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**FINNISH ENTREPRENEURSHIP AND THE RECESSION
OF THE 1990'S: SOME PRELIMINARY RESULTS**

Anne af Ursin

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Pellervo Economic Research Institute PTT
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00180 Helsinki

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TIIVISTELMÄ. Työpaperissa tutkitaan Työssäkäyntitilaston avulla yrittäjyydessä vuosina 1987-1994 tapahtuneita muutoksia ja erityisesti yrittäjinä lopettaneiden taustaa. Paneeliaineisto antaa mahdollisuuden seurata yksittäisten yrittäjien selviytymistä Suomen historian syvimmästä talouskriisistä. Yrittäjien henkilökohtaisten ominaisuuksien lisäksi tutkimuksessa kiinnitetään huomiota talouden toimintaympäristössä tapahtuneisiin jyrkkiin muutoksiin, kuten työttömyyteen ja devalvaatioon. Tyypillinen lopettanut yrittäjä oli nuori, suhteellisen korkeasti koulutettu mies. Sen sijaan varallisuus omistusasumisella mitattuna näytti vastoin ennako-odotuksia lisäävän todennäköisyyttä lopettaa yrittäjyys. Alustavat tulokset kannustavat lisätutkimukseen useassa eri suunnassa mm. selvittämään, poikkeavatko vapaaehtoisesti lopettaneet (palkkatyöhön palanneet) yrittäjät työttömiksi jääneistä.

Avainsanat: Yrittäjyys, konkurssit.

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ABSTRACT. This study examines how the recession of the 1990's changed entrepreneurship in Finland. The empirical analysis is based on the longitudinal Employment Statistics. Apart from the individual characteristics of the entrepreneurs we pay attention in our analysis to the steep changes in the economic environment, such as increase in unemployment and devaluation of markka. The results suggest that during years 1987-94 the typical entrepreneur who quit is young, relatively highly educated male. However, contrary to our expectations wealth, measured by dwelling ownership, increased the likelihood of exit. Our preliminary results point to several interesting questions for further work, among other things on how voluntary exits (to wage work) differ from involuntary exits (unemployment).

Key words: Entrepreneurship, self-employment, bankruptcy

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1. OBJECTIVES OF THE RESEARCH

International comparisons have shown that the number of private firms in Finland is, relatively speaking, about at the same as in the rest of the world. Furthermore, the longevity of the Finnish enterprises is at the international level (see e.g. OECD Economic Surveys, USA, 1997, p. 154). On the other hand the rate of birth of new firms as well as the rate of death of old firms is rather high in Finland. Therefore, the net change of the total number of firms is rather small, around 5000-7000 firms a year (Ilmakunnas & Topi, 1997). On the other hand, the new Finnish firms are relatively small in size (Mustaniemi, 1997). Also, it has long been an unsolved puzzle why the Finnish firms do not seem to grow. In order to understand the growth process of Finnish firms we need to study why some entrepreneurs quit and others don't.

In the beginning of the 1990's Finland experienced the deepest recession among the market economies in the West since the Second World War. Since the beginning of the 1990 by the early summer of 1993 Finland's GDP dropped 13 %. Recession led to several large scale bankruptcies, mass unemployment and banking crises. Thus, the past recession gives us an unique opportunity to study how macroeconomic factors -in particular aggregate demand, unemployment and devaluation of the currency affected entrepreneurial decision making.

In the deep recession, a lot of capacity and know-how was lost, possibly permanently. The resulting mass unemployment has declined very slowly and unemployment still is the most serious economic problem in Finland. The role of small and medium sized companies is crucial when badly needed new job opportunities are created. Therefore, it is important to understand which factors contribute to the likelihood of surviving or quitting as an entrepreneur. This paper focuses on the personal and macro characteristics that could explain why people quit being entrepreneurs.

We start by taking a quick look at the existing literature on entrepreneurship. We proceed by describing the evolution of the stock of entrepreneurs, and then exits and entries in the 10-year period of 1987 through 1996. Thereafter, we describe the data set on individual entrepreneurs compiled from the Employment Statistics of Statistics Finland. Finally we provide a preliminary analysis of the factors affecting entrepreneurial survival or exit from entrepreneurship.

2. BACKGROUND

2.1 Earlier studies

During the past few decades a theory of entrepreneurship has emerged. Entrepreneurial research seeks answers to numerous interesting questions concerning entrepreneurship and it often focuses on small and medium-sized firms. Among main themes in these studies are personal and managerial characteristics of entrepreneurs, nature of entrepreneurial climate for start-ups, patterns of strategy and growth, financing and venture capital, co-operation between small business enterprises (franchising), entrepreneurial education and lately also internationalisation of small business ventures.

Various approaches have been used to analyse entrepreneurship. Entry, survival and exit studies of firms adopt elements from the tradition of labour economics, regional economics, business administration, industrial organisation, sociology and psychology. These studies either focus on the firm and industry or on the particular characteristics of the entrepreneurs. Some recent studies attempt to focus on the process (learning by doing), not the static characteristics of entrepreneurship. In this study we are mainly interested in the personal paths of the entrepreneurs. So far, studies of this type are rather few in number.

Previous studies clearly suggest that persons with particular entrepreneurial background survive longer than others. The list of the potential factors affecting entrepreneurship is long. Some can be viewed as "pull" factors to entrepreneurial activity, some as "push" factors - and some of them have elements of both at the same time. Therefore, it has been rather difficult to establish empirically a unified picture of which factors are the most decisive in determining who becomes an entrepreneur and who survives.

Table 1. Some main factors affecting entrepreneurship in previous studies

Macroeconomic factors	Regional factors	Microeconomic factors	Personal factors
<ul style="list-style-type: none"> - aggregate demand - unemployment rate - interest rates - credit supply - access to capital markets - exchange rate 	<ul style="list-style-type: none"> - mental/physical environment - networking 	<ul style="list-style-type: none"> - economies of scale - concentration - industry size - special know how - level of capacity - level/growth rate of profits 	<ul style="list-style-type: none"> - personality - socio-economic background - education - age - etc.

Due to the increasing, but still scarce availability of panel data, reasonably few recent empirical work has tested the importance of various personal factors in entrepreneurship. Also, past literature has mostly focused on the birth, not on exit. Lindh & Ohlsson (1997) give a recent, comprehensive review of the earlier studies. The focal point of many recent studies is how big a role wealth plays in the decisions made by entrepreneurs. They deal with one of the most fundamental questions in entrepreneurship: does financing really matter?

Previous studies on the wealth effects in entrepreneurship include Evans & Leighton (1989), Evans & Jovanovic (1989), Blanchflower & Oswald (1990), Bates (1990), Hall (1992), Robson (1994), Holtz-Eakin, Joulfaian & Rosen (1994), Johnson & Parker (1996) and Lindh & Ohlsson (1996). Evans & Leighton and Evans & Jovanovic use net family assets as a measure of wealth when establishing a business. They find that these assets do matter: the higher net assets, the more likely one is to become an entrepreneur. Robson as well as Johnson & Parker used housing wealth in explaining regional variation in firm formation. Their results suggest, that housing wealth rather reflects the overall economic conditions than their collateral value. Since more favourable economic conditions may expand opportunities for a paid job, they found a negative correlation between an increase in housing equity and start-ups of new businesses. Also Bates and Hall address in their papers the question of endogeneity of asset accumulation and access to loans. In particular, is the connection between liquidity and investment caused by credit constraints or by changes in demand expectations?

By contrast, both Blanchflower & Oswald and Holtz-Eakin et al. use exogenous inheritances when explaining entry and survival of firms. Their results suggest that there

is a small significant effect of an inheritance on the probability of surviving as an entrepreneur. Lindh & Ohlsson use lottery winnings as an exogenous measure of change in wealth: they claim that in addition to windfall gains like inheritances, also lottery winnings increase the probability of being self-employed.

As well as linking together wealth and entrepreneurship, the studies mentioned above have a large repertoire of other personal characteristics that determine entry, survival and exit of entrepreneurs (see e.g. Blanchflower & Oswald). Several studies have also focused on the path of entry and exit (see e.g. Dunne et al., 1988, Evans & Leighton, 1990 and Holtz-Eakin et al., 1994). They all find that different individual work histories play an important role in entrepreneurship.

Most studies listed here use discrete choice models, either binomial or multinomial probit/logit models. Unfortunately, there are a few problems with these analysis. First of all, it is often the case that the chosen sample does not include those who decided not to become entrepreneurs. Secondly, it is only rarely possible to track individuals before and/or after their history as entrepreneurs (see e.g. Burgess & Rees, 1997). This lack of sufficient time dimension often induces endogeneity problems to the empirical analysis. Moreover, models of entrepreneurship often seem to acquire a complicated design of lag structure due to interdependency of entries and exits caused by e.g. various competition effects (see e.g. Johnson & Parker, 1996).

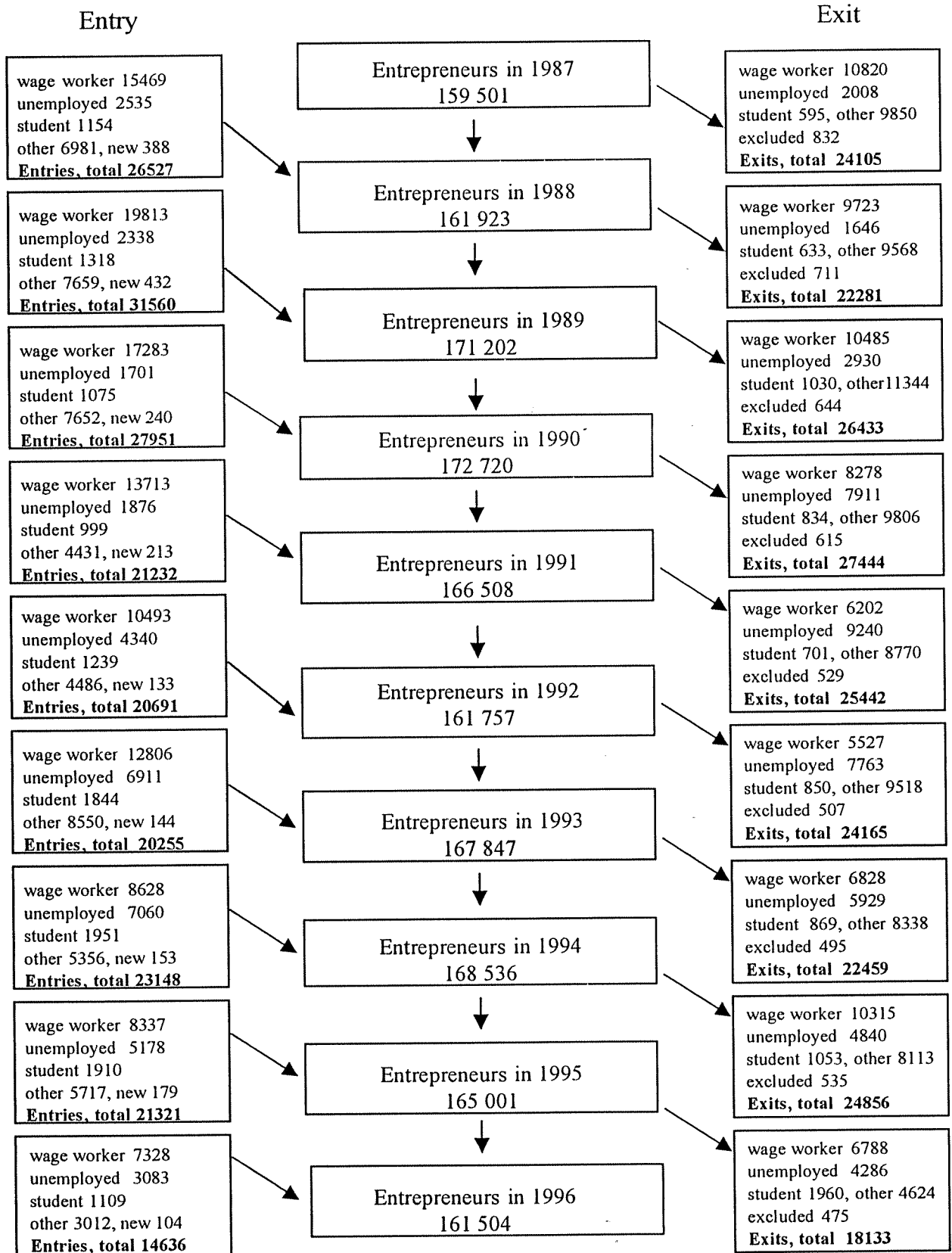
We try to avoid some of these problems by using a large sample. We use the same approach as in the exit analyses performed by Bates (1990) and Blanchflower & Meyer (1990): we estimate a binomial probit/logit model for exits. In contrast to previous studies, we also include several macroeconomic variables in our analysis. Due to the unusually deep recession of the early 1990's the particular role of wealth as a collateral and the role of conditions in the financial markets in general are under our special scrutiny. Before engaging in the more technical part of the research project the next section gives a general description of the evolution of entrepreneurship on the basis of the Employment Statistics.

2.2 How does Employment Statistics characterise the dynamics of Finnish entrepreneurs?

Employment Statistics has been created to replace the questionnaire based Population Census. Employment Statistics has been running since 1987 and it is produced by combining information from some 30 different registers. To list a few most essential ones: Population Statistics and Business Register of Statistics Finland, the registers of National Board of Taxes, Employment Service Statistics of Ministry of Labour, pension registers of Social Insurance Institution and Central Pension Security Institute, employment registers of Social Insurance Institution, Central Pension Security Institute and State Treasury, and various student registers. Thus, Employment Statistics has good coverage of entrepreneurs' socio-economic characteristics dealing with education, employment, housing, income, family composition etc. In an international comparison, Employment Statistics gives a rather special opportunity to study various interesting aspects of entrepreneurship.

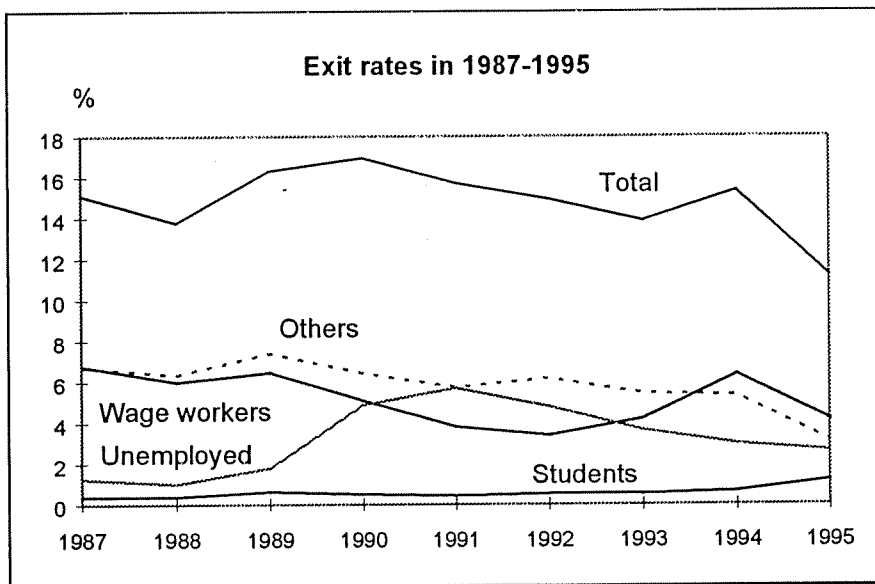
Table 2. shows the backgrounds of those who started their business ventures and the destination of those who quit as entrepreneurs between the years 1987 and 1996 (wage worker, unemployed, student). The evolution of exit rates are summarised in Figure 1. Table 3. in turn categorises entrepreneurs according to their respective industry.

The first observation from Table 2. is that there is a lot of change going on in the stock of entrepreneurs. While the number of people registered as entrepreneurs varies between 161000 and 172000 between 1987 and 1996, typically more than 20000 people become entrepreneurs every year and equally many quit. The number of entrepreneurs increases in the boom period of the 1980's only to decline substantially by the year 1992. Thereafter, the number of entrepreneurs increases in 1993 and 1994. After that, surprisingly, the total number of entrepreneurs seems to decline. The data for 1996 is, however, somewhat unreliable. Thus, it is unclear whether the most recent observations actually constitute a downward trend.

Table 2. Entrepreneurship in 1987-96: Entry and Exit

The overall exit rates in Figure 1. show surprisingly little variation over time. When the number of exits to wage work decreased in the early 1990s, exits to unemployment increased respectively. Few years later the trend reversed, as opportunities for wage work improved and exits to unemployment became fewer. As for entry rates, variation between boom and recession seems to have been more pronounced. In 1996 the entry rate for those who had a background of a wage worker had more than halved since the peak year of the 1989, when their entry rate was 12%.

Figure 1. Exit rates during boom and recession



Source: Employment Statistics.

Even though the total number of entrepreneurs changed surprisingly little over the time period under our scrutiny, there was considerable variation within certain industries. Until recently the number of entrepreneurs has varied the most in construction and commerce (Table 3.).

Table 3. The yearly changes in the number of entrepreneurs in certain sectors of the economy between 1989-1994.

	Total number in 1988	1988	1989	1990	1991	1992	1993	1994
Mining and quarrying, %-change	856	-2,6	5,0	-17,7	-7,2	-0,4	29,7	5,4
change in the number of entrepreneurs		-23	-43	-159	-53	-3	-203	-48
Manufacturing, %-change	21626	-4,6	6,9	-1,2	-4,4	-4,6	2,1	0,2
change in the number of entrepreneurs		-1043	1489	-280	-997	-999	428	32
Construction, %-change	17819	9,0	15,2	17,0	-8,0	-9,0	7,2	0,3
change in the number of entrepreneurs		1470	2704	3481	-1928	-1982	1439	55
Trade and accommodation, %-change	47282	-4,1	4,4	0,0	-2,3	-3,5	1,4	-1,7
change in the number of entrepreneurs		-2016	2082	22	-1139	-1712	671	-820
Transport and communication, %-change	21618	4,7	-1,8	6,3	-1,7	-3,3	0,7	-1,3
change in the number of entrepreneurs		971	-384	1348	-383	-731	143	-288
Finance, insurance and business-to-business services, %-change	13860	-30,8	8,7	16,3	1,0	0,8	4,6	4,1
change in the number of entrepreneurs		-6183	1201	2455	169	137	826	770
Services, %-change	23595	4,1	4,7	4,5	2,5	1,2	5,3	2,5
change in the number of entrepreneurs		932	1114	1118	643	317	1408	718
Unknown, %-change	17080	-4,5	-1,0	-41,6	1,6	8,9	0,0	6,4
change in the number of entrepreneurs		-798	-170	-7043	158	888	-1	696
Entrepreneurs, total (excl. agriculture and forestry), %-change	163736	-3,9	4,9	0,5	-2,0	-2,4	3,1	0,7
change in the number of entrepreneurs		-6690	8079	942	-3530	-4085	5118	1211

Source: Employment Statistics.

3. THE DATA: CONSTRUCTION AND CHOICE OF VARIABLES

The empirical model is estimated on a sample drawn from the Employment statistics. Since those who have survived longest as entrepreneurs are more likely than the others to be picked in a random sample at any point in time, we chose not to have a particular base year and then either back-track or forward-track the individuals in our sample. Instead, as we wanted to secure that our sample adequately represents also those entrepreneurs who did not manage to survive, the model is estimated from a randomly drawn subsample containing 25% of the people who were working as an entrepreneur at least once during the period of 1987-1995. These individuals are followed throughout the 9 year time period. We ended up with the total of 82241 individuals classified at one time or another as entrepreneurs. During the period under observation the total sample of 18522 individuals were classified as entrepreneurs at all times during the years 1987-1995.

The definition for self-employment and entrepreneurship has always been somewhat problematic. In our data we include as entrepreneurs those who are in self-employed persons' pension insurance scheme. In addition those

- who earn more from entrepreneurship than they receive from wage and salary earnings or
 - who are major owners (more than 50%) of their incorporated businesses
- are considered as entrepreneurs.

The purpose of this study is to conduct an exit-analysis. In the subsequent probit analysis the dependent variable, exit, is defined to take on the value 1 in year t if the individual acted as entrepreneur in year t and who was not an entrepreneur in year $t+1$. The total number of pooled exits amounted to 43219 individuals. In addition, both the very youngest and the oldest were dropped out from the analysis. After all, within these excluded age groups the reasons for quitting as an entrepreneur are likely to be quite different from the rest of the group. Thus, first of all, each year all the entrepreneurs who were under 18 were dropped out from the analysis. Secondly, all individuals who were over 65 in 1987 were dropped out as well. Thus, we ended up with the total of 41187 entrepreneurs who had quit at least once during the period between 1987 and 1995. The evolution of the sample is described in Table 4.

Table 4. Entrepreneurs who survived and quit in 1988-1995; the sample.

Year	Survivors	Exits:			
		Wage work	Unemployment	Other	Total
1987-88	37050	2836	545	2261	5642
1988-89	38375	2519	462	2378	5359
1989-90	39597	2793	765	2802	6360
1990-91	39362	2123	2073	2340	6536
1991-92	38385	1575	2440	2112	6127
1992-93	37385	1507	1957	2464	5928
1993-94	38717	1746	1566	2121	5433
1994-95	39493	2625	1281	934	4840

Source: Employment Statistics.

It is interesting to note that 1546 individuals exited more than once. In other words, 3.3 % of all entrepreneurs who quit, quit more than once. Furthermore, at least 45 % of the individuals who quit more than once were in and out of self-employment more than twice. In the lack of international comparison it is hard to make conclusions, but this may re-enforce the preconception that once you have failed it is difficult to start again. The average characteristics of surviving and quitting entrepreneurs are displayed in Table 5.

Table 5. Descriptive Statistics; the sample

Average % of all entrepreneurs who		
	survived	quit
Age 18-25	3,5	7,3
Age 26-30	8,6	11,1
Age 31-35	13,2	13,3
Age 36-40	17,8	15,1
Age 41-45	19,8	14,9
Age 46-50	15,5	10,8
Age 51-55	11,2	8,7
Age 56-60	7,2	7,7
Age 61-65	3,0	9,6
Age > 65	0,3	1,7
Education:		
lower secondary stage	58,9	43,5
upper secondary stage (typically matriculation exam)	24,2	28,9
comprehensive professional edu. programs (e.g. engineer)	6,1	6,3
Bachelor's degree	2,4	3,4
Master's degree	7,9	7,3
Doctor's degree	0,5	0,6
Men, %	76,2	66,1
Average entrepreneurial income, FIM*:		
transferred to wage work	69.700	48.620
transferred and remained in the labor force, other		42.240
Wealth:		
owns apartment or house, %	86,5	77,9
Taxable wealth:		
above average taxable wealth in 1991**	33,2	24,7
below average in 1991	66,8	75,3
*Standard deviation of entrepreneurial income for survivors in 1991 was FIM 95.720.		
**In 1991 the average taxable wealth of all entrepreneurs was FIM 130.900 and st.d. FIM 344.800		

Source: Employment Statistics.

Table 5. suggests that at least the following variables should turn out to be significant in our exit analysis: age, sex, wealth, and income. Earlier studies suggest that also marital status, family size and level of education are important determinants of self-employment. The earlier studies have focused mainly on the determinants of entry and survival, however. Definitions of the variables used in the empirical analysis are presented in Appendix 1. Sketch of the empirical model is presented in Appendix 2.

4. HYPOTHESIS AND PRELIMINARY RESULTS

The main focus of this study is to find out why some entrepreneurs quit and others continued as entrepreneurs. We hypothesise that

Age matters because we use age as a proxy for entrepreneurial experience. Experience is expected to enhance ones ability to run a business. Seen through the eyes of financiers, age and experience may also increase the creditworthiness of entrepreneurs. Therefore, we expect that the likelihood to exit will decrease with age. However, this relationship may not be linear. After all, it has turned out to be an empirical fact that most successful entrepreneurs are in their early 40's. At some point after that the zest for success seems to die out: old entrepreneurs are more likely to quit than those in the middle age. Thus, we also include $IKA2$, age to the power of two, as one of our explanatory variables and expect its coefficient to be positive.

Education matters, since education is an important indicator of human capital which also should be a proxy for entrepreneurial ability. Therefore, we expect the likelihood of exit to decrease with high level of education. On the other hand previous literature also acknowledges (see e.g. Johansson, 1998) that lack of education can be an important push factor for self-employment.

Wealth matters since especially in hard times entrepreneur's personal wealth can serve as collateral for loans. In this study we use a rather raw and simple measure of wealth, namely house ownership. This is because we do not have data on the total taxable wealth for the whole time period. Earlier studies have recognised the fact that it is difficult to establish a role for wealth since it tends to be an endogenous variable. In other words, the more successful an entrepreneur is the wealthier he or she becomes. By the same token, a more successful entrepreneur may also be more likely to own a dwelling. Thus, it is difficult to establish how wealth affects exits. However, it has been noted that the longer one has been an entrepreneur the less willing this person is to exit and consequently loose valuable learning-by-doing experience, for instance. This interpretation implies that in reality the endogeneity of wealth becomes less of a problem in the analysis.

On the other hand, increase in wealth can merely be a reflection of benign economic conditions and better outside opportunities for self-employed to find a job elsewhere in the economy. Therefore, an increase in wealth can actually increase the number of exits from self-employment. The use of several controls for the macroeconomic conditions - which are of interest as such- should alleviate this problem.

Macroeconomic variables: We expect that the likelihood of exit decreases with rising unemployment and rising GDP. On the other hand, the likelihood of exit is expected to increase whenever interest rates go up. Devaluation of markka is expected to cause more exits in the period covered since most small firms operated solely in the home market. At the same time many of these entrepreneurs had in the early 1990's considerable amounts of foreign currency debt. The markka value of this debt increased substantially as markka depreciated in 1991 through 1993.

Table 6. shows our preliminary empirical results.

Table 6. Preliminary empirical results

Random effects probit regression

Number of observations = 187301

Number of groups = 24147

Chi2(13) = 243.30

Deviance = 142211.14

Dispersion = .759322

Pearson chi2 (187287) = 189563.70

Dispersion (Pearson) = 1.0122

EXIT	Coef.	Std.error	z	95% Conf. Interval	
SP	.0008	.00049	1.781	-.00009	.00186
IKA	-.0004	.00016	-2.800	-.00075	-.00013
IKA2	3.80e-6	1.81e-6	2.098	2.51e-7	7.35e-6
HAPE	.0016	.00077	2.120	.00012	.00314
ED1	-.0038	.00259	-1.498	-.00894	.00119
ED2	-.0033	.00261	-1.269	-.00842	.00180
ED3	-.0046	.00273	-1.706	-.01001	.00069
ED4	-.0059	.00291	-2.027	-.01162	-.00019
ED5	-.0024	.00274	-0.887	-.00780	.00294
DUE	-.0020	.00027	-7.516	-.00256	-.00150
DREX	.0054	.00078	6.938	.00389	.00694
DGDP	-.0149	.00352	-4.247	-.02186	-.00806
RINTR	.0299	.00328	9.111	.02350	.03637
CONSTANT	-1.271	.02718	-46.760	-1.3243	-1.2178

Where

- EXIT dependent variable; exit=1 if individual quits self-employment (and switches into wage employment, unemployment etc.)
- SP individual's sex; = 1 if male
- IKA individual's age
- IKA2 age squared
- HAPE house ownership; =1 if respondent owns house or apartment
- ED1 education level 1; =1 if lower secondary stage

ED2	education level 1; =1 if upper secondary stage
ED3	education level 1; =1 if comprehensive professional education program
ED4	education level 1; =1 if Bachelors' degree
ED5	education level 1; =1 if Masters' degree
DUE	change in the ratio of unemployed to labour force
DREX	change in real effective exchange rate
DGDP	change in gross domestic product
RINTR	real interest rates: 3mth Helibor deflated by consumer price index

The effects of macroeconomic factors are highly significant and in line with a priori expectations. GDP growth reduces the likelihood of exits. This finding is consistent with Johnson and Parker (1996), who find that (lagged) growth in GDP reduces exits. Similarly, as the number of unemployed increases, the likelihood of an exit drops. This is plausible, as outside opportunities for self-employed become fewer with high unemployment. An increase in DREX means devaluation. Devaluation increases the likelihood of an exit. The mechanism is likely to work through the increased debt service associated with foreign currency debt. Finally, an increase in interest rates has a rather substantial, positive effect on the likelihood of exiting.

Turning to the individual factors, Table 6 shows that entrepreneurs with low education seem to be less likely to quit. However, the significance level is low. This result is in line with Johansson (1998). He found that higher levels of education tend to decrease the probability of going into self-employment. On the other hand, Bates (1990) found that those with higher education were more likely to survive. This was not, however, true for those holding a Ph.D: they were more likely to quit. Controlling the size and branch of the industry might give further information on the importance of education.

Age as an explanatory variable behaves as expected: up to a certain point age decreases the likelihood of quitting. Later on the age effect becomes reversed, however. This result is in line with earlier studies (see e.g. Blanchflower & Meyer, 1994, Holz-Eakin et al., 1994 and Bates, 1990). In addition we find that men are more likely to exit than women.

The wealth indicator, HAPE turns out to be significant and positive, even after controlling for the changing macroeconomic environment. In other words, contrary to our expectations, the likelihood of exits increases as entrepreneurs become wealthier, at least when measured by house ownership. One interpretation is that entrepreneurs owning a dwelling were forced into bankruptcy more often than others, as they had collateral that could be seized by the creditors. Another possibility is that the businesses run by dwelling owners differ in nature from those run by other entrepreneurs. Therefore, controlling for the size of the operation and industry might be helpful in this re-

gard. Similarly, the exit behaviour may differ a great deal between the involuntary and voluntary exit routes. For example, generally exit into unemployment would be interpreted as an involuntary exit. Allowing for different exit routes would call for a different type of analysis, e.g. multinomial logit analysis.

5. CONCLUDING REMARKS

The preliminary analysis of a very large sample of Finnish entrepreneurs in the period of economic boom and recession has revealed some important patterns. First of all - as expected - macroeconomic factors were utterly important in explaining termination of entrepreneurship.

Second, individual characteristics have played a crucial role in exit decisions as well. Age has a non-linear effect on the likelihood of exit. At the young end, age decreases exit probability. Later on age increases the quitting probability. This is in line with the results obtained with other data sets. Education seems, on the other hand, increase exit probability. This is more difficult to reconcile with our expectations and thus requires further examination.

Wealth as measured by ownership of a dwelling increases the likelihood of exit in our analysis. This is also rather unexpected and clearly calls for further investigation. Most likely distinguishing between different types of exit routes, i.e. into unemployment and wage work, would shed additional light on this relationship. Also the use of other wealth indicators, which are available for a subset of the sample, could be useful. In addition, combining data on the type of business (branch, size) would be highly desirable.

Appendix 1. Sketch of the empirical model

$$\begin{aligned}
 & \begin{bmatrix} 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & 0 \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}_{NT \times 1} = \begin{bmatrix} 1 & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ 1 & \cdot & \cdot & 1 \end{bmatrix}_{NT \times 1} \alpha + \begin{bmatrix} X_{1it} & \cdot & \cdot & X_{1iT} \\ \cdot & \cdot & \cdot & \cdot \\ X_{Nit} & \cdot & \cdot & X_{NiT} \end{bmatrix}_{NT \times k} \begin{bmatrix} \beta_1 \\ \cdot \\ \cdot \\ \beta_k \end{bmatrix}_{k \times 1} + \begin{bmatrix} u_{1t} & \cdot & \cdot & u_{1T} \\ \cdot & \cdot & \cdot & \cdot \\ u_{Nt} & \cdot & \cdot & u_{NT} \end{bmatrix}_{NT \times 1}
 \end{aligned}$$

$NT \times 1$
 $NT \times 1$
 $NT \times k$
 $k \times 1$
 $NT \times 1$

$1 = \text{exit}$
 $0 = \text{entrepreneur}$

Where X_{it} is
 a vector with k different
 explanatory variables

$N = 41187$
 $T = 8$
 $k = \text{number of explanatory variables}$

where
 $u_{it} = v_i + \epsilon_{it}$

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