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## **Where do they come from? Prevalence and characteristics of nascent entrepreneurs**

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# **Where do they come from? Prevalence and characteristics of nascent entrepreneurs**

## **Abstract**

This article reports on a unique study of a large, random sample of business start-ups that were identified prior to the actual, commercial launch of the ventures. The purpose of this article is twofold. The first is to present frequencies on the involvement of the Swedish population in the small business sector (particularly in firm start-ups) and to compare these with estimates from Norway and the USA, which are based on studies using a similar research design. We also discuss the possible reasons for the country differences that emerge. Secondly, we analyse the characteristics of *nascent entrepreneurs* (i.e. individuals trying to start an independent business). We also compare these characteristics for sub-groups within the sample and with characteristics of business founders as they appear in theoretical accounts or retrospective empirical studies of surviving small firms.

In order to get a representative sample from the working age population, respondents (n= 30 427) were randomly selected and interviewed by telephone. We found that 2.0 % of the Swedish population at the time of the interview were trying to start an independent business. Sweden had a significantly lower prevalence rate of nascent entrepreneurs compared to Norway and the USA. Nascent entrepreneurs were then compared to a control group of people not trying to start a business. The results confirmed findings from previous studies of business founders pointing at the importance of role models and the impression of

self-employment obtained through these, employment status, age, education and experience. Marital status, the number of children in the household, and length of employment experience were unrelated to the probability of becoming a nascent entrepreneur. The sex of the respondent was the strongest distinguishing factor. Importantly, the results suggest that while we have a reasonably good understanding of the characteristics associated with men going into business for themselves, the type of variables investigated here have very limited ability to predict nascent entrepreneur status for women.

*Key words:* nascent entrepreneur, business founder, start-up, firm formation, socio-demographic, cross-national

## 1 Introduction

Few will today deny the importance of the small business sector for the economy at large, and particularly for employment creation and innovation rates. However, relatively little is actually known about the process leading to the creation of a business. This is because previous studies of business founders have typically been conducted in retrospect, including only surviving businesses. Relatively little is also known about country differences in firm start-up rates, primarily because the procedures for statistical data collections are so different that no reliable comparisons can be made. This paper reports some of the findings from a Swedish study aiming at following a random sample of people trying to start a business. This study is part of a unique international research effort to randomly sample individuals trying to start a business and to follow the process leading to the creation of a business. At the moment eight countries have agreed to participate (Australia, Canada, Finland, Germany, the Netherlands, Norway, Sweden, and the USA). The advantages of this project are the possibility to make cross-national comparisons, and the ability to start following entrepreneurs *before* they have started a business.

The purpose of this paper is twofold. The first is to present frequencies on the involvement of the Swedish population in the small business sector and particularly in firm start-up and to compare these to estimates from Norway and the USA, which are based on studies using the same research design. While we do not include a systematic study of the institutional and other characteristics of the included countries we will speculate about the likely reasons for the country differences that emerge from the data. Our second purpose is to analyse the characteristics of nascent entrepreneurs (i.e. individuals trying to start an independent business; cf. Reynolds 1997b) relative to a control group of people who are currently not trying to start a firm. We also compare these characteristics for sub-groups within the sample and with characteristics of business founders as they appear in theoretical accounts or retrospective empirical studies of surviving small firms.

It is our impression that the research on the factors leading to business start-ups has not been very successful. We do have reasonably good knowledge of which factors characterise business founders, e.g. social background, level of education, and psychological attitudes (Cooper & Dunkelberg 1987, Erutku & Vallée 1997, Evans & Leighton 1989, Reynolds 1997b, Storey 1994). We know that men and individuals with self-employed parents are over-represented among business founders, as are those that are between 25 and 40 years old and/or have a higher education than the general population and/or have previous experience of self-employment (Reynolds 1997b, SCB 1998, Storey 1994). A vast majority of studies produces results pointing in the same direction. In other words, it is rare to find a study to report a significant positive effect and another a significant negative result while studying the same factors.

However, no socio-demographic (or other individual level) variables have turned out to be a very strong predictor of self-employment. To make matters worse, previous studies rely either on information from surviving businesses several years after they were founded, or they use intentions as the dependent variable. Studying actual business founders in retrospect involves risks of hindsight bias and success bias. That latter means that only those founders whose businesses survive are studied. Hence characteristics associated with survival may be captured rather than those leading to the decision to start a firm. Hindsight bias refers to the risk of incorrect reporting due to memory loss or re-interpretation of facts as a consequence of events that have occurred after the time of the start-up. Therefore, a unique advantage of the present research is that we study nascent entrepreneurs in real time.

Using intentions as the dependent variable involves the risk of not discriminating between 'dreamers' and 'doers'. Psychological research suggest that the relationships between intentions and actual behaviour are not always that strong (cf. Ajzen 1991). Our research has the distinctive advantage of requiring that actual behavioural steps towards starting a firm have been taken in order to qualify as a nascent entrepreneur.

Other drawbacks of previous research are that we have not yet come to understand (a) the inter-relationships among the explanatory factors and (b) the processes these factors are indicators of. With regard to the former, we will in our analysis employ an analysis technique which permits us to systematically detect the most significant interactions among variables. With regard to the latter we will delimit ourselves to suggesting some possible theoretical interpretations of factors found to be empirically related to becoming a business founder. Actual analysis of the process will have to await further data collection.

## *1.1 Previous research*

With regard to macro level influences, and hence our first purpose, it is actually difficult to find studies that systematically relate the characteristics to their business start-up rates on the other. We have not in this study made a systematic assessment of the included countries' characteristics. Otherwise the obvious reason for the lack of studies is the unavailability of a readily comparable dependent variable. However, from economic theory it can be inferred that e.g. taxes and legislation will have predictable effects, and some economists also try to assess these empirically. Recent examples are Davis & Henreksson (1999) and Henreksson & Johansson (1999). They discuss the role of economic policy environment as determined by business taxes, employment security laws, credit market regulations, the national pension system, wage-setting institutions and the size of the public sector. While their analysis does not concern the most recent time period and is not focuses solely on start-up, it is interesting to note their suggestion that 'Swedish policies and institutions have strongly disfavoured less capital-intensive firms, smaller firms, entry by new firms, and individual and family ownership of business.' (Davis & Henreksson 1999:59, cf. also pp. 72-73).

From a methodological standpoint it is easier to compare start-up rates for regions within a country rather than across countries. Quite a number of such studies have been conducted, and seven of them were published in a special issue of the *Regional Studies* journal in 1994. Summarising the international results, Reynolds, Storey & Westhead (1994. p. 453) concluded that across countries, three characteristics had a positive impact on firm birth rates. These were a) growth in demand, indicated by population growth and growth in income, b) a population of business organisations dominated by small firms, and c) a dense, urbanised context reflecting the advantages of agglomeration, presumably including the benefits of access to customers and resources. These general findings were very much in line with the

results of the Swedish study (Davidsson, Lindmark & Olofsson 1994, 1998). Apart from such more tangible environmental characteristics as explanations for differential start-up rates within or across countries, there is also the even more methodologically challenging issue of cultural determinants (cf. Davidsson 1995a).

On the micro-level, previous studies have empirically identified which groups of society are more probable to enter self-employment, and theoretically tried to explain *why* these groups are entering self-employment. Some of the most popular investigated factors are: (a) parents, (b) gender, (c) ethnicity/race, (d) education and work experience, and (e) psychological profile.

*Parents.* We know that a large proportion of self-employed people have parents who themselves were self-employed (de Wit & van Winden 1989, Shapero & Sokol 1982). Research also suggests that not only the presence of self-employed parents but also how positively their status or performance is perceived influences the children's intentions to go into business for themselves (Davidsson 1995b, Scherer, Brodzinsky & Wiebe 1991). Thus, self-employed parents are probably important if they are perceived as successful. This effect may be stronger for males than for females (Matthews & Moser 1995).

*Gender.* Self-employment is a male dominated career choice. In Sweden 67% of all new businesses are started by men, 28% by women and 5% jointly by a man and a woman (SCB 1998). This points at an important imbalance in the economy. Several reasons for this inequality is put forward in the literature. One is that women still have the main responsibility for the family and the children. Therefore, the entrance of women into self-employment is at least delayed until children are adult or it is hindered. This is a life-span approach (Cohen



1996). A more institutional approach is concerned with patriarchal pressure in society that hinders women from entering into self-employment, e.g. women have a more difficulties in obtaining a bank loan than men, because women are perceived as less creditable than men by (male) lender. The empirical evidence here is somewhat contradictory (Brush 1992, Carter & Rosa 1997, Marlow 1997).

Yet another approach to why women are underrepresented as entrepreneurs is exemplified by theories of identity construct (DiMaggio 1997). It has been argued that self-employed as a group are male dominated, consistently conservative in their political ideology and voting behaviour, highly individualistic politically, being strongly against big government and anti-union (Aldrich, Zimmer, & Jones 1986). Research on the identity construct also show that a collective (such as small business *men*) struggles to self-name, self-characterise, and claim social prerogative. Such concerns underscore the politics of identity (Cerulo 1997). From that perspective, it seems logical that women cannot or will not identify with the group of self-employed, and the group is perhaps not interested in women joining them. Davidsson's (1995b) results for male/female differences accord with this line of reasoning.

*Ethnicity /Race.* Self-employment is often suggested as a way of establishing a new immigrant group in the economy when other career options for various reasons are closed (cf. Hagen 1962). However, not all ethnic or racial minority groups have a higher propensity to become self-employed (Shapero & Sokol 1982). Successful groups are, for example, the Indian, Pakistani and Bangladeshi communities in the UK (Storey 1994), and the Jewish and Asian communities in the USA (Butler & Greene 1997). Less successful groups are the African-Caribbean/Guyanese people in the UK and African Americans (Bates 1996, Van Fleet & Van Fleet 1985). It appears that the entrepreneur's ethnic background affects what

resources are available to him or her. The main explanation to why some ethnic groups are more successful than others is that the successful groups have access to critical resources such as financial and human (education, network) capital *before* they enter a new country or a new (sector of an) economy.

*Education and work experience.* Two occupational groups are over-represented in the population of business founders: (1) individuals previously self-employed trying to start a new business, and (2) unemployed trying to start a business as a way of earning an income. In Sweden 1996, one third of all new businesses were started by people who had started a business at least once earlier, and 23% said that they started because of unemployment (SCB 1997). These differences in previous occupation highlight the question of push and pull motivation. Push factors such as unemployment more or less force the individual to take action that would not have been an alternative in a more normal situation (Cooper & Dunkelberg 1987). From a risk perspective, the act of being in loss situation such as unemployment will influence people to take higher risks, e.g. starting a business (Kahneman & Tversky 1979). Already self-employed people's efforts to start businesses are more likely to reflect pull motivation. It is often argued that push motivation is associated with higher failure rates than do pull motivators, but research has found little support for this argument (Birley & Westhead 1994; Dahlqvist, Davidsson & Wiklund 1999). Research also indicates that interest in owning a small business increases with work experience in small business (Matthews & Moser 1995, Storey 1994). Such background may increase the probability of pursuing the self-employment alternative in both push and pull situations.

As regards education most studies indicate a positive effect on self-employment, at least for low versus intermediate levels of education (Reynolds 1997b, Robinson & Sexton 1994).

Bates (1995), who controlled for differences in industry when examining the role of education, also found a positive relationship between education and self-employment. Thus, we can conclude that education probably has a positive impact on self-employment, at least in some (knowledge-intensive) industries.

*Psychological profile.* Psychological traits are among the most used in entrepreneurship research. The results are disappointing, which can be explained by theoretical as well as methodological problems characterising the perspective (Delmar 1996). A more fruitful approach combines the individual's value system and cognitive mechanisms with social context in order to understand the career choice of self-employment (Katz 1992). This research is often based on two popular motivation theories. The first is Ajzen's (1991) theory of planned behaviour (see Kolvereid 1996a, Kolvereid 1996b, Krueger & Brazeal 1994, Krueger & Carsrud 1993, for empirical support). The second theory is Bandura's (1986) theory of self-efficacy. There is evidence that self-efficacy is an important component in a career choice of self-employment (Chen, Gene Greene, & Crick 1998, Krueger & Dickson 1993, Krueger & Dickson 1994). Both theories are also interesting, as they emphasise the notion of the self in regards to the demands of the situation. This notion of the self give us a natural point of convergence between more sociological theories of identity construction reviewed in the gender section and role models and the social psychological motivation theories presented here.

*Summary.* To sum up this section on previous research on start-ups, we can conclude that economic theory suggests that certain institutional factors may explain country differences in start-up rates, but that empirical evidence on this is largely lacking. The research on regional differences has been empirically stronger but perhaps at the same time theoretically weaker.

Individual level research on characteristics of people trying to start a business is quite strong in the sense of absence of conflicting results. Both European and American research finds the same factors to be of importance. However, the results normally refer to founders with surviving businesses. Hence, some of the factors associated with the decision to start a firm may have been misinterpreted. In addition the theoretical interpretations of empirical relationships often leave a lot to be desired, and little has been done on exploring and explaining the possible interactions existing among the above described factors. We will in this paper try to deal with some of these shortcomings.

## 2 Method

*Design.* The study has been designed to provide population estimates for business starts-up efforts and to follow a random sample of nascent entrepreneurs during the time period possibly leading to the start of a new business. Because it was estimated that nascent entrepreneurs constitute a relatively small group in society, every respondent went through a screening interview aiming at selecting out the nascent entrepreneurs and a control group (a random four percent of the original sample). As a consequence, the vast majority of the respondents only participated in the screening interview. The individuals in the two groups were then asked if they were willing to participate in a longer telephone interview. The interviews were conducted during the period of May-September 1998. The intention is to follow the groups at six month intervals during at least a two year period.

*Sample.* Data are based on two samples of randomly selected individuals living in Sweden. The first sample consists of individuals aged between 16-70 years and the second sample consists of individuals aged between 25-44 years. The purpose of the first sample was to get a representative sample of the adult population in Sweden. The purpose of the second sample

was to increase the yield of nascent entrepreneurs. We know from earlier statistics that this age group has the highest rate of business founders. For all individuals included in the two samples we received information on name, address and birth year. In the analyses the cases are weighted according to actual population proportions.

Of the 49 979 individuals randomly selected, it was possible to obtain a telephone number for 35 971 (71.9%) of the individuals. The remaining 28.1% were not listed (n= 13 338), had severe disabilities (n = 381) or had moved abroad (n = 289). Of those contacted by telephone, 30 427 individuals (84.6 %) agreed to participate. Out of these, 961 respondents qualified for the longer interview by answering in the screening interview that they were starting a business either independently (*nascent entrepreneur*) or as part of a current job assignment (*nascent intrapreneur*). From these qualified for the longer interview, a final sample of 405 verified and accessible nascent entrepreneurs was distilled in the following way:

Currently involved in start-up effort according to screening questions:	961	
- Refused to participate in longer interview:		53
- Could not be interviewed due to language problems:		6
- No further contact/unclear if involved in start-up effort:		147
Started longer interview:	755	
- Double-check disproved nascent entrepreneur/intrapreneur status:		132
Completed longer interview	623	
- Start-up effort is part of job (nascent intrapreneur)		128
- No gestation behaviours undertaken (under-qualified)		2
- Reclassified as up and running firm (over-qualified)		88
Final sample of nascent entrepreneurs	405	

The longer interview was started immediately if possible, but in many cases the interviewer has to finish the screening call and call back later. This lead to a loss of 147 cases. A surprise is perhaps the relatively large number whose nascent entrepreneur/intrapreneur status was disproved in the longer interview (132 cases). This category involves people who work with assisting start-ups, passive investors, cases where what is being started is not a business

activity, etc. Corresponding telephone interviews were performed with 608 control group respondents.

*Examined start-up and small business activities.* The following five activities related to start-up and small businesses and were examined in the screening interview: (1) owner of a small business, (2) nascent entrepreneur, (3) nascent intrapreneur, (4) discontinued business owner, and (5) discouraged entrepreneur. The wording associated with each role is presented in table 1.

*Insert table 1 about here*

*Nascent entrepreneur.* In order to maximise comparability we had to accept all respondents who in the screening interview said they were involved in a an independent business start-up as nascent entrepreneurs for our cross-national comparison purposes (n=715). For the comparison between nascent entrepreneurs and the control group requires we employed a stricter definition. This involves a lower as well as an upper bound based on a range of behaviours associated with starting a new firm (such as earning money on sales, doing market research, saving money to start a business). An individual was considered a nascent entrepreneur if he or she had completed at least one gestation activity by the time of the interview. A business was regarded as already started if a) money has been invested, *and* b) income has been made, *and* c) the firms is already a legal entity (cf. Carter, Gartner & Reynolds 1996). This leaves us with 405 nascent entrepreneurs that were compared with the control group. Note that while the nascent entrepreneur is always ‘nascent’ with regard to the current start-up effort, he or she may previously and/or concurrently (have) run other businesses. That is, not all nascent entrepreneurs are novices.

*Independent variables.* The included variables are presented in table 3. They are all categorical which restricts us to statistical methods developed specifically for that kind of data (Sloane & Morgan 1996). While most of the variables reflect factors discussed in the above review of theory and previous research, we have also included a few other background variables (e.g. county tenure, net worth) on the basis of Reynolds' (1997b) empirical results.

*Analysis method.* The country comparisons involve only very simple frequency comparisons with associated Chi-square based significance testing. It should be noted that because of the large samples involved in some comparisons, even very small differences may attain statistical significance at conventional levels.

The comparison between nascent entrepreneurs and the control group is done first by bivariate analyses of variables that previous research has pointed out as important on theoretical or empirical grounds. These analyses are based on cross tabulation using the Chi-square statistic. Data are then analysed using multivariate techniques. Logistic regression for predicting group membership is combined with Chi-squared Automatic Interaction Detection (CHAID) which investigates interactions. Both techniques are developed in order to be used with categorical data. The primary purpose of CHAID is exploratory segmentation analysis. It can also be used to detect interaction effects that are then tested in logistic regression (Magidson 1993). Like discriminant analysis, logistic regression is suited for prediction of group membership, but logistic regression involves far fewer assumptions and is more suitable for categorical explanatory variables than is the alternative (Sloane & Morgan 1996). More details on the multivariate methods will be given in the running text as they appear in the analysis.

## 3 Results

### *3.1 Prevalence rates in Norway, Sweden and USA*

The prevalence rates for Norway, Sweden and the USA are displayed in table 2. All included studies were based on a similar research design, i.e. telephone interview with the same (although translated) wording of questions. The Swedish and US studies used the exact same wording, and Norway had minor differences in wording. The Swedish study is based on a sample of individuals whereas US study used the household as the sampling unit. The effect of this is that the Swedish study will underestimate the prevalence rates compared to the US study. We know, however, that despite the methodological difference the differences are not method artefacts, albeit their magnitude is somewhat exaggerated.

*Insert table 2 about here*

In table 2 the leftmost column, Sweden 1998, represents the present study. It reveals that 2.0% of the Swedish population aged between 18 and 70 years old were at the time of the interview trying to start an independent business. This is considerably lower than US (3.8% and 3.9%) and Norwegian (3.1%) prevalence rates. Norway had also a lower prevalence of nascent entrepreneurs than the USA. It was expected that the Scandinavian countries would have somewhat lower prevalence rates than the USA for reasons that we will return to in the detailed USA-Sweden comparison. Considering the relative similarities between Norway and Sweden we would expect about the same level, so this difference is relatively more difficult to find rationales for. We know that Norway has a more small firm dominated business structure (Henreksson & Johansson 1999) and that regional analysis suggest that high presence of small firms is associated with high start-up rates (Davidsson *et al.* 1994, 1998) so



that may be at least part of the explanation. We also know that the business cycle situations were different in the two countries, but as firms are started both for push and pull reasons it is difficult to judge what net effect to expect from Norway's relatively more positive economic outlook at the time of the investigations.

*Detailed comparison between Sweden and the USA.* In Sweden, 26.6% reported any sort of start-up or small business experience compared to 37.5% in the USA. In other words, more than one out of three adults living in the USA has some sort of start-up or small business experience compared to one out of four adults living in Sweden. As already mentioned, the prevalence of nascent entrepreneurs was also significantly lower in Sweden (and Norway) than in the USA. The institutional factors -- taxes, employment security laws, credit market regulations, the national pension system, wage-setting institutions and the size of the public sector – discussed by Davis & Henreksson (1999) may all be part explanations of the difference in total business participation rates. As many of the specific taxes and regulations they discuss have been changed in recent years, they are less credible explanations for current differences in the prevalence of nascent entrepreneurs (other than indirectly through the lack of role models they may have caused if they kept new firm formation down earlier on).

Among the institutional factors that are still effective we find three that are especially likely to be responsible for the differences. Firstly, we have the fact that the public sector is much larger in Sweden, with industries like Health and Education totally dominated by large, non-profit organisations. This narrows down the total domain in which viable start-ups can appear. Secondly, Swedish employment is for historical reasons concentrated in large-firm dominated basic manufacturing industries, which are known not to be a fertile incubator environment (Davidsson *et al.* 1994; 1997). Thirdly, Davis & Henreksson (1999) suggest that the relatively

small income dispersion in Sweden may restrict entrepreneurial opportunities in industries at both extremes of the human capital and wage distributions. When tax wedges are added to the small income differences the markets for personal and household services become restricted. There are legitimate reasons for people to have different opinions about whether such a difference is a good or a bad sign. The notion that a high level of disposable income equality may also hamper entrepreneurship in growing high-technology and high-pay industries is perhaps more difficult to embrace for those who do not find the former difference to be cause for concern.

When prevalence rates for nascent entrepreneurs are broken down by the respondents' sex, we can conclude that especially Swedish women (1.1 %) were less entrepreneurial than their US counterparts (varying between 2.7% and 2.1%). We find the public sector dominance in Health and Education to be the most likely reason for the country difference. Not only are large part of the economic sectors where women dominate void of room for private initiative. When and where state monopoly is being relaxed the women who have the sectorial competence unfortunately also have their experiential background in large, non-profit organisations, which hardly is a fertile ground for setting entrepreneurial seeds (Davidsson *et al.* 1994, 1998). Women are also over-represented in the low income service industries whose growth, we have argued, may be hampered by relative income equality and tax wedges.

Furthermore, a decrease has occurred during the last year: the difference between the Swedish estimates for 1997 and for 1998 is statistically significant for women. This may be because other alternatives improved and therefore not necessarily a cause for great concern. Firstly, the labour market improved significantly in Sweden between the two point of measurements. Secondly, a large-scale governmental competence development initiative ('Kunskapslyftet')

may have attracted a substantial share of the unemployed women with low education who would otherwise have been pushed into self-employment.

It is also worth noting that the sex distribution between female and male nascent entrepreneurs is comparable to actual start-up rates (27.4% female and 72.6% male nascent entrepreneurs, compared to 28% female, 67% male and 5% mixed start-ups, cf. SCB 1998). This indicates that persistence in getting from nascent entrepreneur to actual start-up is not strongly related to the entrepreneurs' sex.

When age categories are examined, we see some interesting differences between USA and Sweden that may also help to further explain the large difference in prevalence rates between countries. There are no substantial differences among the age groups with the important exception of the 25 to 34 years old. In Sweden, their prevalence rate of nascent entrepreneurs is only 3.0% compared to 9.7% for the USA. This is an interesting result that can probably be attributed to the differences in economic structure between Sweden and the USA. We can only speculate that Swedes in this age cohort are more indebted and therefore not prepared to take the risk of starting a business. It may also have to do with higher female participation in the work market. With two full time providers during years when also children are born and a home is being built, there may be no room for the concentrated effort that a business start-up may require.

Nascent intrapreneurs (individuals starting a new business as part of their job assignment) were four times as frequent in the USA as in Sweden 1998. This is an impressive difference, and it would be interesting to get better data to compare if this result can be generalised and to investigate what the consequences are in real economic terms for the respective societies. It

hints at the possibility that there may exist differences that are even more important than differential rates of independent business start-ups, and that researchers perhaps are overly concerned with the latter only.

We also found significant difference between Sweden and the USA concerning the prevalence rate of business owners. Sweden had 14.5% business owners and the USA had 19.2%. If all current activities are aggregated the differences between the two countries remain statistically significant but relatively smaller than the difference in prevalence rates for nascent entrepreneurs or intrapreneurs. In Sweden, 16.3% of the population reported any start-up or small business activity compared to 23.5% for the USA.

A possible explanation for this relatively smaller difference would be that business turnover rates are higher in the presumably more dynamic US economy. And we do indeed find a relatively large difference in the proportion that report they have at some time discontinued a business, 18.8 % for the USA vs. only 10.9 % for Sweden. We also find a very large difference in the frequency of discontinued start-up efforts. In addition to reflecting real differences in the dynamism of the economies this might reflect a cultural difference in response style, with Swedes less prone to admit a failure.

To sum up this section on prevalence rates, we found substantial differences among the three investigated countries. USA has a higher prevalence rate of nascent entrepreneurs than has the Nordic countries. US women were more active than Swedish women, while the difference between US and Swedish men was relatively smaller. It was found that Americans aged between 25 and 34 years were especially active compared to Swedes in the same age category. There was a difference in current activities, but an even larger difference for

discontinued activities. The impression given by these results is that USA represents a more dynamic economy and that apart from whatever cultural factors there are also tangible institutional reasons that can explain the differences. We hold that the size and make-up of the private sector as well as differences in taxes and wage structures are likely to play a role.

### *3.2 The characteristics of nascent entrepreneurs*

The purpose of this section is to analyse the characteristics of nascent entrepreneurs by comparing them to a control group of people not trying to start a business. Hence, in this section we will use data from the longer interviews, narrowing down the sample from  $n=30427$  to  $n=1\ 013$  (405 nascent entrepreneurs; 608 control group members). As mentioned in the Method section, we will first make bivariate comparisons and then conduct a multivariate analysis in three steps.

*Bivariate analysis.* The results from the bivariate analyses are displayed in table 3. Substantial and significant group differences appear for several variables. Males are over-represented, as are the younger age groups. As regards occupational status those already self-employed are over-represented among nascent entrepreneurs. Interestingly, the unemployed do *not* show a higher probability of being nascent entrepreneurs. This is somewhat unexpected as the proportion of unemployed business founders has been high in recent years in Sweden (SCB 1997, 1998). If the era of push-entrepreneurship is over while the economy is still not strong enough to generate high levels of pull-entrepreneurship, this result indicates that our study may have been conducted during a period of exceptionally low levels of nascent entrepreneurship. Having self-employed parents and positive impression through observation of self-employed family members and friends are variables which exhibited among the largest differences observed in this sample. These results confirm the importance of positive role

models (cf. Davidsson 1995b). It is interesting to note that while being more reserved than the nascent entrepreneurs, also in the control group a majority was positive to self-employment.

The effects of experience and education were confirmed as well. Nascent entrepreneurs had a higher education with 41.2% having a university degree or at least some university education, compared to 26.4% for the control group. However, Reynolds' (1997b) education effect in the US appeared different, discriminating mainly between those with very low vs. intermediate (or higher) levels of education. Years of management experience did also differentiate between the two groups. Nascent entrepreneurs had more management experience. We did not find any difference in years of full time employment between the groups.

As regards regional affiliation the results are in line with previous results concerning differences in regional start-up rates. The nascent entrepreneurs are more likely to be found in the large cities, including Greater Stockholm. This may reflect the agglomeration of resources and market opportunities. Nascent entrepreneurs have been more geographically mobile than their counterpart in the control group. This result is contrary to Reynolds' (1997b) study. He found the opposite in the USA: nascent entrepreneurs tended to have been in the same place for a period of time. However, this may be due to a real country difference, as the Swedish population on average is much less mobile than the US population. Actually, the lack of mobility of the Swedish population is often referred to as one of the main explanations behind unemployment: people stay where they are, and do not move to where new jobs are (or could be) created. To some extent the county tenure variable confounds within-country mobility with immigrant status. However, we do not find a very strong overrepresentation of immigrants among the nascent entrepreneurs.

Reynolds (1997b) also found an influence of marital status and the number of children in the household. Those who were either separated or never married were over-represented among nascent entrepreneurs. Nascent entrepreneurs also tended to have more children. We did not find any of these relationships in the Swedish data even when we controlled for sex and children in pre-school age.

We did find significant difference between the groups in income and net worth. Nascent entrepreneurs tended to be over-represented among the highest income and net worth categories indicating that when large enough, personal wealth and income may play a role. However, neither Reynolds (1997b) nor Delmar & Gunnarsson (1997) found any differences in income and wealth when studying US samples and a Dutch sample, respectively. As our results are not very strong either, it must be concluded that economic variables do not have very strong predictive power with respect to nascent entrepreneur status. It is for future analysis to determine whether they may have stronger effects the on realisation and/or survival of the start-up efforts.

To conclude, the results of the bivariate analyses confirm a large number of previously observed relationships. We found that nascent entrepreneurs were more likely to have self-employed parents, to be self-employed already, to be born outside Sweden, and to have a positive perception of self-employment. Number of children, marital status and length of employment experience did not discriminate between the groups. All these relationships have been observed previously in other studies. Importantly, however, our results show that the differences observed here are present at the planning stage already. If they had not been, the results of previous studies based on retrospective data would have had to be re-interpreted. If a variable is present for actual entrepreneurs (self-employed) but not for nascent

entrepreneurs, two possible interpretations present themselves. Either the variable affects the realisation or the survival rate of the business start-up efforts, or the variable is a result of being in business for oneself rather than causing it. Our results imply that previous, retrospective studies have not been grossly misinterpreted, which increase their value. Without evidence of the kind presented here the results of those previous studies could justifiably be called in serious question.

*Multivariate analyses.* The purpose of multivariate technique is to examine the collective predictive power of the independent variables, as well as possible interaction effects (and spurious effects) among them. The analysis is made in three steps. In step one, logistic regression is used to estimate the predictive power of the variables when no interaction effects are included. In step two, CHAID is used to estimate the occurrence and nature of interaction effects. In step three, we used logistic regression to test the predictive power of a model including both interaction effects and original variables in order to determine whether the inclusion of interaction effects could significantly increase the predictive power of our model.

*Step One: Logistic regression analysis of individual effects and collective predictive power.*

The results from the first logistic regression are displayed in table 4. The most important variables in descending order were sex of the respondents, being self-employed, having a positive impression of self-employment, having self-employed parents, low age, high education, and management experience. The description of a nascent entrepreneur offered by these results is a traditional one, and the results basically confirm previous research indicating the joint multivariate effect of occupation, parents and gender (cf. Matthews & Moser 1995).



Considering the variables examined, the model performed satisfactorily with an overall classification rate of 67.20% (nascent entrepreneurs 50.26%, control group 78.84%), compared to the base rate probability of 59.27% (which is the percentage obtained when guessing that everybody belongs to the largest group in the sample, in this case the control group). However, it was somewhat more accurate in predicting group membership for control group respondents than for nascent entrepreneurs.

*Insert table 4 about here*

*Step Two: CHAID analysis for detection of interaction effects.* Chi-squared Automatic Interaction Detector (CHAID) is an explorative segmentation technique which aims at finding the strongest discriminating variables with respect to a categorical dependent variable. It can also be used to examine the existence of interaction effects for subsequent inclusion in a logistic regression. CHAID has been previously used by Reynolds (1997b) to investigate nascent entrepreneurs in the USA.

CHAID basically works as a forward stepwise technique (Ruist 1990). More precisely, it will choose the independent variable that has the strongest relationship with the dependent variable based on the Chi-square technique. It also will test if categories in a variable can be collapsed or not in order to augment the differences among the segments. This procedure continues until no significant relationships are found or the segments are too small to be further divided. Another property is that CHAID can handle missing values, which makes it possible use all cases and to examine the importance of missing values in the data matrix.

Figure 1 displays the results in a tree diagram for a CHAID analysis performed to find predictive segments. The purpose of the tree diagram is to visualise the breakdown into segments with respect to differential prevalence of nascent entrepreneurs. As can be seen, 40.1% of the analysed sample are nascent entrepreneurs. The strongest discriminating variable is sex; among the men in the sample 49.4 % are nascent entrepreneurs while the corresponding figure for women is 29.6 %. In the next step, the strongest remaining discriminating variable is chosen. This turns out to be different for men (employment status) than for women (county tenure), indicating an interaction effect.

Nine mutually exclusive segments with different probability of being a nascent entrepreneur were identified. Table 5 describes the different segments and their predictive frequencies. It is interesting to comment upon all segments, both segments where there is a high probability of finding a nascent entrepreneur as well as segment with low probabilities of finding nascent entrepreneurs. Such a discussion is interesting both from a policy perspective (e.g. in which of society's subgroups should we promote entrepreneurship and how?), and also from a research perspective (e.g. where do we find the highest prevalence rates of nascent entrepreneurs and why?).

*Figure 1 about here*

The single most important variable in the CHAID model turned out to be the sex of the respondent. In fact, three of the four segments with the lowest probabilities of finding nascent entrepreneurs were composed of women who had been living in the same place for at least six years. The only group of women who had a nascent entrepreneur proportion higher than the over-all figure was those with short county tenure (segment two). This may at least in part

reflect the phenomenon that women move with 'their husbands job' and then find it hard to find a job for themselves and therefore go into self-employment as a solution (cf. Caputo & Dolinsky 1998). If so, the results for this group is not much more reason for optimism than are the other women segments. Among the women with long county tenure, employment status added some predictive power to the model. Segment three, which had the lowest probability of yielding nascent entrepreneurs (12.6%), was composed of women having wage work, being retired or homemakers. Segment four was instead composed of women that were already self-employed, unemployed or being students and the probability of being a nascent entrepreneurs increased significantly (31.2%).

The strong difference by sex is somewhat unexpected in the light of earlier results obtained by Reynolds (1997b) on nascent entrepreneurs in the USA, and by Davidsson (1995b) on start-up intentions in Sweden. While they both found lower frequencies for women in bivariate analysis the sex effect did not come out strongly in multivariate analysis.

Obviously current employment status is of great importance as it also influenced the probabilities of being a nascent entrepreneur among men when combined with management experience and net worth. For men with either wage work, being unemployed or retired, having or not having management experience appears to make a big difference. If they had some management experience the probability of being a nascent entrepreneur rose to 47.6% (segment six) from 28.6% (segment five).

The segments having the highest probability of yielding nascent entrepreneurs were segments seven through nine, and they were composed of men being self-employed, homemaker or students. It is among men with these occupational backgrounds that the economic variables

seem to play a role. Segment eight was composed of the wealthiest men and had a probability of 79.6% of yielding a nascent entrepreneurs. Segment seven and nine pointed at the problem of missing values inherent in this variable. Net worth was the variable that had the highest share of missing values of all examined variables with only 75.5% valid responses.

Apparently, missing values are systematically related to the dependent variable, as they form a segment of their own with a lower probability of yielding nascent entrepreneurs (segment nine: 45.6%) compared to segment seven (64.7

*Insert table 5 about here*

We have now seen that segmentation techniques can give us valuable information on the interaction effects among variables related to nascent entrepreneurs status. However, the overall percentage of correctly classified cases by the CHAID model was 67.0% which is about the same as the above logistic regression model. Moreover, the CHAID model's ability to correctly classify nascent entrepreneurs was actually poorer: only 31.9% were correctly classified compared to 50.3% for the logistic regression model. This suggested that it would be worthwhile to test whether the inclusion of interaction terms could really improve the predictive ability of the logistic regression model. This was done in the third step.

*Step Three: Final logistic regression analysis.* In the third the logistic regression was rerun with the same variables as in table 4 plus the interaction effects identified with CHAID. Both forward and backward stepwise techniques were used to test the model, and both yielded the same result which is displayed in table 6. It turned out that the inclusion of interaction effects were not found significant and therefore dropped from the final model. The variables found important in the first logistic regression model remained in the model and two other dummy

variables were included as well: low geographical mobility and large wealth (net worth larger than 600 000 SEK). The first variable was negatively related to becoming nascent entrepreneur, whereas the second variable was positively related. The correct classification rate increased from 67.2% to 69.5%, and this can only be regarded as a marginal improvement.

Insert table 6 about here

While the interaction effects identified in the CHAID-analysis were not found to be very reliable, the results of separate logistic regressions for men and women are highly suggestive. When only men were analysed, approximately the same results were arrived at as in table 6, but 'low geographical mobility', 'age', and 'management experience' were excluded. The model's predictive ability was satisfactory with an overall correct classification rate of 65.8% compared to the base rate probability of 50.8%. When only women were analysed 'self-employed parents' and 'being self-employed' were excluded from the model. However, what was more important than the variables in the model was the model's predictive ability: the ability to correctly classify female nascent entrepreneurs was very low. The overall correct classification rate was 76.3% compared to a base rate probability of 72.5% (i.e. the rate of correct classification obtained by guessing that all women belong to the control group) which was only a minuscule increase. Furthermore, only 36.6% of the female nascent entrepreneurs were correctly classified. In short, we achieved moderately high classification rates when men were analysed, but very low classification rates when women were analysed. This contrasts with Davidsson (1995b) who found equally strong explanatory power for men and women in his model of socio-demographic and psychological influences on start-up intentions.

These results also explain why the CHAID-analysis performed so poorly. Since the strongest single effect in the CHAID analysis was the sex of the respondents, we obtained two separate segmentation or branches based the respondents' sex. As a consequence the segments based on female respondents achieved a substantially lower correct classification percentage than did segments based on male respondents. In other words, based on the variables examined here we have a very limited ability to predict and explain why women engage in a start-up efforts. The examined variables were much more powerful in predicting and explaining why men engage in start-up efforts.

To sum up this result section, three major observations can be made. First, in the bivariate analysis the majority of the examined relationships were in the same direction as in previous research. Second, the use of an analysis design where logistic regression and Chi-square Automatic Interaction Detection complemented each other yielded interesting models confirming and refining the results from the bivariate analyses. However, the interaction effects identified with CHAID were relatively unstable and did not substantially improve the predictive ability of our logistic regression model. The logistic regression in step three retained no interaction effects, but was more robust and had higher predictive ability. Third, it was found that the background variables examined here had a much higher predictive ability for men than for women.

## 4 Conclusions

This study is part of a unique effort to study for the first time a large random sample of business start-ups in real time, and to do so with the same methodology in several different countries. In this particular article, we had two purposes. The first was to present estimates of the prevalence of nascent entrepreneurs and other indicators of involvement in independent

businesses for Sweden, to compare these with estimates for other countries, and suggest explanations for the country differences that emerge. Our second purpose was to analyse the characteristics of nascent entrepreneurs and compare these with a control group as well as with the characteristics of business founders according to previous research.

With respect to the first purpose we were able to determine that the prevalence of nascent entrepreneurs was lower in the Nordic countries than in the USA. Sweden was also lower than the USA on current and previous business ownership-management experience as well as previous involvement in discontinued business efforts. We suggested that differences in the size and industry make-up of the private sector is likely to have affected this outcome, as are differences in wage dispersion and taxation. The difference between Sweden and Norway was more unexpected but differences in the distribution of firms over business size classes may be part of the explanation.

As regards characteristics of entrepreneurs we were able to develop a multivariate model with reasonably strong predictive power for nascent entrepreneur status. The variables in this model, and the sign of the relationships, confirm many findings from earlier research on characteristics of business founders. This is an important finding, suggesting that despite these earlier studies potential sensitivity to success and hindsight biases, their results have not been grossly misinterpreted. That is, the differences are there at the planning stage already rather than representing rationalisations, re-interpretations after the fact, or the difference between early failures and surviving businesses.

The variable that discriminated most between nascent entrepreneurs and controls was the sex of the respondent. The over-representation of men is well known from previous research.

However, the sex effect in our multivariate analysis is unexpectedly strong since other studies have indicated that most of the sex difference can be absorbed by other variables such as education and experience, leaving little evidence of a ‘pure’ sex effect. More importantly, our results indicate that the type of factors included in this study are much more successful in predicting nascent entrepreneur status among men than among women. This supports the notion that when we study mixed samples of business founders the results will mainly reflect ‘truths’ about male entrepreneurship. It appears that we know much less about the processes that lead women to opt for self-employment.

This study has shown that it is possible to study a large sample of business founders in real time, during the process of business start-up. In the continued work we will deepen our analysis of country differences in order to see whether realisation rates, perceived obstacles and solutions, financing, etc. differ markedly across countries. Such analyses can yield results of high theoretical as well as (policy-)practical value. As regards the micro-level repeated data collections will yield detailed insights into the process of business start-up, linking ‘factors’ to specific activities and outcomes. Hopefully, this large-scale, real time effort will provide new insights into the processes leading to initiation and realisation of start-up efforts, as well as to the early survival and growth of firms.

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Table 1.

*Wording of items related to new and small business activity*

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Business owner	Are you the owner or part owner of a small business that has been active for least twelve months? This would include farms, home-based business, independent consulting, or other type of business activity. It could be a full-time or part-time effort.
Nascent entrepreneur	Are you, alone or with others, now trying to start a new independent firm?
Nascent intrapreneur	Are you, alone or with others, now starting a new firm for your employer? An effort that is part of your job assignment?
Discouraged entrepreneur	Have you alone or with others, tried to start a business and given up?
Discontinued business owner	Have you ever been the owner or part-owner of a business that may have become inactive, shut down, sold, or transferred?

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Table 2.  
Prevalence rate for Norway, Sweden, and USA

	Sweden 1998	Sweden 1997	Norway 1996 (1)	USA 1996 (3)	USA 1993 (2)	Significant differences (p=.05)
Response rates	84.6%	79.1%	42.8%	50.9%		
Number of individuals (n)	30 427	976	9 469	454	1 016	
Nascent entrepreneurs						
All individuals	2.0%	2.4%	3.1%	3.8%	3.9%	USA higher than Norway and Sweden. Norway higher than Sweden
Sex						
Male	3.0%	2.5%		5.4%	4.6%	USA higher
Female	1.1%	2.2%		2.1%	2.7%	USA higher than Sweden, and Sweden 1997 higher than Sweden 1998
Age						
18-24 yrs old	1.8%	4.8%			3.3%	USA and higher than Sweden, and Sweden 1997 higher than Sweden 1998
25-34 yrs old	3.0%	1.0%			9.7%	USA higher than Sweden 1998
35-44 yrs old	2.5%	4.1%			3.0%	USA higher
45-54 yrs old	2.1%	1.9%			2.1%	Not significant
55 and up	0.9%	1.3%			0.3%	Sweden higher
Nascent intrapreneur	1.0%	0.8%		2.8%		USA higher
Business owner, now	14.5%	16.7%		19.2%		USA higher
Any current activity	15.9%	18.8%		23.5%		USA higher
Discontinued a start- up, lifetime	5.3%	4.7%		15.0%		USA higher
Discontinued a business, lifetime	10.9%	11.9%		18.8%		USA higher
Any start-up or small business experience	25.9%	29.1%		37.5%		USA higher

Notes:

(1) Kolvereid & Alsos (1997), Magnussen (1997), (2) Reynolds (1997b), (3) Reynolds (1997a)

Table 3.

*Bivariate analyses, frequencies for nascent entrepreneurs: Sweden 1998 (n=1 013)*

		Nascent entrepreneurs (n =405)	Control group (n =608)	Chi square	Sign.
Age (n = 1 005)	18-24 yrs old	14.6%	11.9%	19.97	.001
	25-34 yrs old	43.2%	33.8%		
	35-44 yrs old	28.9%	33.3%		
	45-54 yrs old	8.8%	10.5%		
	55 and up	4.5%	10.5%		
Sex (n = 1 013)	Male	72.6%	49.5%	53.45	.000
	Female	27.4%	50.5%		
Born in Sweden (n = 1 013)	Yes	87.9%	92.1%	4.96	.026
	No	12.1%	7.9%		
Marital status (n = 1 006)	Single	26.6%	24.3%	0.66	.415
	co-habitation/ married	73.4%	75.7%		
Kids under 18 in household (n = 1 013)	None	44.7%	39.3%	4.40	.221
	One	16.0%	17.3%		
	Two or more	39.2%	43.4%		
Regional affiliation (n=1 013)	Greater Stockholm	25.2%	18.9%	19.70	.000
	Large cities	29.6%	21.7%		
	Rest of Sweden	45.2%	59.4%		
County tenure (n= 1 007)	0-5yrs	22.1%	13.4%	23.15	.000
	6-15 yrs	21.6%	16.7%		
	16-30 yrs	17.9%	26.3%		
	31 yrs and up	38.3%	43.6%		
Educational attainment (n = 996)	Primary	15.9%	17.8%	32.84	.000
	Secondary	43.0%	55.7%		
	University	18.2%	16.0%		
	University degree	22.9%	10.4%		
Labour force status (n = 1 013)	Employed	37.3%	52.6%	62.17	.000
	Self-employed	30.9%	14.5%		
	Homemaker	8.6%	9.0%		
	Retired	1.7%	6.6%		
	Student	10.9%	6.3%		
	Unemployed	10.6%	11.0%		

Continued from the previous page		Nascent entrepreneurs (n = 405)	Control group (n= 608)	Chi square	Sign.
Years of full time employment (n = 1 000)	0-5 yrs	21.6%	20.1%	4.68	.322
	6-10 yrs	22.8%	18.8%		
	11-15 yrs	18.3%	17.3%		
	16-20 yrs	14.0%	16.8%		
	21 yrs and up	23.3%	27.0%		
Years of management experience (n = 1 003)	No exp.	31.8%	52.9%	43.73	.000
	1-5 yrs	34.8%	22.8%		
	6 yrs and up	33.3%	24.3%		
Net Income <sup>1)</sup> (n = 941)	Less than 144 000 SEK/yr	6.1%	11.6%	14.94	.005
	144 000– 300 000 SEK/yr	35.0%	31.9%		
	300 001- 420 000 SEK/yr	25.0%	26.6%		
	420 001- 600 000 SEK/yr	19.2%	20.9%		
	More than 600 000 SEK/yr	14.7%	9.1%		
Net Worth <sup>1)</sup> (n = 766)	Less than 2 000 SEK	10.7%	9.3%	9.62	.047
	2 001- 83 000 SEK	11.6%	17.7%		
	83 001- 228 000 SEK	25.8%	24.5%		
	228 001-600 000 SEK	23.4%	26.8%		
	More than 600 000 SEK	28.5%	21.7%		
Parents self-employed (n = 1 011)	Yes	49.6%	37.3%	15.14	.000
	No	50.4%	62.7%		
Impression of self-employment from observing family and (n = 962)	Very positive	16.4%	6.8%	53.88	.000
	Positive	57.3%	46.1%		
	Neutral	22.3%	35.9%		
	Negative	4.1%	11.2%		

Note: 1) One US-dollar corresponds approximately to eight Swedish crowns.



Table 4

*Summary of Logistic Regression Analysis for variables predicting nascent entrepreneur status (n= 933)*

Variable	B	SE B	R
Age	-.3151	.0708	-.1065
Sex (man)	.7982	.1558	.1387
Parents self-employed	.3809	.1488	.0601
Education	.3109	.0797	.1023
Self-employed	.5940	.1791	.0845
Management experience	.2390	.0657	.0945
Positive impression	.5926	.0993	.1633
Constant	-3.0007	.5170	

*Note:* Chi- square = 169.344 (sig. =0.000). Percentage of cases correctly classified 67.20% (nascent entrepreneurs 50.26%; control group 78.84%)

Table 5.

*Segments and their ability to predict nascent entrepreneurs (n = 1 013)*

Segment	Explanation	Predicted frequency (base rate 40.10%)
1	Woman living in the same place from six to 15 years	30.86%
2	Woman living less than five in the same place	50.00%
3	Woman living more than 16 years or all their life in the same place and working for a wage, is retired or homemaker	12.64%
4	Woman living more than 16 years or all their life in the same place and self-employed, unemployed or student	31.18%
5	Man, wage work, retired or unemployed with no management experience	28.57%
6	Man, wage work, retired or unemployed with management experience	47.55%
7	Man, self-employed, homemaker or student with a net worth up to 600 000 SEK	64.66%
8	Man, self-employed, homemaker or student with a net worth up higher than 600 000 SEK	79.63%
9	Man, self-employed, homemaker or student, missing value on net worth	45.61%

*Note:* The CHAID model correctly predicted 67.02% of the cases (90.46% correctly classified control group members and 31.85% correctly classified nascent entrepreneurs).

Table 6.

*Summary of Logistic Regression Analysis for predicting Nascent entrepreneurs after performed CHAID analysis (n=933)*

Variable	B	SE B	R
Age	-.3039	.0800	-.0993
Sex (man)	.8268	.1582	.1417
Parents self-employed	.3783	.1506	.0585
Education	.2626	.0821	.0809
Self-employed	.5853	.1822	.0812
Management experience	.2343	.0666	.0907
Positive impression	.5969	.1822	.1627
Low geographical mobility	-.4740	.1582	-.0744
Net worth above 600 KSEK	.6948	.1917	.0940
Constant	-2.8047	.5338	

Note. Chi- square = 189.86 (sign=0.0000). Percentage of cases correctly classified 69.56% (nascent entrepreneurs 53.16%; control group 80.83%). Forward and backward stepwise regression yielded the same model.

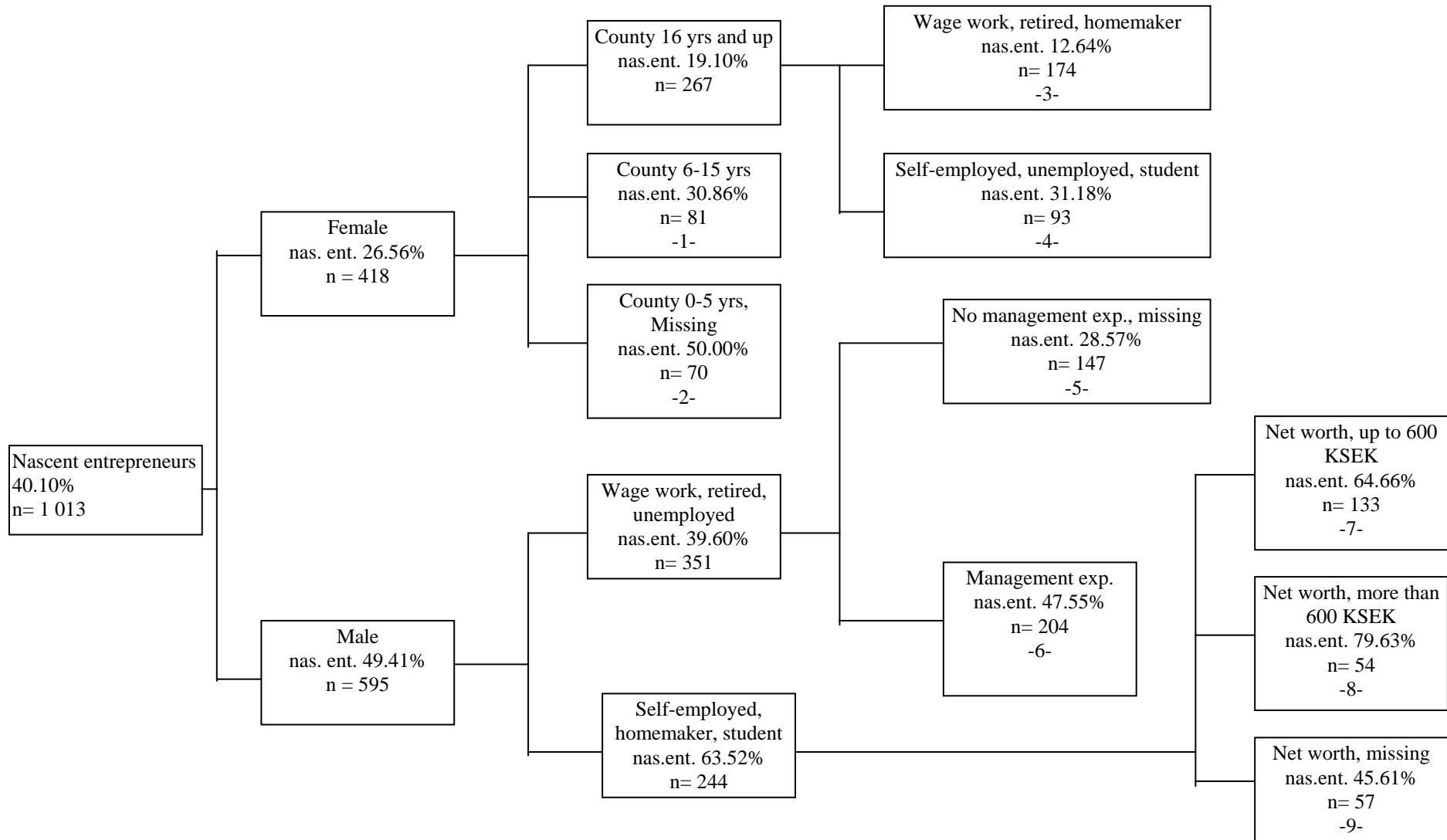


Figure 1 Tree diagram for nascent entrepreneurs based on Chi-squared Automatic Interaction Detection.

Note: Percentages refer to the within-sample predicted frequency of being a nascent entrepreneur.

