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Self employment among Italian female graduates

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Self employment among Italian female graduates[1]

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Abstract

Purpose: To investigate the gender impact of tertiary education on the probability of entering and remaining in self employment.

Design/methodology/approach: We exploit a data set on labour market flows produced by the Italian National Statistical Office by interviewing about 62,000 graduate and non graduate individuals in transition between five labour market states: Dependent workers; Self-Employed workers; Unemployed persons; Non active persons. From these data we constructed an average ten-year transition matrix (1993-2003) and investigated the flows between labour market conditions by applying Markovian analysis.

Findings: Our data show that education significantly increases the probability of entering self employment for both male and female graduates, but it also significantly increases the transition from self employment to dependent employment for female graduates, thereby increasing the percentage of female graduates in paid employment and reducing the percentage of women in entrepreneurial activities. We argue that the disappointment provoked by the gender wage gap in paid employment may induce some female graduates with low entrepreneurial ability to set up on their own, but once in self employment they have lower survival rates than both men in self employment and women in paid

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employment. Thus, what we observe overall, is that education widens the gender gap between self employed workers and employees for individuals persisting in the same working condition**.**

Originality/value: Our data enable us to shift the focus of the relationship between education and entrepreneurship from the probability of *being* self employed to the probability of *entering* and *surviving* in this condition.

Introduction

Why do some individuals and not others become self employed?[2] Why do some individuals manage to continue in business while others fail? We know from the theoretical literature on entrepreneurship (Lucas 1978) that those who choose self employment are all individuals for whom the use of their ability in entrepreneurial functions guarantees earnings higher than they would otherwise receive. As a consequence, people in self employment are related to both entrepreneurial ability and outside options. All else equal, individuals with relatively high entrepreneurial abilities have a comparative advantage in self employment, and will prefer this situation to wage work (or unpaid work).

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2 The definition of self-employment most suitable for our purposes in this paper is that people in self employment are *employers* of themselves and sometimes of others. The feature shared by self-employers and other-employers is their economic status as non-dependent workers. In our data, individuals are classified as self employed or wage employed on the basis of a direct question related to their current job.

The empirical literature on entrepreneurship indicates some personal characteristics other than ability that may facilitate entry into self employment such as, education, gender, age, ethnic background, family background, previous work experience, risk taking propensity, job satisfaction, and so on. In this paper we focus our analysis on education and gender alone: more specifically, we investigate the gender impact of education on the probability of entering and remaining in self employment. Education may either enhance individual entrepreneurial ability, thereby increasing the probability of choosing self employment, or education may increase opportunities for subordinate employment, thereby reducing the likelihood of becoming an entrepreneur. As a consequence, the effect of education on entrepreneurship cannot be determined *a priori* (Le 1999), and it is not surprising that empirical results on the effect of education on self-employment selection are not robust.[3]

In this paper we provide additional empirical evidence regarding the Italian graduates labour market. Our data show that education significantly increases the probability of entering self employment for both male and female graduates, but it also significantly increases the transition from self employment to dependent employment for female graduates. As a consequence, self employed female graduates exhibit lower survival rates than self employed male graduates, thereby increasing the percentage of women in paid employment and reducing the percentage of women in entrepreneurial activities. Our data indicate that the probability of male graduates persisting in self employment is nearly the same as in paid employment, while the probability of female graduates persisting in self

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[3] A meta-analysis of 94 academic studies conducted by Van der Sluis, van Praag and Vijverberg (2003) reaches the conclusion that the effect of education on entrepreneurship is neither positive nor negative.

employment is much lower than that in paid employment. In explanation of this finding, we argue that the cut-off level of ability may be of substantial importance for the entrepreneurial performance of female graduates.

Our contention is that the gender wage gap in paid employment lowers the opportunity cost of the entrepreneurial choice for female graduates (relatively to male graduates). As a consequence, the cut-off level of entrepreneurial ability for which the self employed are separated from employees is lower for female graduates than it is for male graduates. Since earnings in self employment are related to entrepreneurial ability, and since survival in self employment is related to earnings, our empirically verified hypothesis in this paper is that self employed female graduates will have lower survival rates than self employed male graduates.

By applying Markovian analysis to labour market transition matrices[4] we verify the following hypothesis: education increases the probability of entering self employment for

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4 The Markov approach to labour market transitions enables changes in self employment, dependent employment, unemployment and non-participation to be modelled in terms of two series: inflows and outflows. For example, the net change in self employment is the outcome of two gross changes: inflows into self employment (from departure states of dependent employment, unemployment and not in the labour force individuals) and outflows to destination states (dependent employment, unemployment and not in the labour force individuals). Modelling labour market transition in this way can show whether a fall in female self employment is due to a decrease in the inflow rate, an increase in the outflow rate or both. Our data show that the fall in self employment among Italian female graduates is the outcome of an increase of both inflows and outflows. Even if education increases the

both male and female individuals, but the survival rates in self employment are lower for female graduates than they are for male graduates. Owing to their lesser ability, female graduates run less profitable businesses and earn lower incomes than male graduates. As a consequence, after a short period spent in self employment, many of them leave entrepreneurship and move to paid employment. Thus, what we observe overall, is that education reduces the percentage of women in self employment activities, and significantly raises the percentage of women in paid employment.

This paper has two advantages over previous research. The first is that in Italy self-employment is a clear alternative to paid employment because the share of self-employment in total employment is above 28 percent (Eurostat 2004). Among graduate workers, the self-employment rate is above 26 percent, the highest rate in Europe and more than double that in Denmark, France, Spain, Portugal, Sweden, Netherlands and Finland (Eurostat 2002).[5]

The second advantage of this paper is that our data enable us to shift the focus of the relationship between education and entrepreneurship from the probability of *being* self employed to the probability of *entering* and *surviving* in this condition. As pointed out by

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probability of entering self employment for female graduates, it increases even more the outflow rate to dependent employment, lowering their survival rate in self employment.

5 In our data, the share of self-employment in total employment is 31.6 percent for men and 22.4 percent for women. In most previous studies on entrepreneurship, the share of self employment is lower than in our data. For example, in Moore (1983) the self employment rates were only 6.7 percent for men and 2.5 percent for women; in Devine (1994) 12.8 percent for men and 5.8% for women; in Clain (2000) 10.6 percent for men and 5.2 percent for women.

Evans and Leighton (1989), stock data depict self employed workers as individuals who enter self employment and remain self employed until the time of data collection. But as a result, entry and exit decisions are mixed. Instead, looking at those who enter self employment, at how long they stay self employed, and at what they do afterwards is important to gain understanding of the role performed by self employment in the labour market. Flow data on entries into and exits from self employment are therefore of substantial importance.

Who becomes self employed?

Individuals differ in their entrepreneurial abilities. When in employment, individuals can be either self employed or employees, but not both at the same time. Each person must decide whether to be an employer (of him/herself and perhaps of others) or an employee. If people choose paid employment they receive a wage which is independent of their entrepreneurial ability. If people choose self employment they receive a return which is increasing in their entrepreneurial ability. Which sector people choose is determined by the utility of working in each employment condition. One determinant of this utility is the expected level of earnings. A higher amount of earnings in self employment should, all else equal, make the entrepreneurial choice more likely. By contrast, a higher amount of wages in paid employment should, all else equal, reduce the likelihood of a person's becoming an entrepreneur.

Since employees earn wages independent of their entrepreneurial ability and the self employed receive earnings that increase according to their entrepreneurial ability, there

must be a unique cutoff level of ability at which, in equilibrium, individuals with equal or higher ability are entrepreneurs and the rest are employees. This means that, in equilibrium, self employed workers must receive returns on their entrepreneurial ability at least as high as the wage they would receive in paid employment. As a consequence, people in self employment are related to both entrepreneurial ability and wages in paid work. All else equal, individuals expecting lower wages in paid work will prefer self employment activities; all else equal, individuals with higher entrepreneurial ability will prefer self employment to paid work.

As in Blanchflower (2004), we find that the probability of *being* self employed is lower among highly educated workers; but our flow data show that the opposite is the case when the probability of *entering* self employment is considered. Examining transitions among the self employment, paid employment, unemployment, and out of the labor force conditions reveals that education increases the probability of *entering* self employment for individuals from whatever origin, and for both male and female graduates.

As in Moore (1983), Devine (1994) and Clain (2000), we find that the probability of *being* self employed is lower for females than for males, both for the total population and for tertiary educated individuals. Furthermore, our data reveal a significantly lower persistence in self employment for women than for men, both in the total population and among graduated persons. These results provide additional evidence on the relationship between performance and gender in self employment. They aid understanding of the link between motivation (which is different for females than for males), entrepreneurial ability (which is lower for females than for males), and performance (which is lower for females than for males).

The previous literature on gender and entrepreneurship suggests that female and male entrepreneurs may differ in their motivations, and that these differences may be related to female performances in entrepreneurship. Scherer, Brodzinski and Wiebe (1990) report that males have a higher preference for entrepreneurship than females; Matthews and Moser (1996) report that female university graduates have less interest in owning small businesses than do male graduates; Scott (1986) finds that women choose entrepreneurship in order to achieve a balance between career and personal life/family. Buttner and Moore (1997) highlight the desire of women to pursue entrepreneurship for career advancement as well: they suggest that women are motivated to choose entrepreneurship either because of traditional entrepreneurial motivations or because they experience gender related barriers to their career advancement in paid employment. Nabi and Holden (2008) emphasise the role of entrepreneurial intentions in planning self employment as a career choice. A transition from entrepreneurial intentions to actual start-up is often assumed in the literature, but under-researched in terms of career development. As career related decisions reflect a cognitive process in which beliefs and intentions evolve as experiences are processed, perceived ability and gender related barriers may lower the attractiveness of self employment and lead female graduates to flow to the best available opportunity. Given the increasing numbers of graduate self employed and the diverse range of contexts in which graduates pursue an entrepreneurial career, it is important to investigate the link between education, intention and actual career choice, because there is no universal approach to graduate entrepreneurship that works for all contexts and tailored approaches are required to best suite graduate starts-up and small business learning (Nabi and Holden 2008).

We build on this literature stream on observing the flow data in Italy, and by applying Markovian analysis to labour market transitions we confirm our hypothesis that female

graduates rarely move from paid employment to self employment, but the reverse is often the case. Our assumption on observing the flow data is consistent with previous studies on entrepreneurial motivations that focus on barriers to career paths for females in paid employment. Our contention is that the disappointment provoked by lower wage offers induces female graduates to become entrepreneurs whether or not they possess entrepreneurial ability. This lack of entrepreneurial skills, in its turn, provides insights into the possible reasons for gender differences in management patterns and business performance (Chaganti and Parasuraman 1996; Fasci and Valdez 1998), that is, in this paper, lower survival rates in self employment. Other reasons for female underperformance in self employment may be the stereotypes about women which affect their roles as entrepreneurs in businesses (Chaganti 1986; Fagenson and Marcus 1991).

Who lasts in self employment, and who leaves it?

On leaving university, female graduates search for jobs and ask employers about employment conditions, wages and career prospects. According to previous studies, men are more likely to be employed in senior management positions compared to women with the same educational levels. Hence female graduates receive proposals of lower status jobs, lower wages, and worse career prospects than those offered to their male counterparts, even if their educational performances are better than those of male graduates (Istat 2004).[6]

6 The average net monthly income of individuals who graduated in 2001, and who were full-time employees three years late, is 1,295.3 euros for males and 1,131.8 for females (Istat 2004).

The lack of opportunities for wage and salary employment is an important determinant of self employment (Evans and Leighton 1989). People with the same educational level compare themselves to others; and lower earnings, especially if the difference is considered unfair, may induce female graduates to seek other opportunities in order to gain higher rewards for their skills.

When in self employment, female graduates either realize that they do not possess the characteristics necessary for successful entrepreneurship or they find it difficult to overcome the prejudices of lending institutions concerning female entrepreneurs. According to previous studies, stereotypes about female entrepreneurship are pervasive in society, and the charging of higher interest rates and higher collateral requirements to women is a recurring theme in the economic literature on capital constraints (Coate and Tennyson 1992; Carter and Rosa 1998; Coleman 2000; Orhan 2001).

Because some female graduates are pushed into self employment even if they are not particularly skilled entrepreneurs, and because they encounter the same gender stereotypes and difficulties as in dependent employment once they have entered self employment, their business performances may be lower than those of males, and women-owned businesses are more likely to fail than those started up by men (Chaganti 1986; Rosa, Carter and Hamilton 1996; Fasci and Valdez 1998; Du Rietz and Henrekson 2000; Watson 2003). As a consequence, many female entrepreneurs flow out of self-employment, and some of them enter paid employment, thereby increasing the percentage of female graduates in paid employment and reducing the percentage of women in entrepreneurial activities. We verify this hypothesis by analysing the labour market flow matrices produced by the Italian Institute of Statistics (Istat).

The Flow Data

Entries to or exits from a condition or state can be studied using a method based on longitudinal data: that is, data collected from subjects who have been interviewed repeatedly over time. In Italy, it is possible to obtain information of this type from the three-monthly labor force survey conducted by Istat. These data enable the construction of flow matrices, quarterly and annual, between the states of the labor market by re-interviewing a proportion of the individuals in the sample.

We examined ten annual matrices, produced by Istat but not published, which refer to the period 1993/94-2002/03 (the individual data collected amount to more than 62,000).[7] Available at present are ten consecutive annual matrices from which we constructed an average matrix in order to neutralize the random elements and provide information better suited to long-period analysis. Also available for each of these matrices are disaggregations by sex for both the total population (general matrices) and tertiary educated persons

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[7] The survey method used is to interview the same subjects on several occasions over time following the rotation of the households in the sample constructed for the labor force survey. The matrices discussed here are relative to the average annual flows obtained by combining the individuals records relative to the same cohort of persons subjected to two corresponding surveys (i.e. conducted in the same month of two successive years). The minimum number of individual data collected is 62,907 in the 1984/1985 matrix; the maximum number of individual data collected is 73,348 in the 1996/1997 matrix.

(graduates matrices). These disaggregations are still reliable, because they concern a large portion of the sample (the individual data collected amount to more than 3,000).[8]

The data in Table I show the gross flows among four states (Self-Employment; Dependent Employment; Unemployment and Out of labor force) for the general matrix and the graduates matrix. The table illustrates the magnitude of the gross flows into and out of self employment. The two most substantial gross flows among states in both the general matrix and in the graduates matrix are those connecting self employed workers and employees. Every year, more than 290,000 individuals move from self employment to paid employment, and more than 311,000 individuals leave their employer and become self employed, out of a stock of 6.0 million self employed and an employment total of 22.5 million (Istat 2005). As regards graduates, every year, about 40,000 tertiary educated persons move from dependent employment to self employment, and another 40,000 move from self employment to paid employment, out of a stock of 3.3 million graduates in employment (Istat 2005). Table I shows that the most substantial gross flow into self employment consists of individuals moving from subordinate employment, followed by persons starting from inactivity, and then by previously unemployed persons, for both men and women, and in both the general matrix and the graduates one.

The data in Table I can be read as a finite Markov chain. A Markov chain is a stochastic process, which describes the transition from one state to another over time using probabilities. At each point in time *t*, we have a transition matrix which represents the probabilities of moving from state *i* at time t to state *j* at time *t+1*. The probability of transition to any state *i* at time *t* is considered to be conditioned only at the state reached at

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8 The minimum number of individual data collected is 3,105 in the 1994/1995 matrix; the maximum number of individual data collected is 4,693 in the 2001/2002 matrix.

the instant *t-1* immediately prior to the present one, so that the individual's less recent history is omitted (Kemeny and Snell 1960).

Table II presents the horizontal coefficients of the ten-year matrix for both the total population and tertiary educated persons. These coefficients can be read as the probabilities of transition among the states. Overall, the data indicate that education does facilitate entry into employment, but that it does not induce a much longer persistence in this state. The most significant horizontal coefficients show that the probability of remaining out of the labor force is lower for tertiary educated individuals (85 percent in the graduates matrix; 93 percent in the general matrix). Moreover, the probability of tertiary educated individuals moving from inactivity to both self employment and dependent employment is more than twice as high as that of the total population (respectively 1.1 percent and 2.3 percent in the general matrix; 2.9 percent and 6.1 percent in the graduates matrix).

However, the likelihood of graduates persisting in employment (for both the self employed and employees) is only slightly higher than that of the total population (respectively 94.2 percent for employees and 88.8 percent for the self employed in the graduates matrix; and 92.1 percent for employees and 87.0 percent for the self employed in the general matrix). Moreover, it is interesting to note that self employment is less stable than paid employment for both graduates and the total population. Self employed persons who change state are more likely to enter dependent employment (5.5 percent) than they are to pass to unemployment or inactivity, and this likelihood is even higher for tertiary educated persons (7.3 percent). That is to say, more than 65 percent of all graduates leaving self employment move to paid employment. Similarly, the exit flows from paid employment show that about half of all graduates leaving wage work start up a business on their own.

Breaking the data down by gender reveals substantial differences between male and female graduates. The data in Table II indicate a significantly lower persistence rate in self employment for female graduates than for male graduates (respectively 82.4 percent for females and 91.2 percent for males). By contrast, the persistence rate in paid employment is slightly higher for female graduates than it is for male graduates (respectively 94.5 percent for females and 93.8 percent for males). That is to say, the likelihood of male graduates persisting in self employment is nearly the same as in paid employment, while the likelihood of female graduates persisting in self employment is much lower than that in paid employment.

The composition ratios by sex in the gross flows (Table III) highlight that graduate women are not reluctant to set up on their own: they constitute, in fact, 47.1 percent of the gross flow from inactivity to self employment, and 48.7 percent of the gross flow from unemployment to self employment. But the crucial point here is that they are unable to continue in self-employment (only one out of every four survivors in self employment is a woman, even if women are one out of every two survivors in wage employment). Moreover, the sex ratios in the exit flows from self-employment to both unemployment and non-activity are higher than the exit flows from self-employment to paid employment (respectively 51.8 percent for the gross flow to unemployment, 42.4 percent for the gross flow to non-active persons and 41.6 percent for the gross flow to subordinate employment).

Furthermore, it is worth noting that education widens the gender gap between self employed workers and employees for individuals persisting in the same working condition. The percentage of women in graduate employment is 49.0 percent in the wage sector and 25.1 percent in the self employed sector. The percentage of women in total employment is 38.6 percent in the wage sector and 26.9 percent in the self employed sector.

Finally, it is interesting to note that female graduates are twice as likely to move from self employment to paid employment as male graduates (respectively 5.8 percent for male graduates and 11.3 percent for female graduates, in Table II). These first results seemed to confirm our initial hypothesis, and called for further investigation based on Markovian analysis of the transition matrices.

Markovian Analysis of the Transition Matrixes

For our present purposes, the most interesting results yielded by application of Markov chains to the transition matrixes concern the *limiting vector* and the *mean first passage time matrix* (Kemeny and Snell 1960).

The *limiting vector* represents the equilibrium point of a transition matrix of a finite Markov chain. If we let the process run for an indefinite time span, we end up in an equilibrium state called the stationary distribution. This is made up of the fixed probabilities of belonging to the states of the system in the long period. The limiting vector was calculated for both the general matrix and for the graduates matrix (Table IV). The data establish that in the long period the probability of belonging to self employment is 0.18 for males and only 0.06 for females in the general matrix, and 0.29 for males and only 0.12 for females in the graduates matrix.

The *mean first passage time matrix* (MFPT) is a measure of the distance between the states of a system. The idea behind this concept is that if it is possible to re-enter each state at any point in time, one can compute the average number of transitions needed to arrive from origin *i* to the destination *j* for the first time. More specifically, its elements indicate

the average time taken to reach a given destination for the first time starting from a certain origin. These distances take account not only of the direct flows between any pair of states, but also of all possible indirect flows. The results of the general matrix (Table V) show that the average time taken to reach both self employment and paid employment is greater for females than for males whatever its origin may be, but the average time taken to reach inactivity is lower for females than for males from whatever origin.

Only one of these features changes as regards the graduate component. The average time taken to reach paid employment starting from inactivity is lower for female than for male graduates (12.3 for females and 13.5 for males). Owing to education, the average distance between inactivity (or unemployment) and paid employment becomes much shorter for females than for males, but this is not the case for the average time taken to reach self employment starting from inactivity, where the positions of males and females are (as usual) reversed (26.9 for males and 40.6 for females). Moreover, the data show that the average time taken to reach paid employment by individuals starting from self employment is much shorter for female graduates (9.8) than for male graduates (15.7). By contrast, the average time taken to reach self employment starting from paid employment is much longer for female graduates (43.5) than for male graduates (27.7).

These results confirm our hypotheses: female graduates rarely move from paid employment to self employment; on the contrary, they often move from self employment to paid employment. The data in Table V show that the average time taken to reach self employment starting from paid employment is more than four times longer than the time taken by female graduates to reach paid employment starting from self employment.

Conclusions and research agenda

This paper has investigated gender differences in the propensity for self employment of Italian graduates by conducting Markovian analysis of a ten-year transition matrix. It has found that graduate women who choose self employment have lower survival rates than men. It has also found that graduate women who choose self employment have lower survival rates than those who choose paid employment.

In explanation of these differences, we have argued that the cut-off level of ability may be of substantial importance for the entrepreneurial performance of female graduates. Our contention is that the disappointment provoked by the gender wage gap in paid employment may induce female graduates to become entrepreneurs whether or not they possess entrepreneurial ability. Because some female graduates are pushed into self employment even if they are not very skilled entrepreneurs, and because they encounter the same gender stereotypes and difficulties as in dependent employment once they have entered self employment, many of them switch occupations and enter paid employment We have verified this hypothesis by applying Markovian analysis to labour market transition matrices. We have found that graduate women are not reluctant to set up on their own, but after a short period spent in self employment they flow out of entrepreneurship and move to more enduring work positions in paid employment. Our data have shown that female graduates are twice as likely to move from self employment to paid employment as male graduates; subordinate employment is perceived by female graduates as a place of arrival from which they rarely move again when in employment.

These results confirm our hypotheses: female graduates rarely move from paid employment to self employment; on the contrary, they often move from self employment to paid employment. Thus, what we observe overall, is that education widens the gender gap

between self employed workers and employees for individuals *persisting* in the same working condition.

This paper could be extended in three further ways.

First, gender discrimination in credit market is illegal in Italy as in all developed countries, but there is convincing evidence that may nevertheless exist (Muravyev et al. 2009; Alesina, Lotti and Mistrulli 2008; Cavalluzzo, Cavalluzzo, and Wolken 2002) and further research is needed in order to identify sources of this important phenomenon. Fay and Williams (1993) tested for discrimination by sending out identical loan applications whose sole difference was the name (i.e. the gender) of the individual seeking financing. They found that the applications were significantly more likely to be refused or charged a higher rate of interest if the name was female than male. Riding and Swift (1990) showed that women seeking business loans are required to provide higher levels of security than are male applicants. Alesina, Lotti and Mistrulli (2008) find that in Italy women pay a higher interest rate than men, after controlling for a host of personal an business characteristics. Their results remain strong after controlling for a variety of risk factors, including the length of credit history of the individual borrower, the sector in which the borrower operates and the length of the borrower and lender relationship. Moreover, Alesina, Lotti and Mistrulli find that, when a woman has a male guarantor, her interest rate goes down, rather than up, while a woman guaranteed by a woman is considered the absolute worst possible borrower by banks.

Second, explaining variations across European countries in the field of graduate entrepreneurship may improve the effectiveness of entrepreneurship education programmes. Countries may vary not only in the extent of self employment among graduates but in the characteristics of self employment as well. Such differences are

conditioned by varying institutional arrangements that make entry and survival in self employment more or less likely. As an example, countries with high levels of self employment, such as Italy, Portugal and Greece, tend to have negative associations between education and self employment while countries with lower levels of self employment such as Germany, France and the Netherlands show a strong positive correlation between tertiary education and the likelihood of becoming self employed (Blanchflower 2000). Moreover, labour market regulation and taxation policies also likely affects self employment activities across countries. In Australia, the United Kingdom, and the United States, new businesses could be established with one very short procedure and with a minimum amount of financial costs associated with regulatory compliance while in France, Germany, the Netherlands, as well as Italy and Japan, there are higher degrees of labour market regulation and higher procedural costs (Arum and Muller 2004).

Third, more longitudinal research is required to investigate the motivation and entrepreneurial intentions of the unsuccessful entrepreneurs (that is the movers from self employment to wage employment). Blanchflower and Meyer (1994) find a positive effect of education on entrepreneurial exit, while Burke et al. (2008) find a negative effect, and Van Gelderen et al. (2005) find no effect at all of education on exit. A consideration of this dimension may enhance our understanding of graduate career-making, and may lead to enterprise education programmes focusing on a better link between the business start-up and the entrepreneurial identity.

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Table. I – Gross flows (in thousand) of the ten-year transition matrix 93-03 (general matrix and graduates matrix).

MF general matrix

	SE	DE	U	N
SE	4596053.5	290455.7	65614.6	330398.5
DE	311625.8	12253345.1	231800.0	512228.6
U	89438.2	377076.3	1170303.9	610017.6
N	270043.3	523777.7	720607.6	21102474.2

M general matrix

	SE	DE	U	N
SE	3359865.4	197253.3	43388.7	168899.2
DE	223136.2	7518645.9	132750.0	285646.5
U	59282.2	212656.4	579191.9	223766.9
N	131325.1	264433.2	296857.7	7183756.5

F general matrix

	SE	DE	U	N
SE	1236188.2	93202.5	22226.0	161499.3
DE	88489.6	4734699.2	99050.0	226582.1
U	30156.0	164420.0	591112.0	386250.8
N	138718.3	259344.6	423749.9	13918717.7

MF graduates

	SE	DE	U	N
SE	485858.0	39966.6	4335.9	16673.1
DE	40080.0	1367990.3	11317.3	33415.8
U	11179.5	31092.3	65855.0	28033.2
N	15499.5	32464.8	29220.2	451305.0

M graduates

	SE	DE	U	N
SE	363894.0	23330.1	2090.5	9610.5
DE	25728.6	697349.0	3977.8	16277.2
U	5732.8	13052.2	23950.4	8580.3
N	8199.0	15983.8	10018.6	207016.0

F graduates

	SE	DE	U	N
SE	121964.0	16636.5	2245.4	7062.6
DE	14351.5	670641.0	7339.5	17138.6
U	5446.7	18040.1	41904.6	19452.9
N	7300.5	16481.0	19201.6	244290.0

Legend: The departure states are arranged in the rows and the destination states in the columns. Self-employed workers: SE; Dependent workers: DE; Unemployed persons: U; Non active persons: N. Source: our calculations on ISTAT data

Table. II – Horizontal coefficients (exit rates) of the ten-year transition matrix. 93-03 (general matrix and graduates matrix).

MF general matrix

	SE	**DE**	**U**	**N**
SE	0.8700	0.0550	0.0124	0.0625
DE	0.0234	0.9207	0.0174	0.0385
U	0.0398	0.1678	0.5209	0.2715
N	0.0119	0.0232	0.0319	0.9330

M general matrix

	SE	**DE**	**U**	**N**
SE	0.8914	0.0523	0.0115	0.0448
DE	0.0273	0.9214	0.0163	0.0350
U	0.0552	0.1978	0.5388	0.2082
N	0.0167	0.0336	0.0377	0.9121

F general matrix

	SE	**DE**	**U**	**N**
SE	0.8170	0.0616	0.0147	0.1067
DE	0.0172	0.9196	0.0192	0.0440
U	0.0257	0.1403	0.5044	0.3296
N	0.0094	0.0176	0.0287	0.9442

MF graduates

	SE	**DE**	**U**	**N**
SE	0.8885	0.0731	0.0079	0.0305
DE	0.0276	0.9416	0.0078	0.0230
U	0.0821	0.2284	0.4837	0.2059
N	0.0293	0.0614	0.0553	0.8540

M graduates

	SE	**DE**	**U**	**N**
SE	0.9122	0.0585	0.0052	0.0241
DE	0.0346	0.9381	0.0054	0.0219
U	0.1117	0.2544	0.4667	0.1672
N	0.0340	0.0663	0.0415	0.8582

F graduates

	SE	**DE**	**U**	**N**
SE	0.8246	0.1125	0.0152	0.0477
DE	0.0202	0.9453	0.0103	0.0242
U	0.0642	0.2126	0.4939	0.2293
N	0.0254	0.0574	0.0668	0.8504

Legend: See Table I

Table III – Ratios of composition by sex of the ten-year transition matrix 93-03 (general matrix and graduates matrix).

Ratios of composition by sex - general matrix

	SE	**DE**	**U**	**N**
SE	26,9	32,1	33,9	48,9
DE	28,4	38,6	42,7	44,2
U	33,7	43,6	50,5	63,3
N	51,4	49,5	58,8	66,0

Ratios of composition by sex - graduates

	SE	**DE**	**U**	**N**
SE	25,1	41,6	51,8	42,4
DE	35,8	49,0	64,9	51,3
U	48,7	58,0	63,6	69,4
N	47,1	50,8	65,7	54,1

Legend: See Table I

Table IV – Limiting vectors of the ten-year transition matrix 93-03 (general matrix and graduates matrix).

	SE	**DE**	**U**	**N**
MF general matrix	0.1205	0.3317	0.0484	0.4994
M general matrix	0.1822	0.4011	0.0488	0.3679
F general matrix	0.0638	0.2685	0.0482	0.6194
MF graduates	0.2128	0.5768	0.0312	0.1792
M graduates	0.2947	0.5291	0.0203	0.1558
F graduates	0.1187	0.6307	0.0438	0.2068

Legend: See Table I

Table V – Mean first passage time matrix 93-03 (general matrix and graduates matrix).

MF general matrix

	SE	**DE**	**U**	**N**
SE	8.30	23.51	44.97	17.15
DE	53.22	3.01	44.49	19.98
U	54.25	20.37	20.66	10.51
N	59.16	28.82	38.34	2.00

M general matrix

	SE	**DE**	**U**	**N**
SE	5.49	19.36	46.84	22.09
DE	40.09	2.49	45.82	23.48
U	38.94	13.98	20.51	14.88
N	43.37	21.03	37.75	2.72

F general matrix

	SE	**DE**	**U**	**N**
SE	15.66	29.77	42.21	11.67
DE	76.35	3.72	42.50	16.68
U	78.50	28.66	20.73	7.35
N	82.51	37.74	38.47	1.61

MF graduates

	SE	**DE**	**U**	**N**
SE	4.70	13.17	66.92	34.70
DE	33.87	1.73	68.02	36.69
U	29.83	9.21	32.09	23.68
N	32.39	12.98	48.89	5.58

M graduates

	SE	**DE**	**U**	**N**
SE	3.39	15.67	96.82	40.99
DE	27.72	1.89	97.11	41.73
U	23.53	9.41	49.17	30.36
N	26.90	13.57	75.65	6.42

F graduates

	SE	**DE**	**U**	**N**
SE	8.42	9.80	47.89	28.02
DE	43.52	1.59	51.17	32.23
U	38.68	8.78	22.85	19.07
N	40.65	12.27	34.44	4.84

Legend: See Table I