)
Share of employees in financial sector	0.8428	(3.63)	6.503	-0.9253	(-1.90)	-1.0053	(-2.06)
Entry rate	1.1483	(26.15)	4.692	-1.6274	(-16.01)	-1.6792	(-16.41)
Exit rate	-0.5871	(-11.40)	-6.206	0.3767	(3.55)	0.3772	(3.55)

Table 4. Continued….

	First Stage			Second Stage			
	Estimate	t-stat	100xME	Estimate	t-stat	Estimate	t-stat
Individual characteristics [fraction of explained variance =64.9%]							
Income of other hh members	-0.0294	(-22.96)	-0.218				
Labor income	-0.0026	(-21.32)	-0.019				
Wealth	0.0127	(11.21)	0.052	-0.0219	(-10.06)	-0.0218	(-10.01)
Wealth**2	-0.0001	(-2.62)	0.098	0.0004	(4.48)	0.0004	(4.44)
Share of liquid assets in hh wealth	0.0079	(5.42)	-0.001	-0.0036	(-1.25)	-0.0038	(-1.32)
Age	0.0672	(33.89)	0.424	-0.0877	(-16.48)	-0.0878	(-16.50)
Age**2	-0.0007	(-29.46)	-0.004	0.0010	(15.88)	0.0010	(15.90)
Male	0.1800	(35.11)	1.318	-0.0600	(-4.75)	-0.0604	(-4.77)
Mover	0.2093	(20.92)	1.542	-0.3351	(-13.91)	-0.3362	(-13.94)
Changes in family structure	0.0759	(11.56)	0.558	-0.0780	(-5.74)	-0.0783	(-5.76)
Number of children	0.0060	(2.40)	0.085	0.0259	(5.30)	0.0261	(5.34)
Married	0.0415	(6.17)	0.258	-0.0070	(-0.54)	-0.0072	(-0.55)
Divorced	-0.0765	(-7.01)	-0.581	0.1750	(7.95)	0.1752	(7.95)
Unemployed	-0.1239	(-6.04)	-1.004	0.0014	(0.03)	0.0009	(0.02)
Born abroad	-0.0296	(-1.60)	-0.164	0.1167	(3.14)	0.1177	(3.16)
Wage premium	-0.0179	(-4.29)	-0.132	0.1796	(22.20)	0.1795	(22.16)
Church				-0.0338	(-3.08)	-0.0331	(-3.01)
High school	0.0224	(3.34)	0.168	-0.0649	(-4.30)	-0.0658	(-4.36)
College	0.0738	(10.37)	0.519	-0.2513	(-16.48)	-0.2531	(-16.57)
Lambda				-1.9426	(-31.39)	-1.9495	(-31.45)

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Table 4. Continued....

	First Stage			Second Stage			
	Estimate	t-stat	100xME	Estimate	t-stat	Estimate	t-stat
Pseudo R2	0.47			0.0694		0.0697	
N	1704373					83276	
Log-likelihood	-167386						

Note: In the first stage, the dependent variable is a dummy variable equal to 1 if an individual is an entrepreneur at time t, and equal to zero otherwise. In the second stage, the dependent variable is the income from entrepreneurial activity. Entrepreneurship is defined as the proportion of individuals who are entrepreneurs in a municipality. The explanatory variables are defined in Tables 1 and 2. Lambda is the inverse Mill ratio. All equations include four year dummies, seven regional dummies, and eleven dummies that refer to the sector where an individual is employed. The first-stage equation has been estimated using a probit model. The second-stage equation has been estimated using Huber-White estimates. The marginal effect (ME) has been multiplied by 100. The standard errors are corrected for heteroskedasticity and take into account that observations for the same municipality may be correlated. T-statistics are reported in parentheses. The marginal effects have been calculated setting the variables equal to the average. We also report Adjusted R-Squared (Pseudo R-Squared for first stage estimates) and the fraction of explained variance for each group of variables in the second stage.

Table 5. The decision to abandon entrepreneurial activity

	Estimate	*t*-stat
Characteristics of the social environment [fraction of explained variance =1.6%]		
Entrepreneurship	-8.655	(-2.86)
Proportion of children attending child day care centers	48.478	(1.55)
Proportion of individuals member of the state church	-7.372	(-1.18)
Share of votes for right-wing parties	-0.002	(-0.07)
Trade credit of the median company	2.562	(0.38)
Characteristics of the economic environment [fraction of explained variance =32.2%]		
Specialization	-1.708	(-0.50)
Competition	-0.600	(-1.34)
Population density	0.411	(0.32)
Unemployment rate	0.217	(1.29)
Fraction of unemployed in entrepreneurship education programs	54.329	(0.21)
Share of employees in financial sector	-52.663	(-2.82)
Fraction of public sector employees in population	4.185	(0.22)
Average income per capita	-0.001	(-1.76)
Average wealth tax per capita	0.002	(1.40)
Fraction of individuals born abroad * born abroad	-24.839	(-1.55)
Entry rate	-8.470	(-2.72)
Exit rate	77.532	(21.56)
Individual characteristics [fraction of explained variance =66.2%]		
Duration of self-employment > 1 year	-15.297	(-36.56)
Income of other hh members	0.207	(2.55)
Entr. Income	-6.749	(-36.14)
Wealth	-0.562	(-6.86)
Wealth**2	0.011	(3.84)
Share of liquid assets in hh wealth	-0.157	(-1.53)
Age	-0.313	(-1.70)
Age**2	0.003	(1.22)
Male	0.802	(2.29)
Mover	4.319	(3.35)
Changes in family structure	0.022	(0.05)
Number of children	-0.013	(-0.07)

Table 5. Continued….

	Estimate	*t*-stat
Individual characteristics [fraction of explained variance =66.2%]		
Married	0.425	(0.90)
Divorced	1.668	(2.03)
Born abroad	1.974	(1.54)
Wage premium	1.702	(4.74)
Church	-0.942	(-1.77)
High school	0.513	(0.92)
College	0.601	(1.09)
Adj R2	0.1018	
N	61151	

Notes: The dependent variable is a dichotomic variable with a value equal to 1 if individual *i* abandons the entrepreneurial activity at time *t*, and equal to zero if she continues to be an entrepreneur. Individuals who were not entrepreneurs at time *t*-1 are excluded. Entrepreneurship is defined as the proportion of individuals in a municipality who are entrepreneurs. The explanatory variables are defined in Tables 1 and 2. All equations include three year dummies, seven regional dummies, and eleven dummies that refer to the sector where an individual is employed. The equation is estimated using a linear probability model (LPM). The latter is estimated using Huber-White estimates. The standard errors are corrected for heteroskedasticity and take into account that observations for the same municipality may be correlated. T-statistics are reported in parentheses. We also report the Adjusted R-Squared and the fraction of explained variance for each group of variables. Estimates are multiplied by 100.

For entrepreneurial income as well as for the decision to become an entrepreneur, more than 50 percent of the explained variance is due to individual heterogeneity. In general, it seems that individuals who appear more inclined to become entrepreneurs run less profitable businesses. Somewhat surprisingly, better educated individuals, males and middle-aged individuals earn lower income from the entrepreneurial activity. This finding must be interpreted considering that we include 11 sectoral dummies and suggests that returns to education are realized by choosing sectors with higher profitability. Educated individuals—and individuals with other characteristics that make them more inclined to be self-employed—more often self-select to be entrepreneurs in these sectors and hence, have lower income *on average*. Additionally, better educated individuals are more likely to run their own business as a second job and dedicate fewer hours to the

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entrepreneurial activity. Entrepreneurial income also appears to be related to unobservable skills as individuals who earn a wage premium over other workers with similar observable characteristics also run more profitable firms.

Finally, more than 20 percent of the explained variance is accounted for by the economic characteristics of the municipality. In particular, profits are lower where more firms enter, perhaps indicating that there are more young firms, and higher where the exit rate is lower. The availability of funds, proxied by the local level of financial development, seems to allow more inefficient firms to remain in business.

We also analyze the determinants of the decision to abandon entrepreneurial activity. Estimates are presented in Table 5. Interestingly, this decision appears to be purely economic: The variables capturing cultural values and the level of entrepreneurial activity within the municipality account for less than 2 percent of the explained variance. Conversely, the explanatory power of the economic characteristics of the municipality is larger than for the other aspects of entrepreneurial activity we have examined. The estimates suggest that, *ceteris paribus,* in richer municipalities (as measured by income per capita) or where the financial sector is more developed, fewer entrepreneurs abandon entrepreneurial activity. Local growth also appears to be important as fewer entrepreneurs abandon entrepreneurial activity when more companies are created and fewer go out of business.

Our impression that the decision to abandon entrepreneurial activity is purely economic is confirmed by the fact that individuals with a higher entrepreneurial income are more likely to continue to engage in entrepreneurial activity. Furthermore, as one would expect, individuals who move and who are very young or very old are more likely to abandon entrepreneurial activity. Finally, consistently with previous studies (Taylor, 2004), we find that individuals who have been self-employed for at least two consecutive years are more likely to persist in the entrepreneurial activity.

3. Empirical evidence on social norms

Identifying the effect of social norms on the decision to become an entrepreneur is a challenging task. The correlation between the individual and aggregate occupational choices that social norms would imply could depend on several other factors such as unobserved char-

acteristics of the community or the population. For instance, if agglomeration economies matter or widespread entrepreneurial activity generates knowledge spillovers, we expect to observe an analogous correlation between individual and aggregate occupational choices.

To address these problems, Giannetti and Simonov (2003) proceed as follows. First, using a simple model, they formulate predictions about the expected effect of the level of entrepreneurial activity within a municipality on individual occupational choice *and* entrepreneurial income, respectively. If social norms matter, not only do they expect to find that the probability of an individual becoming an entrepreneur is positively affected by the level of entrepreneurial activity within the municipality, but also that the entrepreneurial income of individuals with similar characteristics is lower where entrepreneurial activity is more widespread, because an individual derives utility from becoming an entrepreneur regardless of profits. This prediction contrasts with what agglomeration economies or knowledge spillovers would imply (see Glaeser et al., 1992; Rauch, 1993), as entrepreneurial productivity and therefore an individual's entrepreneurial income would be higher if these factors mattered.

The task of testing these hypotheses, however, is far from straightforward. One might observe a positive (negative) correlation between the proxy for entrepreneurial activity within a municipality and the probability of an individual becoming an entrepreneur (entrepreneurial income) because the econometrician does not observe individual or municipality characteristics that are totally unrelated to social norms.

In order to be able to draw conclusions, Giannetti and Simonov (2003) use the methodology suggested by Case and Katz (1991), and identify some instruments that are *not* expected to directly affect an individual's decision to become an entrepreneur, but that do affect entrepreneurial activity, *without* being affected by it. These instruments are the proportion of pensioners who are members of the state church, and the proportion of individuals who voted for right-wing parties in the early 1980's.

These cultural characteristics of the municipality population are unlikely to directly affect the decision to become an entrepreneur, if controlling, as Giannetti and Simonov do, for roughly the corresponding individual cultural traits and the demand conditions of the labor market, which could be affected by a rightist local administration, for instance through the availability of jobs in the public sector.

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The estimates presented in the previous section show that their supposition is correct.

A potential problem is, however, that municipality culture—and therefore religious beliefs and political orientation—could be affected by the level of entrepreneurial activity. Giannetti and Simonov (2003) try to overcome this problem by using predetermined values of the cultural values expected to affect entrepreneurial activity dating back to the early 1980's. In particular, the proportion of individuals who voted for right-wing parties in the early 1980's is likely to be exogenous to the level of entrepreneurial activity in the second half of the 1990's. Nevertheless, the political orientation of the municipality—which may be related to the prestige attributed to self-employment versus paid employment—may have affected the attitude towards entrepreneurial activity once the institutions—and, in particular, the corporate tax rate—became more favorable to it.

For similar reasons, the proportion of *pensioners* (and *not* the proportion of the population of working age) who are members of the state church can be used as an instrument. As many have pointed out before (see Guiso et al., 2003), religious beliefs affect attitudes towards entrepreneurial activity. However, the religious beliefs of pensioners, which are most often lifetime beliefs, are unlikely to have been affected by the current level of entrepreneurial activity. Both instruments explain—jointly *and* disjointly—a large part of the variance of the proportion of entrepreneurs. Hence, the estimates do not have in the problems that arise when instruments are weak (Bound et al. 1995).

Giannetti and Simonov's (2003) results suggest that individuals are more likely to become entrepreneurs in municipalities where entrepreneurship is more widespread, even after controlling for individual characteristics and local conditions such as wages, rate of unemployment, and employment in the public sector. Moreover, in municipalities with a higher proportion of entrepreneurs, entrepreneurial income is significantly lower. These findings are robust to the inclusion of 109 dummies that control for local labor markets. Local labor markets are analytical regions created by *Statistics Sweden* and based upon the observed commuting patterns. Basically, this regional division means that moving costs must be incurred if an individual wants to find a job outside her local labor market. These dummies obviously help control for omitted characteristics of the area where an individual lives that may affect her propensity to become an entrepreneur, as

individuals living in the same labor market area face similar economic incentives.

Overall, Giannetti and Simonov's (2003) findings support the hypothesis that social norms influence entrepreneurial choice. They are also confirmed by several robustness checks. First, by looking at the behavior of movers, it can be excluded that the correlation between individual and aggregate occupational choices is due to the sorting of individuals more prone to entrepreneurial activity in some municipalities.

Second, to increase the confidence in their identification strategy, Giannetti and Simonov check whether the results continue to hold in the subsample of young individuals who were not part of the labor force in the early 1980's, and who definitively *cannot* in any way have affected the cultural values used as instruments. Although the sample is dramatically reduced, the results remain qualitatively invariant. This confirms that the estimates they present are unlikely to be affected by endogeneity problems.

Third, since social interactions are more intense in small communities, the correlation between individual and aggregate occupational choices is expected to be stronger in non-urban municipalities. If urban municipalities were just as important for their findings, it would be more likely that some omitted factors correlated with the instruments could be driving the results. Instead, in accordance with the hypothesis that social norms matter, the results appear to mainly be due to the correlation between individual and aggregate occupational choices in *non-urban* municipalities.

Finally, the results lose significance if a municipality's distance from the closest airport is used to instrument the level of entrepreneurial activity. This distance is also unlikely to directly affect an individual's decision to become an entrepreneur, after having controlled for other municipality characteristics. However, it is more likely to capture the variation in the proportion of entrepreneurship that is related to possibly unobserved economic characteristics of the municipality or of the population. The loss of significance of the estimates suggests that, if anything, omitted economic-related characteristics have a downward bias on the estimates of the importance of social norms.

4. Conclusions

This paper has surveyed the determinants of the decision to become an entrepreneur and has attempted to quantify their relative importance. Individual characteristics seem to explain most of the cross-sectional variation in the decision to become an entrepreneur, followed by municipality characteristics. Local cultural values and the level of entrepreneurial activity also affect the decision to become an entrepreneur. The evidence suggests that where the culture makes entrepreneurial activity attractive, more individuals become entrepreneurs *even though* entrepreneurial profits are lower. The results discussed suggest that some of the observed differences in entrepreneurial activity may be explained by social norms which, for instance, make different professions desirable and well regarded in different communities.

The most striking results, however, are that a large part of the variance of the decision to become an entrepreneur is unexplained and that different studies lack agreement on whether different policy instruments such as access to funds or education can affect the decision to become an entrepreneur. While our results suggest that the provision of role models may contribute to spurring entrepreneurial activity thanks to social interactions, more research is needed to identify the determinants of entrepreneurial choice and derive more conclusive policy implications.

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Appendix

The **individual characteristics** included in the econometric analysis are defined as follows:

- The logarithm of the salary received by an individual (Labor income) and the logarithm of the income of the other members of the household (Income of other hh members), both measured the year before the occupational choice. These variables proxy for how remunerative the status of employee is for an individual, and the resources available to the household. While an increase in non-entrepreneurial income is expected to decrease the probability of an individual becoming an entrepreneur, the income of the other household members may have a positive effect because more resources are available to set up a new business.

- The logarithm of wealth (Wealth) and the square of the logarithm of wealth (Wealth^2) of an individual's household. Wealth includes all financial and real assets of the household that are subject to wealth tax plus one öre in order not to lose the observations of households with zero wealth. Household wealth has been included because wealthy individuals are less likely to be subject to liquidity constraints that keep them from starting a business (Evans and Jovanovic, 1989; Holtz-Eakin, Joulfaian and Rosen, 1994). We also include the quadratic term because individuals who are already very wealthy may not have an incentive to undertake entrepreneurial activity or may be more likely to do so if being self-employed is regarded as a sort of luxury good.

- The logarithm of ratio of liquid assets, including securities and bank accounts, to total wealth (Share of Liquid Assets in hh wealth), which takes into account that only the most liquid assets may be available to fund a new business.

- The individual age (Age) and its square (Age^2), which are commonly believed to be negatively correlated with risk aversion (Evans and Leighton, 1989), and should therefore be negatively related to the probability of an individual setting up her own business.

- A dummy equal to 1 for men (Male), to account for possible gender differences.

- A dummy variable equal to 1 if an individual is born abroad (Born Abroad) and zero otherwise; and, similarly, a dummy variable equal to 1 if an individual changed municipality during the last year and

zero otherwise (Mover), and a dummy equal to 1 if an individual was unemployed the year before commencing entrepreneurial activity and equal to zero otherwise (Unemployed). An individual has been defined as unemployed if she receives unemployment benefits.

- A dummy equal to 1 for married individuals (Married), a dummy equal to 1 for divorced individuals (Divorced), the logarithm of the number of children in the household (Number of children), a dummy equal to 1 if either the number of children or the marital status changed in the last year (Changes in family structure). These variables may be related to the risk aversion of an individual because they proxy for the responsibility of an individual towards the household (Evans and Leighton, 1989). Moreover, individuals whose status recently changed may have a stronger need for extra resources. This may affect their willingness to start a new business.

- A dummy equal to 1 if an individual has a college degree, and equal to zero otherwise (College); and a dummy equal to one if an individual has high school degree and equal to zero otherwise (High school).

- The wage premium or discount (Wage premium) an individual received the year before becoming self-employed, once the observable characteristics of the individual and her job have been taken into account. This variable has been computed as the residual of the regression of the individual's salary on her age and its square, the variables regarding the family status mentioned before, a dummy equal to 1 for individuals born abroad, a dummy equal to 1 for individuals with a handicap, a dummy equal to 1 for individuals who are registered as unemployed, and finally dummy variables controlling for an individual's education level, the industry of employment, the occupation, and the seven Swedish macro-regions.

- In the equation for the probability of abandoning the entrepreneurial activity, we also include a dummy variable (Duration of self-employment > 1 year), which is set equal to 1 if an individual has been an entrepreneur for two consecutive years, and equal to zero otherwise. This variable captures the fact that the probability of exit decreases in the time spent in the entrepreneurial activity. Unfortunately, we do not observe when an individual has become self-employed and therefore, we cannot control for the duration of self-employment. This variable, however, captures that individuals

who have been self-employed for at least two years are less likely to exit (Taylor, 2004)

The **economic characteristics of the municipality** in the econometric analysis are captured by the following variables, which, unless noted otherwise, are directly provided by *Statistics Sweden*:

- The level of unemployment in a municipality (Unemployment rate) and the share of employment in the public sector (Proportion of public sector employees), which account for the demand conditions in the local labor market.

- The share of population enrolled in entrepreneurship programs for unemployed (Proportion of unemployed in entrepreneurship programs), which is obviously expected to have a positive effect on the decision to become an entrepreneur.

- The proportion of employment in the financial sector (Proportion of financial sector employees). This variable captures the availability of financial services within a municipality and controls for the fact that it may be easier to access funds in municipalities in which there are more bank branches. This is the best proxy for financial development at the municipality level we could find. Although this variable is endogenous, and more bank branches may certainly depend on a higher demand for financial services in municipalities with more entrepreneurs, we include it as a control variable because we know that the rate of firm creation is positively affected by financial development (see, for instance, Guiso et al., 2002). If we did not control for this variable, one of the reasons why the stock of entrepreneurs in a municipality may help explain occupational choices could be the greater availability of financial services.

- The share of the top five industries in local employment to the share of the top five industries in national employment (Specialization), which provides a measure of specialization of the municipality. This variable proxies for the existence of dynamic externalities (Glaeser et al., 1992), which may increase productivity in regions that specialize in few sectors, and could have an independent effect on the choice to become an entrepreneur.

- The number of limited liability firms per employee in a municipality relative to the number of limited liability firms per employee in

Sweden (Competition).[5] This variable, computed using *Market Manager*, measures average firm size in a municipality, and has been used as a proxy for competition in the labor market (Glaeser et al., 1992). In our case, this variable also helps control for competition in the product market that may drive down profits and affect the decision to become self-employed.

- The share of individuals born abroad in the population (Fraction of individuals born abroad), calculated as a municipality average from *Linda*.

- Per capita income (Income per capita) and per capita wealth tax (Wealth tax per capita). Both variables proxy for the availability of funds in a region. The wealth tax per capita has been calculated as a municipality average from the individual wealth tax in *Linda*.

- Entrepreneurial entry (Entry rate) and exit rates (Exit rate). These variables have been computed as municipality averages of the individual decisions of becoming an entrepreneur and abandoning the entrepreneurial activity, respectively. They control for differences in firm dynamics that can influence our results. If, in regions with a high proportion of entrepreneurs, more firms die and are replaced by new ones, we could observe a positive correlation between the individual decision to become an entrepreneur and the proportion of entrepreneurs in a municipality. This, however, would not indicate either agglomeration economies or social norms but would simply be related to firm dynamics. By controlling for firm entry and exit rates, we overcome this problem.

Finally, all equations include year-dummies, seven regional dummies and eleven dummies that refer to the sector where an individual is employed.

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[5] The number of limited liability firms in a municipality differs from the number of self-employed, because in many cases firms are not incorporated.