



**FINANCIAL DEVELOPMENT AND SELECTION INTO
ENTREPRENEURSHIP:
EVIDENCE FROM ITALY AND US**

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Financial Development and Selection into Entrepreneurship: Evidence from Italy and US¹

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Abstract

The existence of capital market imperfections causes business investment decisions to be strongly dependent on households' private wealth allocation. I claim that if a link exists between private wealth and business decisions, it should be stronger in countries with less developed capital markets. Here, I test this theoretical prediction assessing the relationship between initial household net wealth and the probability of switching to entrepreneurship in Italy and the United States, using household-level data from the Survey of Household Income and Wealth (SHIW) and the Panel Survey of Income Dynamics (PSID). Although Italy and the United States are both developed countries, there are striking differences between the two in terms of transaction costs, downpayment requirements and participation in financial markets. I formulated several theoretical predictions, which are then compared with the data at hand. First of all, I argue that initial wealth should matter more for potential Italian entrepreneurs, who may encounter greater difficulties than their US counterparts in obtaining sufficient funds from a bank or financial institution to start a business. From this perspective, "informal markets" (i.e. help from friends or relatives) should play a more significant role for potential entrepreneurs in Italy, especially for those who are more likely to be constrained. Secondly, I claim that a well developed financial market, by reducing household exposure to financial risk, would positively affect transition into entrepreneurship. Therefore, I fill a gap in the literature introducing a portfolio diversification index, calculated as the inverse of the Herfindhal index, in order to assess the level of financial sophistication. Last but not least, I simultaneously estimate the probability of switching to entrepreneurship and changes in net wealth. Using a sample selection model with endogenous switching makes it possible to deal with endogeneity issues, related to the fact that households may actually accumulate assets prior to setting up a business.

Keywords: entrepreneurship, business start up, financial development.

Jel classification: E21, L26, G20.

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1. Introduction

Entrepreneurial activity, as well as a country's savings rate, plays a key role in economic growth. On the one hand, entrepreneurs create employment and wealth, fostering innovation. On the other, an increase in national savings has a substantial effect on the level of investment, which in turn affects growth².

From this perspective, it plainly emerges that capital market imperfections - such as transaction costs and borrowing constraints- are not neutral to growth. On the one hand, they affect business start ups by limiting the availability of funds to start a business (Evans and Jovanovic, 1989; Banerjee and Newman, 1993), while on the other, once the business is created, capital market imperfections may affect its size.

As Gentry and Hubbard (2004) point out, because of capital market imperfections (i.e. liquidity constraints and transaction costs) individual decisions concerning business start ups and subsequent investments cannot be disentangled from those regarding private wealth allocation. As a matter of fact, a better developed capital market would indeed weaken the link between entrepreneurial households' private saving choices and business decisions.

Here, I argue that if the linkage between households' occupational choices and private savings is in place, then it should be stronger for those living in a country where capital markets are less developed. In this regard, there are enormous differences between Italy and the US in terms of credit availability, households participation in the stock market and transaction costs (Kapteyin and Panis, 2003). These differences, which affect private savings, are likely to affect transition into entrepreneurship.

Actually, at the country-level, empirical evidence has shown that households' private net wealth strongly determines the probability of becoming an entrepreneur (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Fairlie, 1999; Gentry and Hubbard, 2004)³. This result also holds when the issue of wealth endogeneity is taken into account, instrumenting wealth or using a

²See Parker (2005) for a survey of the main literature contributions assessing the entrepreneurship-growth link.

³Consensus is almost unanimous about this point (see Blanchflower and Oswald, 1998; Evans and Jovanovic 1993 among others). Only Hurst and Lusardi (2001) seem to disagree, arguing that other factors, such as attitudes towards risk affect business start ups.

more exogenous substitute directly in the estimation (Holtz, Eakin et al, 1994; Blanchflower and Oswald, 1998; Fairlie and Krashinsky, 2006). Actually, the positive and significant effect of private wealth in determining the probability of starting a business has been interpreted as proof in favor of the existence of capital market imperfections, in the form of liquidity constraints.

Here, the link between private wealth and business start ups is re-assessed using micro data from the Italian Survey of Household Income and Wealth (SHIW), and from the US Panel Survey of Income Dynamics (PSID). This comparison has been feasible because of shared measures and design features in the two datasets. Moreover, these data contain detailed information about households' demographic characteristics, occupation, wealth composition and attitudes toward risk. Finally, the panel structure of the data makes them particularly useful for keeping track of households' occupational choices and saving decisions over time.

Drawing on previous literature (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Fairlie, 1999; Hurst and Lusardi, 2004) I will first describe institutional differences between the two countries, focusing on the way in which they are able to affect household occupational choices. Then, I formulate several theoretical predictions, which are next compared with the data at hand. The more these predictions are corroborated by the microdata, the more confident we can be that inter-country institutional differences help to explain households' selection into entrepreneurship.

First of all, I claim that lower transaction costs and lower downpayment requirements should make obtaining a loan easier for potential US entrepreneurs. Consequently, the net wealth of Italian households before switching to entrepreneurship should matter more. Moreover, in Italy informal markets (i.e. help from relatives and friends) are more likely to offset capital market rigidities (Guiso and Jappelli, 1991).

Secondly, given a better developed financial market, US households should participate to a greater extent in financial markets⁴. From this perspective, if we assume imperfect correlation between asset returns, we can argue that US households have more opportunities to insure themselves against financial

⁴See Guiso and Jappelli (2002) and Bertaut-Star McCluer (2002) for an empirical analysis of financial market participation of Italian and US households, and Guiso, Haliassos and Jappelli (2003) as far as a comparative analysis regarding stockholding is concerned.

risk. Introducing a portfolio diversification index into the estimation of the probability of starting up a business helps to proxy for financial sophistication, which may affect household wealth allocation and in turn household occupational choices.

Finally, I argue that wealth accumulation, rather than the initial level of wealth, may represent a more powerful instrument for explaining household occupational choices. Actually, households may accumulate assets before starting a business. This should be true especially in Italy. On the one hand, imperfections in capital markets may discourage potential entrepreneurs from asking a bank or a financial institution for a loan. On the other hand, Italian households may accumulate assets in advance so as to be able to pay higher downpayments. Some studies have already addressed changes in wealth both theoretically (Buera, 2003) and empirically (Hurst and Lusardi, 2004). However, capital accumulation is endogenous to household decisions to switch to entrepreneurship. To cope with endogeneity, I simultaneously estimate the process of capital accumulation and the decision to switch to entrepreneurship using an endogenous switching regression approach.

Empirical evidence strongly supports theoretical predictions formulated on the basis of institutional differences between Italy and the US. The marginal effect of the initial level of household wealth is greater and more significant for Italian households than US ones. Moreover, expected liquidity constraints are found to negatively affect households occupational choices.

From this perspective, because of more severe imperfections in Italian credit markets, "informal networks" are more likely to offset credit market rigidities. This holds especially for those business which does not probably require an high level of start-up capital. When a non-negligible investment is required we found instead binding liquidity constraints to represent a strong obstacle to business start ups. Besides the credit market, a higher level of financial sophistication positively affects US household occupational choices. The availability of more financial instruments, helping US households to better deal with uninsurable risks, weakens the link between household wealth and investment decisions. Finally, asset accumulation is found to be an important device for business start ups, especially in a country, like Italy, where credit market imperfections are more severe.

This paper contributes to the existing literature in three ways. First of all, by creating a bridge between the finance-growth and occupational choices literature. Showing that in a country with a better developed financial market business start ups are enhanced, weakening the link between personal wealth

and occupational choices, is a proof in favor of Deaton's view, according to which private savings- especially entrepreneurial saving- are not neutral to growth. In this regard, my analysis differs from studies analyzing business formation that take cross country aggregate data⁵ into account, which do not allow for the impact of public policies on individual saving behavior. My claim is instead that public policies affect business formation through incentives to saving behavior. In this regard, household-specific data should be used instead of aggregate data.

Secondly, this paper contributes to the literature on entrepreneurial choice and wealth in several ways. First of all, I analyze in more depth the extent to which Italian and US households rely on "informal" markets to overcome financial market deficiencies. Then, I use a portfolio diversification index as a proxy of financial market development. Portfolio diversification is indeed one means of dealing with financial risk. Controlling for individual attitudes to risk, I argue that the greater a household's opportunities to diversify its asset portfolio, the more efficient the composition of savings will be and therefore the greater the possibility of switching to entrepreneurship. Last but not least, I will emphasize to what extent the process of capital accumulation affects the way households switch to entrepreneurship.

The paper is structured as follows. In the second section, a brief review of existing literature about wealth and occupational choices is provided. Then, some of the main differences between Italian and US capital markets are described in section 3. In particular, on the basis of institutional differences between these two countries I will formulate some predictions which will be tested in subsequent sections. In section 4, the data used in the empirical analysis are described, providing some comparative evidence of demographic and financial characteristics of Italians and US shifting towards entrepreneurship. Section 5 contains the estimation aimed at shedding light on the link between the initial net wealth of a household and the probability of starting up a business. Section 6 analyzes instead the relation between business start ups and changes in wealth. Section 7 concludes with some final remarks.

2. Brief literature review

The debate on the relationship between wealth and occupational choice is a

⁵See, for example, Rajan and Zingales (2003) and Klapper, Laeven and Rajan (2004) among others.

longstanding one. Shumpeter and Knight made path-breaking contributions in this field at the beginning of the last century. Whereas Shumpeter separates the entrepreneurial role from the capitalist one, according to Knight the entrepreneur also needs to be a capitalist. The high uncertainty correlated with entrepreneurial activity makes it impossible for the market to provide the entrepreneur with all the capital he requires. Therefore, in the Knightian view initial wealth is not neutral to business start ups.

From an empirical perspective, several contributions have attempted to shed light on the relationship between wealth and business start ups. Evans and Jovanovic (1989) argue that capital market imperfections in the form of borrowing constraints select wealthy households into entrepreneurship. Wealthy households are indeed less likely to face binding liquidity constraints, since they may be able to meet higher collateral requirements when asking for a loan or be more likely to have sufficient capital of their own to set up an entrepreneurial activity. Using data from the National Longitudinal Survey of Young Men (NLS) for 1966-81, they eventually found a positive and strong relation between entrepreneurial entry and initial assets especially when liquidity constraints are in place.

Similar to Evans-Jovanovic are the contributions by Evans and Leighton (1989) who use the National longitudinal survey (NLS) for 1966-81 and the Current Population Survey (CPS) for 1968-87 and by Gentry and Hubbard (2004) who use instead the Survey of Consumer Finance for the years 1984 and 1989.

As far as cross country - comparative studies are concerned, Klapper, Laeven and Rajan (2004) found, using aggregate-level data, that a country's business environment strongly affects the creation of new firms. In particular, they provide evidence that the entry rate for industries that depend heavily on external finance is higher in countries with better developed financial systems. Their findings confirm Evans and Jovanovic's thesis: the supply of credit is an important aid to entrepreneurship.

Cagetti and De Nardi (2000) study the choice of starting an entrepreneurial activity through a simulation analysis calibrated on US data (PSID and SCF). They identify two main forces that affect the probability of becoming an entrepreneur: wealth and risk aversion. However, they consider intergenerational transfers as the only forces that may lead people towards entrepreneurship. Moreover, they do not consider the fact that people may become entrepreneurs after switching from another job.

Using data from the SCF, Cagetti and De Nardi (2006) found that a strong

relationship exists between asset ownership and external financing, and between wealth and entrepreneurial entry. They develop a model of wealth accumulation and bequests in which entrepreneurs face an endogenous borrowing constraint that limits the amount they can borrow. They find this setup generates a wealth distribution that matches the one observed in the data.

Quadrini (2000) develops a general equilibrium model to explain the high level of income inequality to be found in US data. Asset holdings, together with the perceived ability of successfully carrying on a business, drive the choice of starting an entrepreneurial activity. Modeling explicitly entrepreneurial choice, Quadrini took into consideration the fact that entrepreneurs' saving patterns differ strongly from those of non-entrepreneurs'. First of all, they need to save in order to accumulate the minimum capital requirement to set up an entrepreneurial activity or to implement larger projects. Secondly, enterprising households usually face a higher uninsurable risk, that may result in higher precautionary saving. He uses PSID data (1984-1989 panel component) to calculate net wealth transition matrices for workers and entrepreneurs and found that entrepreneurs are more likely to pass into the upper wealth groups, whereas the trend is reversed for workers.

Using data from the Italian Survey of Household Income and Wealth, Magri (2009) found that the initial net wealth of a household is important for explaining the decision to become an entrepreneur, but that it does not affect the size of the business once it has been created.

Caner (2003), analyses in depth entrepreneurs savings using PSID data. She found that not only do entrepreneurs have higher incomes, but they also have greater wealth accumulation and higher wealth-to-income ratios. Moreover, she addresses more effectively the problem of the endogeneity of saving rate with respect to business ownership, estimating simultaneously household saving rate and their occupational choice.

Gentry and Hubbard (2004) analyze the wealth-entrepreneurship channel in greater depth. They argue that capital market imperfections in the form of borrowing constraints affect a household's probability of becoming entrepreneurs and starting up firms, since they strongly influence both the amount and composition of household savings. They point out that because of capital market imperfections, firm decisions cannot be disentangled from household decisions. In this context, financial development plays a dual role. First of all, it may facilitate capital access for potential entrepreneurs starting

up a business. This should be true especially for small businesses that usually face more severe financial constraints and are less able to diversify and insure risks. Consequently, it may help to weaken the link between household savings and firms' decisions. Secondly, financial development may strongly influence the amount and composition of household savings. In turn, this affects not only the probability of the household head starting an entrepreneurial activity, but also that of the other household members through the channel of bequest, gifts and intergenerational transfers.

3. Institutional differences between Italy and US

Italy and the US differ significantly as far as credit market development and financial market participation are concerned. Here, I discuss some of the institutional differences between Italy and the US which are pertinent to the present analysis. In particular, I will underline the extent to which the institutional background of a country is able to exert a strong impact on household occupational choices. Because of capital market imperfections, investment and savings choices are indeed strongly correlated (Gentry and Hubbard, 2004). Therefore, a country's level of development may affect the probability of starting up a business not only through direct incentives for entrepreneurial investment, but also through private savings incentives.

The first main difference between Italy and the US concerns the credit market, in particular the mortgage market and transaction costs (Kapteyin and Panis, 2003; Bianco, Jappelli and Pagano, 2004; Chiuri and Jappelli 2003).

As far as mortgage markets are concerned, substantial differences exist between Italy and the US, particularly in regard to downpayment requirements. In the US the average level of downpayment requirements is around 10-20%, whereas in Italy they may be as much as 40-50% of the total value of the real estate. Moreover, in the event of default foreclosures take much longer and transaction costs are much higher in Italy than in the US (OECD 2004).

In addition to transaction costs and downpayment requirements, judicial enforcement is a strong candidate for explaining differences in the loan market between Italy and the United States. Actually, the cost of lending and the loan supply are strongly affected by the cost of recovery from insolvent borrowers. Djankov, La Porta and Lopez-de-Silanes (2003) and Bianco, Jappelli and Pagano (2004) highlight the enormous differences in terms of

judicial efficiency between these two countries⁶. Magri (2009) instead, incorporates judicial enforcement into a theoretical model. Using data on judicial enforcement in Italy, she shows that net wealth matters more for those entrant entrepreneurs living in regions with less stringent judicial enforcement⁷.

The existence of strong rigidities in the Italian financial market results in an extremely low percentage of the total population applying for credit. Clearly these differences are not neutral to business formation. A broad strand of literature has pointed out the importance of initial assets to business start ups (Evans and Jovanovic, 1989; Evans and Leighton 1989; Gentry and Hubbard 2004). Initial net wealth is indeed not only important *per se*, but also because it may be used to meet collateral requirements in the event the potential entrepreneur needs additional funds. Actually, one of the main findings of Evans-Jovanovic's path breaking contribution is that initial assets matter especially for those households who are liquidity constrained.

My claim is that differences between Italy and US regarding credit market affect business start ups in two directions. First of all, high transaction costs and downpayment requirements may discourage Italian households from asking for a loan. In this context, the initial wealth of a household should matter more for potential Italian entrepreneurs, than for their US counterparts. Moreover, in Italy those households which decide to apply for a loan in credit markets may have to accumulate assets in order to meet high downpayment requirements.

Different Italian and US credit market development levels may result in parental support playing a different role in the two countries. Actually, as Evans-Jovanovic (1989) point out, parental support is a channel through which potential entrepreneurs may raise enough funds to start a business⁸.

⁶Djankov, La Porta and Lopez-de-Silanes (2003) report the duration of dispute resolution for two court cases: collecting a bounced check and evicting a delinquent tenant, for 109 countries. Actually, they report that in Italy the average duration of dispute resolution is 645 days versus 49 days in the US.

⁷As well as judicial enforcement, difference in bankruptcy regulations provide a plausible explanation for differences in the percentage of loan applicants between the two countries. As Crook (2005) pointed out, in Italy we observe a greater demand for debt in regions with a more efficient judicial system. On the contrary, in the US greater protection in the event of bankruptcy increases the demand for debt for those in the upper half of the wealth distribution.

⁸In this regard, Basu and Parker (2001) model household altruism in a theoretical

Moreover, Guiso and Jappelli (1991), analyzing a cross section of Italian households, found that intergenerational transfers help to relax binding borrowing constraints⁹. I claim that the role played by this "informal" market is stronger and more significant for Italian than for US households in the switch to entrepreneurship. Because of the lower confidence in capital markets, Italian households rely more on "informal markets". Thus, help from friends and relatives is important especially for those households that are more likely to be constrained. Actually, informal networks could act as a substitute for credit markets - so those households whose loan application is rejected may ask for support from parents and friends. However, such informal networks may complement traditional markets. In this sense, support from parents may help to meet downpayment requirements. From a cross country perspective, it is interesting to analyze to what extent interactions between "traditional" credit markets and "informal networks" affect transition into entrepreneurship. Beside of credit market features, Italy and US differ profoundly as far as participation in financial markets is concerned. Actually, households' portfolio composition depends not only on personal characteristics, such as wealth, age and attitudes towards risk, but also on supply-side features, such as the availability of financial instruments and transaction costs. Empirical works highlighted substantial differences in this sense between Italy and the US (Guiso and Jappelli, 2002; Bertaut and Star McCluer, 2000). Italian households are found to hold a lower percentage of stocks, compared to their US counterparts, and a less diversified portfolio¹⁰.

As pointed out by Gentry-Hubbard (2004), imperfections in credit markets make decisions about personal savings interdependent on investment decisions. Moreover, uncertainty and uninsurable risks mean that portfolio and saving decisions are strongly interrelated, since potential uninsurable risks (unemployment, health, financial risk), encourage people to save more for precautionary reasons. In this regard, it has been shown (Guiso, Jappelli

framework using a unique dataset of Asian entrepreneurs in the UK.

⁹However, their findings show that even after receiving a transfer, Italian households are still constrained.

¹⁰This result also holds for the majority of Italian households in the top 5 percent of the wealth distribution, who are found to have no direct or indirect stock holding. This puzzling difference may be due, in part, to some combination of national differences in households' background risk, in information and other entry costs (Guiso and Jappelli, 2000).

and Terlizzese, 1992) that uncertainty leads households to opt for a relatively safe portfolio. As uncertainty increases, households want to reduce other risks, such as financial risk, so they try to avoid holding risky assets. Kennikell and Lusardi (2004), and Jappelli and Pistaferri (2008), using a direct measurement of precautionary wealth (in SCF and SHIW, respectively), found the desired precautionary savings-to-permanent income ratio to be higher in Italy than in the US.

Taking into consideration financial markets, clearly better opportunities for diversifying financial risk will lead households to save less for precautionary reasons, once financial risk has been mitigated through diversification. Italian households need instead to save more than US households for precautionary reasons. Because of the lower level of financial market development, there are fewer instruments available in Italy for protection against uninsurable risks, be they direct (private insurance), or indirect (portfolio diversification to reduce total risk). Introducing a portfolio diversification index, it is possible to control for the degree of financial sophistication. The portfolio diversification index represents, therefore, the extent to which people rely on capital markets. Unless asset returns are perfectly correlated, a well diversified portfolio may help households to self insure against idiosyncratic financial risk. Therefore, transition into entrepreneurship could be affected by the level of financial market development. By affecting the amount of precautionary wealth accumulated, financial market imperfections establish a link between household saving decisions and occupational choice. In our context, this is important, since private savings and investment decisions are not separable. Introducing an index of financial diversification, we are able to control for the degree of a country's financial development and at the same time to determine the extent to which it affects the process of household capital accumulation.

4. Data and descriptive statistics

4.1 Data and sample selection

Data for Italy are drawn from several waves of the Survey of Household Income and Wealth (SHIW), conducted every two years by the Bank of Italy. The survey contains detailed information on household social, demographic and economic characteristics. Moreover, in 1995 a question was introduced for household heads, making it possible to derive a measure of risk

aversion¹¹. Data on wealth composition and business ownership are also provided. I consider 9 waves of SHIW, from 1989 to 2006.

Data for the United States are taken from the Panel Survey of Income Dynamics (PSID). This survey was conducted almost annually, from 1968 to 2006. However, information about wealth composition was only contained in the 1984, 1989, 1994, 1999, 2001 and 2003¹² waves.

Similarly to the SHIW, a question about risk tolerance was included in the 1996 wave of the PSID. For both countries I only consider household heads aged between 16 and 70, who were interviewed for at least two survey waves, and who had been in the workforce for at least one year. Moreover, I only analyze individual occupational choices for the main occupation. Finally, I exclude all those households where the head has changed.

4.2 Definition of entrepreneur

In regard to the present analysis, the distinction between entrepreneurs and non entrepreneurs ("wage earners" henceforth) is a key point. Several definitions of entrepreneur and entrepreneurship have been used in the literature. According to one strand of literature (Hurst and Lusardi, 2004; Cagetti and De Nardi, 2006; Gentry and Hubbard, 2004), an entrepreneur is someone who owns a business, creates jobs and makes active business investments. According to another (Evans and Leighton, 1989; Evans and Jovanovic, 1989; Blanchflower and Oswald, 1998; Fairlie, 1999) an entrepreneur is someone who declares to be self-employed. Both PSID and SHIW allow for the use of these two different definitions of entrepreneurship. Each year the household head was asked whether he was a wage earner or self employed. Moreover, a detailed section about household wealth- and therefore business ownership- is contained in both surveys. It is worth noticing that in both surveys, whereas information about self employment is asked to each household member, information about business ownership provided by the household head may refer to any one of the household members.

¹¹See Guiso and Paiella (2003).

¹²Although the Survey of Consumer Finance contains much more detailed information about household wealth composition, it is mainly cross sectional. Using the Panel Survey of Income Dynamics it is instead possible to keep track of household occupational choices and wealth composition for several years. Moreover, wealth distribution in the PSID closely matches that in the SCF (Hurst, Luoh, and Stafford 1998).

In the empirical analysis, I will consider the two definitions of entrepreneur. According to the first definition (*self_employed1*), a household head is an entrepreneur if he declares him/herself as self employed. According to the second (*self_employed2*), a household is an entrepreneurial one if the household head or other household member owns a business whose value is greater than zero. Therefore, *self_employed1* focus on the job declared by the individual, whereas *self_employed2* places the emphasis on household wealth composition, and in particular on business ownership. Though both definitions are good candidates for identifying entrepreneurs, *self_employed2* better suits our needs. *Self_employed1* actually also includes freelancers, or professionals, who probably require a very small investment to start their activity. Therefore, empirical specifications will mainly rely on *self_employed2*, whereas *self_employed1* will be used for robustness checks.

In actual fact, using a definition of entrepreneurship that relies on household data about wealth composition is not devoid of problems. A zero value for *self_employed2*, may well mean that the household does not own a business, or owns a business whose value is zero. However, the main results do not change when *self_employed1* is used. Moreover, using *self_employed1*, and selecting only those households with a positive business value the results remain basically unchanged¹³ Following previous studies, rather than focusing on the probability of being an entrepreneur, I focus on the probability of becoming an entrepreneur. When we focus on the relationship between business start ups and initial household wealth, we actually need to look at initial net wealth as a cause, rather than the effect, of individuals' occupational choices¹⁴

To analyze transition into entrepreneurship, I examine pairwise several waves of SHIW and PSID. As far as SHIW is concerned, the years are paired as follows: 1989-1991; 1991-1993; 1993-1995; 1995-1998; 1998-2000; 2000-2002; 2002-2004, 2004-2006. Except for 1995-1998, a two-year gap is considered. As far as the first definition of entrepreneur is concerned, in the PSID I also analyze household heads who switch to entrepreneurship after 2 years. Therefore, the following years were paired: 1984-1986; 1989-1991; 1994-1996; 1999-2001; 2001-2003.

As far as *self_employed2* is concerned I use a broader time span, since

¹³Results are not reported, but they are available on request.

¹⁴In this sense, finding a positive relation between net wealth and the probability of being an entrepreneur simply means that entrepreneurs hold an higher level of wealth, compared to wage earners.

questions about household wealth in the PSID were not asked every year, but only in 1984, 1989, 1994, 2001 and 2003. Since wealth changes are very widely distributed, I have limited the influence of outliers by truncating the top and bottom 1 percent of the change in wealth distribution.

Table 1.a shows the percentage of entrepreneurs in Italy and in the United States according to *self_employed1* and *self_employed2*. Using both definitions of entrepreneur, we observe a higher percentage of entrepreneurs in Italy than in the US. Using the first definition, entrepreneurs in Italy are 26.40%, against 12.77% in the US, whereas using the second definition, the percentages are 24.85% and 10.48%, respectively. Table 1.b on the other hand shows the distribution of entrepreneurs over wealth quartiles. In both countries, entrepreneurs are concentrated in the highest wealth quartile.

Table 2.a shows the percentage of those who switch from wage earners to entrepreneurship for the two definitions of entrepreneurship *self_employed1* and *self_employed2*. In particular, variables *switch1* and *switch2* take a value of 1 if the household head was a wage earner at time t , and becomes an entrepreneur in the following period, according to the first and second definitions of entrepreneur, respectively.

Table 2.b presents the percentage of switching entrepreneurs by net wealth quartiles, according to the first and the second definitions, respectively. In both countries the majority of households who switch to entrepreneurship are concentrated in the highest wealth quartiles. This feature is particularly significant when considering *switch2*, which is not surprising. Considering business ownership instead of simply self employment implies making non-negligible investment, which probably requires households to be in high wealth quartiles.

4.3 Descriptive statistics (demographics)

Table 3.a gives the descriptive statistics of the main variables used in the empirical analysis. Furthermore, in order to draw preliminary information about the existence of significant differences between staying workers and switching entrepreneurs, some descriptive statistics about demographical and financial characteristics of households are presented, according to definitions *switch1* and *switch2*.

As far as demographic characteristics are concerned, there are no striking differences between Italy and the US.

Using *switch1* and *switch2*, in both countries switching entrepreneurs are younger than staying workers and mainly male. Those who switch to

entrepreneurship are mainly married in the US, whereas in Italy the opposite holds true. Moreover, significant differences between switching workers and switching entrepreneurs exist as far as family size is concerned, especially when *switch2* is taken into account. Switching entrepreneurs have a larger number of household members than staying workers. In actual fact, in a household with more than one earner uninsurable risks can be shared among the household.

Significant differences are observed between Italy and US regarding education. In the US, potential entrepreneurs are generally better educated than staying workers. This result holds true especially when we consider entrepreneurs as business owners, rather than simply self-employed. In Italy on the contrary, switching entrepreneurs are less educated than wage earners (but the difference is only significant when *switch2* is taken into consideration).

As far as support from relatives/friends is concerned, significant differences are found in the two countries when using *switch1* compared to *switch2*. Actually, support from parents seems to be significant only when we take into consideration self employed, rather than business owners. This distinction is not trivial: if we consider entrepreneurs as self employed then this category will also include professionals and freelancers, who probably do not require a high initial capital investment. Occupational status of the father seems to play a fundamental role in both countries: household members who switch to entrepreneurship are those whose father was a business owner.

Finally, switching entrepreneurs in both countries have a greater net wealth, and a higher household income than staying workers.

4.4 Descriptive statistics (Wealth composition and portfolio diversification)

In section 3 I highlighted the main institutional differences between Italy and US, arguing that these differences may affect whether households select into entrepreneurship. In particular, I claim that a different level of financial and credit market development could be non neutral to household occupational choices. In this regard, a descriptive analysis of household wealth component would shed some light on the existence of significant differences between switching entrepreneurs and staying workers within and between countries. So far, the literature has argued that initial wealth is non neutral to household occupational choices. However, the level of development of financial and credit markets may strongly influence household occupational choices, affecting not only the amount, but also the

composition of personal wealth.

Tables 4.a and 4.b show some descriptive statistics for wealth composition of switching entrepreneurs in Italy and US respectively¹⁵. In Italy as in the US the bulk of real asset is given by the main house, which represents more than 50% out of total real assets. As far as portfolio composition is concerned, we observe that in Italy switching entrepreneurs hold a larger percentage of real assets than staying workers. This result holds true when *switch1* and *switch2* are used. However, traditional p-value tests reject the hypothesis of equality of this ratio between staying workers and switching entrepreneurs only when *switch2* is taken into account¹⁶. The ratio between financial assets and total net wealth is slightly higher for switching entrepreneurs in Italy, but differences are not significant. Significant differences instead exist between Italy and US as far as the ratio total liabilities/total net wealth is concerned. In Italy this ratio does not reach 10% when considering both definitions of entrepreneur. In the US we notice instead that it is around 50%. Actually, this is in favor of the thesis according to which US households rely on financial market more than Italian ones. Moreover, in both countries this ratio is higher for staying workers rather than switching entrepreneurs. It is plausible that those who want to set up a business should not have an high indebtness before switching in case they need to ask for a loan to a financial institution.

The last 2 lines of table 4.a and 4.b show average values for the index of portfolio diversification. Actually, diversifying their portfolio, households are indeed able to reduce idiosyncratic risk correlated to their investments, and therefore to reduce total uncertainty. There are two measures of portfolio diversification which are mainly used in the literature. The first one is simply the number of assets in the portfolio. However, this measure requires assets to be evenly distributed in households portfolio.

Therefore, I employ instead the following measure of diversification, calculated as the inverse of Herfindhal index, which is one of the most widely used measures of concentration.

¹⁵Classification of financial and real assets and liabilities, and the way in which wealth is computed are described in the appendix.

¹⁶Actually, switching entrepreneurs have a greater percentage of financial wealth invested in relatively risky assets (i.e. stocks and bonds). However, this may be explained by the relatively lower degree of risk aversion of entrepreneurs and potential entrepreneurs.

$$div_index = 1 - \sum_{i=1}^N (w_i)^2$$

where w_i is the weight of asset i in households' portfolio. An index equal to 1 means maximum diversification, whereas an index value equal to 0 means that all the wealth is concentrated in one only asset. Due to data limitations, our index of financial diversification is limited to 5 categories of assets. However, it may be used as a proxy of financial sophistication.

The level of detail for wealth composition in the PSID is coarser than the SHIW¹⁷. However, this is not a problem in the present analysis¹⁸.

Actually, the diversification index proxies for households' degree of trust in capital markets, and measures the level of financial sophistication, which may affect capital accumulation. Actually, a country with a better developed financial market should provide households with better opportunities for protecting themselves against uninsurable risks. Consequently, controlling for education and attitudes towards risk, we should observe switching entrepreneurs in the US who diversify their portfolio in order to better protect themselves against idiosyncratic risk.

Tables 4.a and 4.b show average values for 2 indexes of diversification: *div1*, which includes only financial assets, and *div2*, which also includes real assets. The average value of the portfolio diversification index differs substantially for switching entrepreneurs and staying workers. However, as expected, these differences are only significant in the US.

In order to better assess the role of demographic and financial determinants of entrepreneurship it is preferable to carry out a regression analysis.

¹⁷SHIW provides every year detailed information about households wealth composition. In particular, for each household in the SHIW detailed information about real assets, financial liabilities and almost 21 types of financial assets are provided. As far as financial assets are concerned, PSID allows us to distinguish among only 3 categories of financial assets. The first one is given by relatively safe assets: checking or savings accounts, money market funds, certificates of deposit, government savings bonds, or treasury bills. The second one is given instead by relatively risky assets such as stock in publicly held corporations, mutual funds, or investment trust. The third group is represented by other assets such as bonds, rights in a trust or estate and cash value in a life insurance policy.

¹⁸For a robustness check in the regression analysis I compute a broader diversification index for Italian households, using the information about 21 financial assets. Results are basically unchanged.

5. Regression Analysis

5.1 Initial net wealth

The first step for exploring the differences between Italian and US households' probability to start a business is to assess whether initial wealth affects the probability of starting up a business. To do that, I consider pairwise several waves of the SHIW and of the PSID. All households which are not entrepreneurs (according to definitions *self_employed1* and *self_employed2*) in the first period are considered in the whole sample, pooled together. The dependent variable is equal to 1 if the household becomes an entrepreneur, whereas it equals 0 if the household remains a wage earner. All explanatory variables are considered in the initial period. Therefore, as in previous literature, I take into account the probability of switching to entrepreneurship (from salaried employment, or unemployment), instead of the probability of simply being an entrepreneur. However, I deviate from previous work in several ways. First of all, I take into account several time gaps between the first and second period. In this regard, I deviate from Hurst and Lusardi (2004), who take into consideration a 1 year gap, considering a two-year (*self_employed1*) and 4 (SHIW) and 5 (PSID) year (*self_employed2*) gap. This is due not only to the fact that SHIW is a biannual survey, but also to the need to deal with the endogeneity of initial net wealth. It is likely that those who want to set up a business accumulate assets in advance. In this sense, initial net wealth 4, or 5 years ahead represents a more exogenous measure of wealth.

In order to render Italian and US analysis as comparable as possible, when considering business owners as entrepreneurs (*self_employed2*) the empirical estimation will be performed taking into consideration a similar time span in both countries. Tables 5.1 and 5.2 show the results of a probit regression using Italian and US data, where the dependent variable is *switch1* and *switch2*, respectively. Actually, performing the empirical analysis using both definitions makes it possible to check the robustness of results. Moreover, definition *self_employed1* includes self employed in general - and therefore also freelancers and professionals, who probably do not require high levels of capital outlay to start up a business. On the other hand, definition *self_employed2*, by focusing on business ownership rather than self employment, allows one to consider only those households which face a non negligible investment to setting up a business. This is particularly significant as the issue at stake is whether initial net wealth is more likely to affect household occupational choices when a non negligible initial investment is

required.

All specifications include several demographic controls, such as a quadratic function of age and years of education, the number of household members, a dummy which indicates whether the household head is married and a dummy which indicates that the household head is male. Net wealth and household head's labor income the year before switching are included in the regression. Moreover, following previous studies (i.e. Magri, 2009) education of the father and a dummy that indicates whether household head's father was an entrepreneur, are included in order to check for unobserved ability which may give rise to spurious results. Each regression also includes year dummies.

In specification (I) only demographics, initial net wealth and labor income are included. When switching entrepreneurs according to *switch1* are taken into account (table 5.1), the initial level of net wealth in both countries is found to be significant at 1% level. Further, the economic impact of initial level of resources is not trivial. Increasing net wealth by 100,000 Euros at t-2, increases the probability of switching to self employment by 0.35% (Italy) and 0.38% (US). Given that in Italy the estimated probability of becoming an entrepreneur in the subsequent year is 2.49%, an increase in 100,000 euro would increase the probability of switching to self employment by roughly 14%. In the US the increase is instead almost 10%.

When *switch2* is taken into account, more significant differences are observed between Italy and US. Actually, increasing (at t-4) net wealth by 100,000 Euros would increase the probability of acquiring a business in the following period by only 1%, whereas this figure is close to 23% in Italy. Moreover, the initial level of net wealth is still significant at 1% level in Italy, whereas it becomes insignificant in the US.

Furthermore, in Italy initial labor income is highly significant and negatively signed. The negative and significant coefficient associated to family income I found in Italy is actually in line with Evans and Leighton (1989) and with some behavioral studies on entrepreneurship, according to which those who switch to entrepreneurship are those with low paid jobs, or unemployed, who try to improve their condition by switching to self-employment¹⁹.

From this perspective, the difference between the two countries may be explained looking at a country's institutional job environment, in terms of unemployment rate, or flexibility in the job market for example. In Italy

¹⁹See Rees and Shah (1986) for example.

higher unemployment together with greater labor market rigidities may be the cause of the negative and significant relation between the likelihood of switching to entrepreneurship and labor income²⁰. In specification (II) total income (calculated as the sum of labor income, transfers and asset income) is included. Actually, it is positively signed and significant only in the US (*switch2*).

In this regard, Fairlie and Krashinsky (2006) suggest that rates of entry to entrepreneurship are not neutral to the employment status before entry. They demonstrate that the wealth constraint has more impact on those who were unemployed before entry to entrepreneurship than on the employed.

Therefore, a dummy was introduced which takes a value of one if the household head was unemployed in the period prior to setting up a business, or becoming self employed. As expected, it is positive and significant for both countries. Actually, this is in line with the findings of Evans-Leighton (1989): self-employment represents an alternative to unemployment.

Family background is found to be very important. The level of education of the father and a dummy which takes a value of 1 if the household head's father was himself an entrepreneur, are found to positively affect transition into entrepreneurship²¹. In order to check for unobserved ability, previous experience as an entrepreneur is included in the estimation. It is highly significant in both countries.

In specification (III) risk attitudes are taken into account. The number of observations diminishes, since a question about attitudes towards risk was only included in the 1995 (SHIW) and 1996 (PSID) surveys. Therefore, only households interviewed in those years and in subsequent waves were included in the sample. However, it is plausible to assume that risk attitudes remain constant over time (Paiella and Chiappori, 2008; Brunnermeier and Nagel, 2008)²². As Cressy (2000) pointed out, if risk aversion is a negative

²⁰To strengthen this hypothesis I performed specification (I) for the Italian subsample, where family income interacted with a dummy for geographical area. I found that in regions with higher unemployment the coefficient associated with family income is not only more significant but also higher. Results are not included but they are available on request.

²¹In both surveys the level of education as well as the occupation considered refer to the household head's father when young.

²²Using data from PSID and SHIW they demonstrate that households' investment in risky assets show a very low (and statistically insignificant) elasticity to wealth fluctuations. In this sense, household risk aversion cannot be considered as time

function of wealth, the positive effect of wealth on entrepreneurship transition may be spurious, and due to the omission of risk aversion. In this regard, net wealth should not have any effect on household occupational choices when risk attitudes are accounted for. In order to test for this prediction, the interaction term between household attitudes towards risk and net wealth is included (specification 3). Cressy's prediction is not borne out in Italy. The marginal effect of net wealth is indeed still positive and significant.

Finally, to eliminate households where the household head is close to retirement, in specification (IV) only household heads aged less than 55 are included. Previous results are basically unaffected.

5.2 *Alternative specifications*

Table 6.1 presents some further exercises. As in Hurst and Lusardi (2004) wealth quartiles are included instead of initial wealth. Unlike Hurst and Lusardi, however, the role of expected liquidity constraints and parent support are explicitly taken into account.

Following Hayashi (1984) a household is defined as constrained if net wealth is less than two months income, unconstrained otherwise. Even if it this is not a precise measure of liquidity constraints, it is likely that those households with wealth below a certain threshold would be rejected when asking for a loan²³.

As well as traditional credit markets, "informal" networks (i.e. help from relatives or friends) may be one way of starting up a business. Moreover, in some contexts, such informal networks may not only complement credit markets, but also replace them. Actually, as Fairlie (1999) and Evans Jovanovic (1989) point out, help from parents is a typical way of overcoming borrowing constraints.

In specification (I) of table 6.1, a dummy taking a value of 1 if the household is constrained according to the above definition is included in the estimation. It is found to be negative for potential Italian entrepreneurs. Moreover, when *switch2* is considered, the liquidity constraint indicator is significant at

varying.

²³Actually, SHIW contains a specific question which allows to identify constrained households as those who apply for, but are not granted, a loan. However, PSID does not contain any such information (it is instead contained in the Survey of Consumer Finance). As a robustness check, I performed the same analysis of table 6.2 using the alternative definition of liquidity constraints. Results do not change.

1% level. Having a low wealth-to-income ratio actually seems to prevent potential Italian entrepreneurs from starting a business, especially when business ownership-rather than simply self employment - is taken into consideration.

Specification (II) includes an interaction term between liquidity constraints and help from parents/friends (*no_help*constrained*)²⁴. As far as Italy is concerned, information about households receiving financial support from parents or friends was not asked in 1991 and 1993. Therefore, the number of observations reduces to 7129 (*switch1*) and 7094 (*switch2*).

As table 6.1 shows, when *switch1* is taken into account, the interaction term between informal help and (expected) liquidity constraints is negative and significant at 1% level for Italian switching entrepreneurs. Therefore, credit market imperfections in the form of liquidity constraints have a strong negative impact on those Italian switching entrepreneurs who do not receive any support from informal networks. However, when *switch2* is taken into account, the interaction term turns to be positive and significant. From this perspective, even those households who receive help from relatives or friends find binding liquidity constraints as a non-negligible obstacle when setting up a business. A complementary relation does indeed exist between "formal" and "informal" credit channels. However, the role of "informal networks" in offsetting credit market rigidities is significant only when the households intend to start a business which does not presumably require an high level of initial capital²⁵. In this regard, Italian households with a relatively low level of wealth, may find help from parents an important means of setting up a business without having to rely on credit markets.

On the contrary, in the US liquidity constraints are found not to be significant. Actually, the interaction term between parent help and liquidity constraints is found to be insignificant for both *switch1* and *switch2*.

In order to highlight cross country differences between Italy and US, I performed a further analysis. In table 6.2 the financial diversification index *div2*, calculated as the inverse of the Herfindhal index, is included in the

²⁴*no_help* takes value 1 if the household did not receive any help from parents or friends the period before switching to entrepreneurship.

²⁵Actually, when considering the total effect of liquidity constraints, we found it is positive when *switch1* is taken into account, whereas negative using *switch2*. This is not surprising: credit market imperfections are likely to affect transition into entrepreneurship especially for those business which probably require a non-negligible initial investment.

estimation. It is a very general measure of the diversification of financial portfolio. Actually, it has been used to measure the extent to which investors, by diversifying their portfolio among assets whose returns are imperfectly correlated, try to protect themselves against financial risk. Due to data limitations, this index of financial diversification is limited to 5 categories of assets. However, it is a good proxy of financial sophistication²⁶. As Guiso, Haliassos and Jappelli (2003) point out, significant differences exist between Italy and US stock market participation and portfolio composition. What we need to explore is whether these differences affect transition into entrepreneurship.

As table 6.2 shows, the financial diversification index is positive in US, but negative in Italy. Moreover, considering business ownership definition, in the US the diversification index is significant at 1% level.

From this perspective, US households rely on capital markets to diversify uninsurable financial risk. However, these results may be plagued by endogeneity problems. Those who decide to switch to entrepreneurship may not only accumulate assets beforehand, but they may also accumulate wealth in such a way as to reduce somewhat financial risk. In order to deal with endogeneity issues, the financial diversification index is instrumented with household head's level of education and household head's father level of education. As specification (II) of table 6.2 shows, previous results are confirmed. The index of financial diversification is positive and highly significant for potential US business owners, whereas it is negative for Italians.

Finally, I tried another empirical exercise. Table 6.3 presents IV estimation of previous equation, when net wealth and financial diversification index are instrumented with household head level of education and household net wealth two periods before²⁷. Previous results are confirmed. Financial diversification index is positive and highly significant for US switching entrepreneurs, whereas it turns to be not significant for Italian ones.. Further, the initial level of net wealth is still significant at 1% level, whereas

²⁶Actually, SHIW contains detailed information about household ownership of 21 assets. In order to check for the robustness of results, an alternative index of financial diversification is calculated, using detailed information from Italian data.

²⁷Net wealth 4 years before switching to entrepreneurship is therefore instrumented with net wealth 8 years before switching for the Italian case. In the US, net wealth 5 years before switching to entrepreneurship is therefore instrumented with net wealth 10 years before switching.

it turns to be negative- but not significant for US ones.

6. Changes in wealth and transition into entrepreneurship

Changes in net wealth, rather than initial net wealth, may prove a more powerful instrument for explaining the transition to entrepreneurship. First of all, potential entrepreneurs may accumulate assets before making the switch. In this regard, Buera (2009) develops a dynamic model with borrowing constraints, finding that borrowing constraints make households with wealth above a certain threshold save in order to become entrepreneurs. On the contrary, those with a level of wealth below this threshold remain wage earners, being trapped in a "poverty trap" forever. Using 1989 and 1994 waves of the PSID, Lusardi and Hurst (2004) check whether 5 year changes in wealth affect the probability of switching to entrepreneurship. They found that the coefficient associated with changes in net wealth is not only negative but also not significant. However, the relation between changes in wealth and entrepreneurship transition may be plagued by an endogeneity problem. First of all, entrepreneurial households tend to save more in anticipation of a business opportunity, in order to face downpayment requirements, for example. Secondly, households use unanticipated increases in wealth, such as capital gains or properties in order to pay for the cost of a business (Caner, 2003).

Therefore, changes in net wealth and the probability of switching to entrepreneurship need to be estimated simultaneously.

Considering the decision to switch to entrepreneurship as endogenous to wealth accumulation, it can be assumed that some unobserved characteristics that affect the likelihood of setting up an entrepreneurial activity, could also influence capital accumulation before switching. Actually, we can suppose that households base the decision to become an entrepreneur on the additional wealth they would gain by switching from salaried employment to entrepreneurship. The equations representing changes in net wealth and the probability of switching can indeed be formally written as an endogenous switching regression:

$$(6.1) \quad \ln \Delta W_{i,t}^1 = X_{i,t-1}' \beta_1 + u_{1,i}$$

$$(6.2) \quad \ln \Delta W_{i,t}^2 = X_{i,t-1}' \beta_2 + u_{2,i}$$

$$(6.3) \quad I_i^* = (\ln \Delta W_{i,t}^1 - \ln \Delta W_{i,t}^2) \delta + Z_i \gamma + v_i$$

I_i^* is a latent variable that determines whether the household head is a switching entrepreneur or a staying worker. The dependent variable in equations 6.1 and 6.2 is calculated as the logarithm of the change in net wealth (excluding the value of the business acquired at t+1 from this definition of wealth)²⁸, standardized by household income calculated at the initial period.

$\ln\Delta W_{i,t}^1$ and $\ln\Delta W_{i,t}^2$ are, respectively, the dependent variable for switching entrepreneurs and staying workers²⁹. Z_i is a vector of characteristics affecting the decision of starting a business, whereas $X_{i,t-1}$ is a vector of characteristics affecting accumulation of net wealth. β_1 , β_2 and γ are vectors of parameters, and $u_{1,i}$, $u_{2,i}$ and v_i are disturbance terms. The observed dichotomous realization I_i of latent variable I_i^* of whether the individual is a switching entrepreneur has the following form:

$$\begin{aligned} I_i &= 1 \text{ if } I_i^* > 0 \\ I_i &= 0 \text{ otherwise} \end{aligned}$$

Substituting from (6.1) and (6.2) we can write (6.3) as:

$$\begin{aligned} I_i^* &= X_{i,t-1}'(\beta_1 - \beta_2)\delta - \varepsilon_i \\ &= W_i'\alpha - \varepsilon_i \end{aligned}$$

where $W_i' = [X_{i,t-1}', Z_i']$, and

²⁸Business investment is part of total net wealth. One can readily find a strong and positive correlation between wealth accumulation and the probability of starting a business because a business is acquired at t+1. To avoid this problem, I consider wealth accumulation, omitting business value from total net wealth.

²⁹The value of the business acquired the following period is excluded from the estimation.

$$\varepsilon_i = (u_{1,i} - u_{2,i})\delta + v_i$$

Assume that $u_{1,i}$, $u_{2,i}$ and ε_i have a trivariate normal distribution. Moreover, the following assumptions hold:

- (a) $\sigma_{1,2} = 0$
- (b) $\sigma_{1,\varepsilon} \neq 0; \sigma_{2,\varepsilon} \neq 0$
- (c) $\sigma_\varepsilon^2 = 1$

Given these assumptions, the variance-covariance matrix Σ can be written as:

$$\Sigma = \begin{pmatrix} \sigma_1^2 & & \\ 0 & \sigma_2^2 & \\ \sigma_{\varepsilon,1} & \sigma_{\varepsilon,2} & 1 \end{pmatrix}$$

Actually, separate estimates of equations (6.1) and (6.2) yield inconsistent parameter estimates if wage earners differ in observed and unobserved characteristics from switching entrepreneurs. Equations (6.1-6.3) can be simultaneously estimated through maximum likelihood estimation, correcting for the selection bias.

Because of the institutional differences between Italy and the US, capital accumulation should matter more for Italian households than for US ones. This is not only due to higher downpayment requirements in Italy, but also to more severe credit market imperfections, which may lead Italian

households to rely more on their own resources rather than asking for a loan.

Table 7. show the results of the estimation of equations (6.1-6.3). The right hand side of equations 6.1 and 6.2 contains a set of demographic controls, such as age, age squared, years of education, sex , family size and civil status. Moreover, I improve on Hurst and Lusardi's analysis (2001) by controlling financial sophistication, which may affect regression results, leading to spurious correlation between the probability of starting up an entrepreneurial activity and changes in net wealth. To proxy for financial sophistication, I use the inverse of Herfindal index, which is a measure of household portfolio dispersion. Further, controls for wealth quartiles are included.

Finally, in order to improve identification of the selection equation, previous experience as an entrepreneur and household head father's level of education are included.

In columns (I) and (II) the rate of growth of net wealth for staying workers and switching entrepreneurs are included, whereas column (III) shows the probit estimation of equation 6.3.

ρ_{0} and ρ_{1} represent the correlation coefficients between the error term of the selection equation (6.3) and error terms of equations (6.1) and (6.2), respectively. In Italy the correlation coefficient ρ_{1} is positive and significant at 1% level when both $switch1$ and $switch2$ are considered. Since ρ_{1} is negative and significantly different from zero the model suggests that individuals who choose to switch to entrepreneurship have higher capital accumulation than a random individual. On the contrary, in the US ρ_{1} is negative, and significant only when $switch1$ is taken into account .

7. Conclusions

In this paper, I use microdata from Italy and US to assess the determinants of selection into entrepreneurship and to investigate whether institutional differences between these two countries affect household labor market decisions. I empirically assess the probability of starting a business in a common framework, in order to detect similarities and differences between the two countries. Following previous literature, I employ two different definitions of entrepreneur. The first one considers entrepreneurs as self employed, whereas the second one focuses on business ownership. Then, on the basis of observed differences between Italy and US, I formulated several theoretical predictions, which have been tested empirically.

First of all, I argue that greater imperfections in the Italian credit market

make Italian households relying to a greater extent on initial net wealth than in the US. Actually, in both countries having a high level of wealth increases, *ceteris paribus*, the probability of starting up a business. However, when business ownership- rather than self employment- is taken into account, the marginal effect of increasing initial net wealth is much higher and significant for potential Italian entrepreneurs compared to their US counterparts.

Secondly, the role of informal credit channels, such as help from relations or friends is addressed. I argue that "informal markets" can represent an important alternative to traditional credit channels, especially for potential Italian entrepreneurs, in particular those who are more likely to be constrained. I found that help from relations or friends partly offsets credit constraints for Italian households, whereas it is not important for US households.

Then, I fill a gap in the literature by introducing an index of financial diversification. Despite considering households' private wealth as being linked to occupational choices, previous studies fail to analyze whether the composition (rather than the mere amount) of wealth affects households' probability of switching to entrepreneurship. From this perspective, the index of portfolio diversification, calculated as the inverse of Herfindhal index, measures the extent to which households rely on capital markets. It clearly emerges that better opportunities for diversifying financial risk will lead households to save less for precautionary reasons, once financial risk has been mitigated through diversification. As far as the comparative analysis is concerned, financial diversification is found to positively affect transition into entrepreneurship for US households, whereas it is not significant for Italians. This result is robust to alternative specifications taking into account the potential endogeneity of financial diversification index.

Last but not least, the role of capital accumulation is taken into consideration. The level of financial development is indeed not neutral to capital accumulation. On the one hand, potential entrepreneurs need to accumulate assets in order to have sufficient collaterals to secure a loan. On the other, capital accumulation may well be the only channel through which "discouraged" households are able to obtain the capital needed to start a business. Actually, unobserved factors affecting wealth accumulation may also affect the decision to start a business. Therefore, a separate estimate may lead to spurious results. Using an endogenous switching regression helps to cope with this problem. Estimating simultaneously changes in net wealth and the probability of switching to entrepreneurship, reveals that

capital accumulation is significantly higher for potential entrepreneurs in Italy. By contrast, potential entrepreneurs in the US do not show significantly higher capital accumulation compared to wage earners.

Summing up, institutional differences seem to partially affect the decision to start a business. Greater imperfections in Italian credit markets mean that "informal networks" are more likely to be created. Besides credit markets, a greater degree of financial sophistication positively affects household occupational choices. The availability of more financial instruments, helping US households to better deal with uninsurable risks, weakens the link between household wealth and investment decisions. Moreover, asset accumulation is found to be an important device for business start ups, especially in a country- like Italy- with more severe credit markets imperfections.

The usefulness of this comparative analysis is not devoid of policy implications. Government stimulus packages, such as tax cuts or entrepreneurial loans might not be useful if entrepreneurial choice depends simply on personal traits, such as attitudes towards risk. But if the wealth-entrepreneurship link is in place, governments can stimulate business start ups not only by direct incentives to firms, but also through capital market development, which would in turn lead to better incentives for private savings. In this sense, a better developed financial market would weaken the link between personal wealth and business start ups not only in a direct manner (i.e. by relaxing borrowing constraints), but also by allowing potential entrepreneurs to better deal with uninsurable risks, and to accumulate more easily the assets required to set up a business. In this regard, differences in insurance and pension systems, that affect private savings behavior, are therefore able to indirectly influence household occupational choices.

Appendix

Data-Italy

The data used in this study come from the Survey of Household Income and Wealth (SHIW). It is carried over biannually. In this study, I consider 9 waves of PSID, from 1989 to 2006.

All nominal variables are converted in euro, and expressed at 2003 prices.

In this article, household total net wealth is calculated as the sum of the following components:

- (1) main house value.
- (2) net value of farm or business assets
- (3) net value of any other valuable asset.
- (4) mortgage.
- (5) value of checking or saving accounts, postal bonds, certificates of deposit.
- (6) government bonds
- (7) any other savings or assets, such as bond, stocks, a valuable collection for investment purposes, or rights in a trust or estate.
- (8) Any other debt besides mortgage.

Real assets are calculated as the sum of (1), (2), (3) and (4).

Financial assets are calculated as the sum of (5) (6) and (7).

Financial liabilities are calculated as the sum of (4) and (8).

Data-US

The data used in this study come from the Panel Study of Income Dynamics (PSID). This survey has been carried over since 1968. However, information on wealth components was collected since 1984, and every five years. From 1999 to 2003 instead, questions about wealth were asked every two years. In this study, I consider 6 waves of PSID, from 1984 to 2003.

All nominal variables are expressed at 2003 prices, and converted in euro.

In this article, household total net wealth is calculated as the sum of the following components

- (1) main house, net value.
- (2) farm or business assets, net value
- (3) net value of any real estate other than main home, such as a second home, land, rental real estate, or money owed to you on a land contract
- (4) value of checking or saving accounts, money market funds or investment trusts, savings bonds, Treasury bills, including IRAs (IRAs asked separately in 1999).
- (5) value of shares of stock of publicly held corporations, mutual funds or investment trusts, including stocks in IRAs (IRAs asked separately in 1999).

(6) any other savings or assets, such as bond funds, cash value in a life insurance policy, a valuable collection for investment purposes, or rights in a trust or estate.

(7) Any other debt besides mortgage.

Real assets (gross value) are calculated as the sum of (1), (2) and (3), plus the mortgage on the main house.

Financial assets are calculated as the sum of (4), (5) and (6).

Financial liabilities are calculated as the sum of mortgage on main house, plus (7).

In section 6, the definition of net wealth excludes the business value.

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TABLE 1.a Entrepreneurship rates in Italy and United States

	ITALY	US
Definition of entrepreneur		
Self_employed1		
0	73.59	87.33
1	26.40	12.67
Self_employed2		
0	75.14	89.51
1	24.85	10.48

TABLE 1.b Entrepreneurship rates in Italy and United States, by wealth quartiles

	I quartile	II quartile	III quartile	IV quartile
Definition of entrepreneur				
Self_employed1				
Italy	13.16	21.54	26.59	44.26
US	5.42	5.64	9.08	23.71
Self_employed2				
Italy	5.90	16.70	21.73	40.93
US	2.94	6.20	11.34	30.75

Table 1.a and Table 1.b show the percentages of wage earners and self-employed, overall, and by wealth quartiles. Calculations are made using 23,476 observations from the pooled data of the SHIW (1989-2006) and 41,069 observations from the pooled data of the PSID. Italian data are weighted using SHIW sampling weights, whereas US ones are weighted using PSID sampling weights. *Self_employed1=1* if the household head report to be self-employed, 0 otherwise. *Self_employed2=1* if the household head or other household member owns a business whose value is greater than zero.

TABLE 2.a Switching entrepreneurs in Italy and US

	ITALY	US
Switch1		
0	96.41%	96.3%
1	3.58%	3.69%
Switch2		
0	92.76%	94.65%
1	7.23%	5.35%

TABLE 2.b Switching Entrepreneurs in Italy and United States, by wealth quartiles

	I quartile	II quartile	III quartile	IV quartile
Definition of entrepreneur				
Switch1				
Italy	3.38	3.32	3.75	4.16
US	3.32	2.67	3.64	4.93
Switch2				
Italy	5.82	6.90	7.69	10.10
US	3.79	5.83	7.60	9.61

Table 2.a shows the percentages of those who switch to entrepreneurship according to definition *self_employed1* (*switch1*) and *self_employed2* (*switch2*), respectively. *switch1* takes value 1 if the household head was wage earner in the initial period, and he becomes entrepreneur the following one. *switch2* takes value 1 if the household head or another household component were wage earners at time t, and they he become business owners the following period. As far as *switch2* in PSID data is concerned, a longer time span is considered from 1984 to 1999 (5 years gap), whereas 2 year gap is considered from 2001 to 2003. **Table 2.b** shows the percentages of switching entrepreneurs classified by wealth quartiles at time.

Table 3.a Variables used in the empirical analysis- descriptive statistics

	MEAN		MEDIAN		MIN		MAX	
	IT	US	IT	US	IT	US	IT	US
Age	45.84	41.79	45	41	16	16	70	70
Years of education	10.10	12.59	8	12	1	1	21	21
Net wealth	185.08	112.69	125.13	37.11	-3.40	-21.48	154,155	155,546
Fin. liabilities	6.60	156.55	0	6.383	0	0	1,183	10,200
Business value	26.33	27.36	0	0	0	-20.68	8,870	24,500
Household tot. income	33.27	48.74	28.68	37.65	-44.75	-75.30	1,022	3,028
H. head income (dependent job)	12.61	28.16	13.62	22.79	0	0	398	1,220

Table 3.b Descriptive statistics-average values (Italy)

	switching e.	wage earners	p-value difference
switch1	A	B	A-B=0
N	(444)	(12171)	
Age	45.14	46.25	0.0228
Sex (dummy)	0.80	0.79	0.7693
Married (dummy)	0.78	0.82	0.0430
years of education	10.39	10.15	0.2411
help parents (dummy)	0.03	0.01	0.0128
father entrep. (dummy)	0.42	0.24	0.0000
family size	3.24	3.36	0.0450
Household net wealth	220,005	160,673	0.0000
Household income	33,361	32,223	0.2123

	switching e	wage earners	p-value difference
switch2	A	B	A-B=0
N	(886)	(11875)	
Age	45.69	46.12	0.2204
Sex (dummy)	0.79	0.83	0.0103
Married (dummy)	0.81	0.85	0.0024
years of education	10.15	10.58	0.0035
help parents (dummy)	0.01	0.01	0.3421
father entrep. (dummy)	0.40	0.24	0.0000
family size	3.44	3.34	0.0161
Household net wealth	201,597	149,557	0.0000
Household Income	36,888	31,418	0.0000

Table 3.c Descriptive statistics-average values (US)

	switching e.	wage earners	p-value difference
switch1	A	B	A-B=0
N	(615)	(16475)	
Age	41.29	40.63	0.1919
Sex (dummy)	0.79	0.71	0.0012
Married (dummy)	0.61	0.56	0.0076
years of education	12.93	12.49	0.0104
help parents (dummy)	0.11	0.08	0.0521
father entrep. (dummy)	0.12	0.07	0.0174
family size	2.91	2.86	0.4624
Household net wealth	299,710.8	215,259.6	0.1010
Household income	52,604	45,018	0.0029

	switching e	wage earners	p-value difference
switch2	A	B	A-B=0
N	(950)	(14095)	
Age	39.98	41.12	0.0036
Sex (dummy)	0.91	0.72	0.0000
Married (dummy)	0.73	0.55	0.0000
years of education	13.65	12.48	0.0000
help parents (dummy)	0.07	0.08	0.2124
father entrep. (dummy)	0.10	0.06	0.0007
family size	3.08	2.86	0.0000
Household net wealth	231,252	125,050.5	0.0006
Household Income	60,543	44,699	0.0000

Table 3.a shows descriptive statistics of the main variables used in the empirical analysis. All nominal variables are divided by 1000, converted in euro, and deflated using 2003 consumer price index.

In **Table 3.b** and **Table 3.c** some descriptive statistics about variables used in the empirical analysis are presented. As far as Italian data are concerned, the sample is obtained considering in pair different waves of the SHIW (1989-1991; 1991-1993; 1993-1995; 1995-1998; 1998-2000; 2000-2002; 2002-2004; 2004-2006). Regarding US data instead, the sample is obtained considering in pair different waves of the PSID. As far as *switch1* is concerned, I considered in pair the following years: 1984-1986; 1989-1991; 1994-1996; 1999-2001; 2001-2003). As far as *switch2* is concerned, I considered in pair the following years: 1984-1989; 1989-1994; 1994-1999; 1999-2001;2001-2003. All households who are not entrepreneurs in the first period according to the definition *switch1* and *switch2* are considered in the whole sample, pooled together. Wage earners do not become entrepreneurs in the second period. New entrepreneurs become entrepreneurs in the second period. All the nominal variables are converted in Euro, at 2003 prices

Table 4.a Wealth composition Italy

ITALY			
	switching e.	wage e.	p value
switch1	A	B	A-B
real asset/tot. wealth	0.82	0.79	0.2171
fin. asset/tot. wealth	0.23	0.24	0.8328
fin. liabilities/tot. wealth	0.05	0.03	0.2185
main house/real asset	0.51	0.58	0.0017
div1	0.13	0.13	0.9017
div2	0.23	0.22	0.6828
switch2			
real asset/tot. wealth	0.82	0.78	0.0865
fin. asset/tot. wealth	0.25	0.25	0.7719
fin. liabilities/tot. wealth	0.07	0.03	0.1855
main house/real asset	0.60	0.58	0.1875
div1	0.13	0.12	0.1953
div2	0.23	0.22	0.4148

Table 4.b Wealth composition US

US			
	switching e.	wage e.	p value
switch1	A	B	A-B
real asset/tot. wealth	0.94	1.00	0.4819
fin. asset/tot. wealth	0.57	0.58	0.9282
fin. liabilities/tot. wealth	0.51	0.58	0.6159
main house/real asset	0.80	0.89	0.0000
div1	0.15	0.13	0.0785
div2	0.25	0.20	0.0030
switch2			
real asset/tot. wealth	0.81	1.06	0.2724
fin. asset/tot. wealth	0.54	0.59	0.7714
fin. liabilities/tot. wealth	0.35	0.65	0.2106
main house/real asset	0.87	0.93	0.0000
div1	0.19	0.14	0.0000
div2	0.30	0.21	0.0000

The sample considered in **table 4.a** and **4.b** is obtained considering in pair different waves of the PSID and SHIW. All households that in the first period are not entrepreneurs according to the definition *switch1* and *switch2* are considered in the whole sample, pooled together. Wage earners do not become entrepreneurs in the second period. New entrepreneurs become entrepreneurs in the second period. *div1* and *div2* are the financial diversification indexes, calculated as the inverse of the Herfindhal index. *div1* only includes financial assets, whereas *div2* also includes real assets. All the nominal variables are converted in Euro, at 2003 prices. All ratios are obtained by dividing each wealth component by total net wealth.

Table 5.1 The probability to start a business and initial net wealth				
Marginal effects (<i>switch1</i>)				
ITALY	(1)	(2)	(3)	(4)
age	-0.000516	-0.000810	-0.00397***	0.00114
	(0.00143)	(0.00146)	(0.00144)	(0.00247)
age^2	-5.09e-06	-3.67e-06	3.56e-05**	-2.72e-05
	(1.58e-05)	(1.60e-05)	(1.55e-05)	(3.05e-05)
education	-0.00170	-0.00198	-0.00151	-0.000751
	(0.00209)	(0.00209)	(0.00232)	(0.00243)
education^2	7.69e-05	7.73e-05	6.19e-05	4.75e-05
	(9.61e-05)	(9.77e-05)	(0.000101)	(0.000108)
male (dummy)	0.0124***	0.0104**	0.0130***	0.00761
	(0.00433)	(0.00446)	(0.00401)	(0.00523)
married (dummy)	-0.0137*	-0.0133*	-0.0177*	-0.0146*
	(0.00771)	(0.00784)	(0.0102)	(0.00885)
family size	-0.00138	-0.000670	0.00112	-0.00150
	(0.00217)	(0.00224)	(0.00197)	(0.00240)
parental education	0.000771	0.000724	0.000761	0.000346
	(0.000540)	(0.000556)	(0.000601)	(0.000542)
father entrepreneur	0.0279***	0.0277***	0.0164***	0.0244***
	(0.00570)	(0.00571)	(0.00557)	(0.00636)
net wealth / 100,000	0.00351***	0.00413***	0.00259**	0.00318***
	(0.000951)	(0.00114)	(0.00121)	(0.00113)
labour income / 100,000	-0.0940***		-0.106***	-0.0656*
	(0.0358)		(0.0361)	(0.0373)
unemployed	0.0391***	0.0554***	0.0262**	0.0427***
	(0.0106)	(0.0111)	(0.0122)	(0.0148)
previous experience as entrep.	0.0836**	0.0868**	0.0610	0.182**
	(0.0407)	(0.0403)	(0.0376)	(0.0778)
total income		-0.0247		
		(0.0162)		
risk aversion*net wealth			0.000285	
			(0.00711)	
Predicted prob.	0.0350	0.0350	0.0163	0.0336
Observed prob.	0.0248	0.0250	0.0295	0.0236
Pseudo R-squared	0.1099	0.1058	0.1594	0.1139
Observations	10349	10349	5063	7927
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

Marginal effects(<i>switch1</i>)				
US				
	(1)	(2)	(3)	(4)
age	0.00131	0.000848	0.000992	0.00370**
	(0.00101)	(0.000991)	(0.00133)	(0.00168)
age^2	-1.67e-05	-1.13e-05	-7.34e-06	-4.98e-05**
	(1.16e-05)	(1.13e-05)	(1.51e-05)	(2.20e-05)
education	-0.00240	-0.00224	-0.000188	-0.00440
	(0.00254)	(0.00255)	(0.00316)	(0.00298)
education^2	0.000102	8.66e-05	2.97e-05	0.000176*
	(8.89e-05)	(8.90e-05)	(0.000109)	(0.000103)
male (dummy)	0.0128***	0.0122***	0.0139***	0.0112**
	(0.00441)	(0.00448)	(0.00510)	(0.00464)
married (dummy)	-0.00286	-0.00381	-0.0100	0.000543
	(0.00523)	(0.00532)	(0.00643)	(0.00545)
family size	0.000179	9.26e-05	0.00150	-0.000364
	(0.00138)	(0.00139)	(0.00162)	(0.00144)
parental education	0.000811*	0.000711	0.000815	0.000782
	(0.000456)	(0.000456)	(0.000542)	(0.000490)
father entrepreneur (dummy)	-0.000182	-0.000362	0.00558	-0.00189
	(0.00459)	(0.00459)	(0.00592)	(0.00507)
net wealth /100,000	0.00380***	0.00329***	0.00158	0.00438***
	(0.000863)	(0.000897)	(0.00158)	(0.00105)
labour income / 100,000	-0.0201*		-0.0250*	-0.0305**
	(0.0105)		(0.0135)	(0.0140)
unemployed (dummy)	0.0135**	0.0185***	0.0315***	0.0215**
	(0.00674)	(0.00663)	(0.0107)	(0.00842)
previous experience as entrep.	0.128**	0.134**	0.0544	0.0922
	(0.0643)	(0.0659)	(0.0632)	(0.0617)
total income/100,000		-0.00168		
		(0.00379)		
risk tolerance*net wealth			0.00822**	
			(0.00399)	
Observed prob.	0.0347	0.0347	0.0353	0.0341
Predicted prob.	0.0328	0.0331	0.0324	0.0318
Pseudo R-squared	0.0185	0.0162	0.0297	0.0225
Observations	11759	11759	8193	9937
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

Notes: The dependent variable (*switch1*) takes value 1 if the household was wage earner at t , and he becomes entrepreneur at $t+2$. Regional dummies, year dummies and municipality - size dummies are included. Personal characteristics refer to household head. In specification (II) total income - calculated as the sum of labour income, asset income and transfers - is included instead of labour income. Specification (III) includes risk aversion (Italy) and risk tolerance (US). In specification (IV) only household heads whose age is below 55 years old are considered. All nominal variables are deflated using 2003 consumer price index.

Table 5.2 The probability to start a business and initial net wealth

Marginal effects (<i>switch2</i>)				
ITALY	(1)	(2)	(3)	(4)
age	0.00150	-0.000965	-0.00330	-0.00501
	(0.00288)	(0.00326)	(0.00357)	(0.00498)
age^2	-2.27e-05	-7.51e-06	2.22e-05	6.20e-05
	(3.19e-05)	(3.62e-05)	(3.88e-05)	(6.22e-05)
male (dummy)	0.0310***	0.0260***	0.0326***	0.0359***
	(0.00786)	(0.00930)	(0.00906)	(0.00832)
married (dummy)	0.00122	-0.0130	-0.000588	0.00918
	(0.0123)	(0.0153)	(0.0152)	(0.0126)
education	-0.00189	-0.00623	-0.00891**	-0.00690
	(0.00405)	(0.00423)	(0.00450)	(0.00499)
education^2	0.000140	0.000200	0.000362*	0.000381
	(0.000192)	(0.000196)	(0.000207)	(0.000231)
family size	0.00623*	0.00874**	0.00522	0.00310
	(0.00348)	(0.00417)	(0.00381)	(0.00410)
parental education	0.00181*	0.00123	0.00167	0.000797
	(0.000939)	(0.00110)	(0.00110)	(0.00106)
father entrepreneur	0.0644***	0.0695***	0.0692***	0.0703***
	(0.0118)	(0.0122)	(0.0143)	(0.0139)
net wealth	0.0129***	0.0123***	0.0127***	0.0159***
	(0.00183)	(0.00220)	(0.00240)	(0.00232)
labour income	-0.581***		-0.522***	-0.612***
	(0.0596)		(0.0712)	(0.0728)
unemployed	0.0231**	-0.00859	0.0216*	0.0253**
	(0.00939)	(0.0135)	(0.0123)	(0.0118)
previous experience as entrep.	0.0732	0.209**	0.0235	0.168*
	(0.0532)	(0.0838)	(0.0404)	(0.0972)
total income		0.0295		
		(0.0288)		
risk*net wealth			0.00322	
			(0.0136)	
Observed prob.	0.0799	0.0799	0.0768	0.0834
Predicted prob.	0.0558	0.0671	0.0502	0.0576
Pseudo R-squared	0.1563	0.0769	0.1687	0.1667
Observations	6726	6726	3931	5195
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

Marginal effect (<i>switch2</i>)				
US				
	(1)	(2)	(3)	(4)
age	0.000255	-4.86e-05	-0.00120	0.00110
	(0.00115)	(0.00114)	(0.00164)	(0.00200)
age^2	-3.96e-07	2.40e-06	2.05e-05	-1.16e-05
	(1.32e-05)	(1.32e-05)	(1.89e-05)	(2.61e-05)
education	0.00331	0.00316	0.00902*	0.00571
	(0.00304)	(0.00304)	(0.00476)	(0.00370)
education^2	-5.71e-05	-6.32e-05	-0.000236	-0.000136
	(0.000104)	(0.000104)	(0.000159)	(0.000125)
male (dummy)	0.0475***	0.0468***	0.0510***	0.0472***
	(0.00445)	(0.00447)	(0.00588)	(0.00486)
married (dummy)	0.00513	0.00323	0.00118	0.00450
	(0.00566)	(0.00571)	(0.00773)	(0.00620)
family size	0.000505	0.000372	0.00141	0.000275
	(0.00154)	(0.00154)	(0.00213)	(0.00169)
parental education	0.00235***	0.00225***	0.00176***	0.00249***
	(0.000497)	(0.000497)	(0.000643)	(0.000551)
father entrep.	0.0195***	0.0196***	0.0212**	0.0182***
	(0.00632)	(0.00632)	(0.00853)	(0.00696)
net wealth / 100,000	0.000579	0.000445	-0.00147	0.000594
	(0.000362)	(0.000315)	(0.00141)	(0.000433)
labour income	-0.0024032		0.000458	0.0017658
	(0.0061111)		(0.0089158)	(0.006751)
unemployed	0.0274***	0.0261***	0.0274***	0.0278***
	(0.00500)	(0.00502)	(0.00778)	(0.00609)
previous experience as entrep.	0.164***	0.167***	0.196***	0.173***
	(0.0516)	(0.0519)	(0.0661)	(0.0616)
total income		0.008558***		
		(0.0032676)		
risk tolerance*net wealth			0.00718	
			(0.00492)	
Observed prob.	0.0624	0.0624	0.0698	0.0637
Predicted prob.	0.0518	0.0517	0.0608	0.0533
R-squared	0.0544	0.0552	0.0451	0.0520
Observations	13823	13823	9485	11842
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

Notes: The dependent variable (*switch2*) takes value 1 if the household was wage earner at t , and he becomes entrepreneur at $t+4$ (Italy) or $t+5$ (US). Regional dummies, year dummies and town - size dummies are included. Personal characteristics refer to household head. In specification (II) total income - calculated as the sum of labour income, asset income and transfers - is included instead of labour income. Specification (III) includes risk tolerance. In specification (IV) only household head whose age is below 55 years old are considered. All nominal variables are deflated using 2003 consumer price index.

Table 6.1 The probability to start a business- some exercises

Marginal effects				
ITALY				
	(1)	(2)	(3)	(4)
	<i>switch1</i>	<i>switch2</i>	<i>switch1</i>	<i>switch2</i>
age	-0.00135	-0.00501*	-0.00133	-0.00146
	(0.00138)	(0.00260)	(0.00177)	(0.00357)
age^2	2.13e-06	5.60e-05**	1.53e-06	1.72e-05
	(1.51e-05)	(2.81e-05)	(1.93e-05)	(3.91e-05)
education	-0.00320*	-0.00382	-0.00297	0.00136
	(0.00194)	(0.00351)	(0.00232)	(0.00547)
education^2	0.000132	0.000159	0.000144	4.75e-07
	(8.83e-05)	(0.000162)	(0.000108)	(0.000252)
male (dummy)	0.0113***	0.0251***	0.0101**	0.0184*
	(0.00415)	(0.00729)	(0.00481)	(0.0105)
married (dummy)	-0.0135*	-0.000206	-0.00314	6.77e-05
	(0.00759)	(0.0115)	(0.00728)	(0.0160)
family size	-0.000167	0.00656**	-0.000557	0.00939**
	(0.00203)	(0.00323)	(0.00251)	(0.00469)
parental education	0.000729	0.00118	0.000537	0.00197*
	(0.000533)	(0.000842)	(0.000583)	(0.00118)
father entrepreneur	0.0314***	0.0637***	0.0350***	0.0692***
	(0.00574)	(0.0108)	(0.00759)	(0.0164)
unemployed	-0.0573***	0.0329***	-0.0496***	0.0176
	(0.0104)	(0.00864)	(0.0114)	(0.0121)
II wealth quartile	0.00411	0.0151	0.00453	0.0157
	(0.00654)	(0.00990)	(0.00864)	(0.0140)
III wealth quartile	0.00533	0.0254**	0.00437	0.0205
	(0.00657)	(0.0120)	(0.00801)	(0.0164)
IV wealth quartile	0.0100	0.0250*	0.00762	0.00662
	(0.00732)	(0.0131)	(0.00899)	(0.0165)
constrained	-0.00140	-0.279***	0.163	-0.565***
	(0.00737)	(0.0244)	(0.162)	(0.137)
no_help*constrained			-0.0298***	0.0649***
			(0.00557)	(0.0141)
Observed prob.	0.0344	0.0758	0.0358	0.0787
Predicted prob.	0.0252	0.0504	0.0249	0.0561
Pseudo R-squared	0.0912	0.1840	0.1048	0.1446
Observations	11870	7741	7129	4152
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

Marginal effect				
US				
	(1)	(2)	(3)	(4)
	<i>switch1</i>	<i>switch2</i>	<i>switch1</i>	<i>switch2</i>
age	0.000610 (0.000992)	-0.00102 (0.00114)	0.000683 (0.000990)	-0.00147 (0.00122)
age^2	-8.65e-06 (1.13e-05)	6.48e-06 (1.31e-05)	-9.32e-06 (1.12e-05)	1.10e-05 (1.38e-05)
education	-0.00298 (0.00252)	0.000822 (0.00297)	-0.00298 (0.00252)	0.000595 (0.00304)
education^2	0.000113 (8.75e-05)	-4.51e-06 (0.000101)	0.000112 (8.75e-05)	3.33e-06 (0.000103)
male (dummy)	0.0121*** (0.00451)	0.0439*** (0.00448)	0.0121*** (0.00450)	0.0432*** (0.00467)
married (dummy)	-0.00240 (0.00543)	-0.00397 (0.00583)	-0.00230 (0.00543)	-0.00440 (0.00605)
family size	0.000317 (0.00140)	0.00102 (0.00153)	0.000294 (0.00139)	0.00107 (0.00157)
parental education	0.000990** (0.000453)	0.00209*** (0.000490)	0.000985** (0.000453)	0.00203*** (0.000503)
father entrep.	0.00209 (0.00468)	0.0186*** (0.00619)	0.00216 (0.00468)	0.0192*** (0.00636)
II wealth quartile	-0.00957** (0.00466)	0.0126* (0.00700)	-0.00921* (0.00473)	0.0151** (0.00732)
III wealth quartile	-0.00743 (0.00515)	0.0299*** (0.00845)	-0.00706 (0.00521)	0.0323*** (0.00877)
IV wealth quartile	0.00609 (0.00655)	0.0643*** (0.0121)	0.00644 (0.00663)	0.0685*** (0.0125)
unemployed	-0.0171*** (0.00639)	0.0254*** (0.00502)	-0.0170*** (0.00638)	0.0259*** (0.00520)
previous experience as entrep.	0.160** (0.0689)	0.157*** (0.0506)	0.159** (0.0689)	0.160*** (0.0512)
constrained	-0.0168* (0.00891)	-0.00341 (0.00970)	-0.0111 (0.0117)	0.00158 (0.0121)
no_help*constrained			-0.00618 (0.00740)	0.00149 (0.0230)
Observed prob.	0.0347	0.0624	0.0355	0.0632
Predicted prob.	0.0249	0.0502	0.0334	0.0515
Pseudo R-squared	0.1016	0.0640	0.0191	0.0616
Observations	11946	13823	11944	13410
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

Notes: Regional dummies, wealth-quartiles dummies, year dummies and town - size dummies are included. Specification (I) includes a dummy (*constrained*) which takes value 1 if the household is liquidity constrained, and 0 otherwise. An household is considered constrained if total net wealth is lower than two months' income. Specification (II) includes the interaction term between *no_help* and *constrained*. *no_help* takes value 1 if the household did not receive any help from parents or friends the period before switching to entrepreneurship. All nominal variables are deflated using 2003 consumer price index.

Table 6.2 The probability to start a business including the financial diversification index

ITALY				
	(1)	(2)	(3)	(4)
	<i>switch1</i>	<i>switch2</i>	<i>switch1-IV</i>	<i>switch2-IV</i>
age	-0.00660*** (0.00172)	0.000527 (0.00231)	-0.0921*** (0.0150)	-0.0467*** (0.0148)
age	6.37e-05*** (1.76e-05)	-7.15e-06 (2.41e-05)	0.000780*** (0.000153)	0.000375** (0.000156)
male (dummy)	0.00892 (0.00726)	0.0298*** (0.00786)	0.234*** (0.0781)	0.153** (0.0636)
married (dummy)	-0.0218* (0.0119)	-0.00474 (0.0127)	-0.144 (0.0927)	-0.0106 (0.0797)
education	-0.00438 (0.00286)	-0.00338 (0.00412)		
education^2	0.000174 (0.000136)	0.000211 (0.000195)		
living in the south (dummy)	0.00439 (0.00681)	-0.0138* (0.00798)	8.40e-05 (0.0823)	-0.0549 (0.0647)
family size	0.000891 (0.00262)	0.00896** (0.00368)	0.00275 (0.0302)	0.0502** (0.0239)
parental education	0.000529 (0.000891)	0.00160* (0.000951)		
father job	0.0436*** (0.00937)	0.0593*** (0.0117)		
labour income/100,000	-0.206*** (0.0606)	-0.574*** (0.0562)		
net wealth/100,000	0.007081*** (135.6)	0.001210*** (183.3)	0.006516*** (1397)	0.008344*** (1120)
fin. diversification index	0.00602 (0.0165)	0.000782 (0.0207)	-0.773 (0.896)	-0.572 (0.705)
unemployed	0.0115 (0.00773)	0.0325*** (0.00795)	-0.593*** (0.0779)	-0.0367 (0.0717)
father entrepreneur			0.401*** (0.0618)	0.346*** (0.0502)
Wald test exogeneity			0.3266	0.4636
Observations	6804	6787	6782	6770
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

US	(1)	(2)	(3)	(4)
	<i>switch1</i>	<i>switch2</i>	<i>switch1- IV</i>	<i>switch2 - IV</i>
age	0.00218 (0.00141)	-0.000212 (0.00164)	-0.0186 (0.0203)	-0.0283 (0.0177)
age^2	-2.61e-05* (1.55e-05)	-1.17e-05 (1.87e-05)	4.46e-06 (0.000194)	8.92e-05 (0.000174)
education	0.00226 (0.00362)	-0.00623 (0.00415)		
education^2	-9.36e-05 (0.000124)	0.000196 (0.000144)		
male (dummy)	0.0320*** (0.00618)	0.0530*** (0.00640)	0.303*** (0.106)	0.532*** (0.108)
married (dummy)	-0.0138 (0.00866)	-0.00292 (0.00876)	-0.422*** (0.145)	-0.200* (0.115)
family size	-0.000507 (0.00213)	0.00127 (0.00231)	0.0758* (0.0433)	0.0629* (0.0355)
parental education	0.00329*** (0.000699)	0.00295*** (0.000757)		
father entrep.	0.0113 (0.00753)	0.0211** (0.00843)	0.0392 (0.0739)	0.126* (0.0648)
labour income / 100,000	0.00812 (0.0131)	-0.0224 (0.0138)	-0.4004* (0.24115)	-0.47758** (0.19184)
net wealth / 100,000	0.00488*** (0.00161)	0.0101*** (0.00181)	-0.1750* (0.0934)	-0.0671 (0.0788)
fin.diversification index	0.0150 (0.0133)	0.0656*** (0.0141)	4.590*** (1.782)	3.409** (1.431)
unemployed	-0.0306** (0.0125)	0.0187** (0.00943)	-0.219** (0.0976)	0.197* (0.103)
Wald test of exogeneity			0.0081	0.0411
Observations	7377	7425	7377	7425
Robust standard errors in parentheses				
*** p 0.01, ** p 0.05, * p 0.1				

Notes: Regional dummies and year dummies are included. In column (3) and (4) household head years of education, and level of education of household head's father are used as instruments for financial diversification index.

Table 6.3 IV estimation		
switch2		
	ITALY	US
	(I)	(III)
fin. divers. index	2.070378	3.840**
	(2.223696)	(1.785)
net wealth / 100000	0.1871222***	-0.0217
	(0.0522728)	(0.00103)
age	0.0114977	-0.0265
	(0.0720137)	(0.0260)
age^2	-0.0002443	6.75e-05
	(0.000765)	(0.000261)
male (dummy)	0.1523589	0.299*
	(0.1875501)	(0.163)
married (dummy)	-.1158506	-0.128
	(0.2350364)	(0.180)
family size	0.0474394	0.0797
	(0.0722495)	(0.0488)
father entrepreneur	.4247815**	0.0378
	(0.1720321)	(0.107)
unemployed		0.503***
		(0.152)
labour income	-5.814392***	-6.73e-06***
	(1.1601)	(2.16e-06)
Constant	-2.552225	-2.074***
	(1.528798)	(0.535)
Standard errors in parentheses		
*** p 0.01, ** p 0.05, * p 0.1		

Notes: Regional dummies and year dummies are included. In column (II) household head years of education, and level of education of household head's father are used as instruments for financial diversification index.

Table 7. Wealth accumulation and the probability to start a business**Switching regression ITALY**

	switch1			switch2		
	(I)	(II)	(III)	(I)	(II)	(III)
VARIABLES			select			select
II wealth quartile	0.602*** (0.0653)	0.555 (0.380)	0.111 (0.112)	0.654*** (0.0696)	0.799*** (0.269)	0.450*** (0.0711)
III wealth quartile	0.632*** (0.0709)	0.977** (0.409)	0.0891 (0.134)	0.614*** (0.0765)	1.348*** (0.272)	0.333*** (0.0824)
IV wealth quartile	0.804*** (0.0845)	0.725 (0.485)	0.257 (0.166)	0.866*** (0.0942)	1.353*** (0.334)	0.388*** (0.101)
unemployed (dummy)	-0.0980 (0.0771)	-1.048** (0.453)	-0.720*** (0.111)	-0.168* (0.0868)	-0.319 (0.250)	0.0985 (0.104)
fin. div. index	-0.153 (0.135)	0.443 (0.811)	-0.0302 (0.232)	-0.130 (0.149)	0.578 (0.528)	-0.0972 (0.152)
age	-0.0158 (0.0207)	0.0568 (0.0988)	-0.0964*** (0.0278)	-0.0279 (0.0227)	-0.0446 (0.0720)	-0.0640*** (0.0241)
age^2	0.000205 (0.000225)	-0.000509 (0.00103)	0.000800*** (0.000304)	0.000286 (0.000247)	0.000609 (0.000805)	0.000574** (0.000264)
male (dummy)	-0.0792 (0.0594)	0.828** (0.395)	0.246** (0.108)	-0.0887 (0.0651)	0.138 (0.221)	0.00119 (0.0684)
married (dummy)	0.0510 (0.0797)	-0.289 (0.348)	-0.177 (0.121)	0.0800 (0.0852)	-0.374 (0.322)	0.161 (0.0989)
education	0.0566** (0.0276)	-0.113 (0.146)	-0.0690* (0.0415)	0.0321 (0.0310)	0.158 (0.108)	-0.0693** (0.0304)
education^2	-0.00102 (0.00120)	0.00327 (0.00640)	0.00256 (0.00191)	-4.82e-05 (0.00135)	-0.00531 (0.00453)	0.00244* (0.00136)
living in the south	0.198*** (0.0507)	-0.00729 (0.277)	0.0547 (0.0890)	0.176*** (0.0561)	-0.00281 (0.195)	0.0276 (0.0594)
family size	-0.0601** (0.0245)	-0.0481 (0.112)	0.00265 (0.0409)	-0.0432 (0.0272)	0.123 (0.0877)	0.000341 (0.0298)
parental education			-0.0137 (0.0119)			-0.00228 (0.00676)
father entrepreneur (dummy)			0.453*** (0.0868)			0.145*** (0.0486)
family income			0.480 (0.402)			1.316*** (0.175)
Constant	11.88*** (0.469)	10.02*** (1.990)	1.284** (0.651)	12.25*** (0.510)	9.994*** (1.597)	0.00109 (0.520)
Rho0	-0.1142 (0.0889)			0.9217*** (0.0216)		
Rho1	0.6325*** (0.2121)			0.4784*** (0.1038)		
Wald test of indep.eq.	0.0001			0.0000		
Prob > chi2						
Observations	4234	4234	4234	4229	4229	4229
Robust standard errors in parentheses						
*** p 0.01, ** p 0.05, * p 0.1						

Switching regression US						
	switch1			switch2		
	(I)	(II)	(III)	(I)	(II)	(III)
VARIABLES			select			select
II wealth quartile	0.237*** (0.0666)	-0.456 (0.534)	-0.0461 (0.107)	0.196*** (0.0682)	-0.347 (0.534)	0.321*** (0.0996)
III wealth quartile	0.527*** (0.0749)	-0.266 (0.550)	0.310*** (0.113)	0.492*** (0.0811)	-0.178 (0.589)	0.517*** (0.110)
IV wealth quartile	0.829*** (0.0929)	-0.316 (0.766)	0.534*** (0.140)	0.858*** (0.107)	-0.417 (0.695)	0.682*** (0.149)
unemployed	-0.282*** (0.0971)	0.282 (0.489)	-0.430*** (0.118)	-0.251*** (0.0949)	-0.791 (0.604)	0.0142 (0.128)
fin. div. index	0.209* (0.123)	-0.0199 (0.648)	-0.0180 (0.181)	0.111 (0.124)	0.240 (0.543)	0.247 (0.171)
age	-0.0380*** (0.0123)	-0.103 (0.0826)	0.0171 (0.0191)	-0.0360*** (0.0130)	0.00233 (0.0635)	-0.0219 (0.0193)
age^2	0.000405*** (0.000139)	0.00143 (0.000887)	-0.000328 (0.000213)	0.000404*** (0.000142)	4.86e-05 (0.000723)	6.96e-05 (0.000220)
education	-0.0186 (0.0339)	-0.0698 (0.234)	-0.0431 (0.0458)	-0.0331 (0.0356)	0.0122 (0.124)	-0.101** (0.0428)
education^2	0.00130 (0.00115)	0.00352 (0.00775)	0.00101 (0.00154)	0.00188 (0.00120)	0.000711 (0.00419)	0.00303** (0.00146)
male (dummy)	0.0274 (0.0833)	-0.480 (0.903)	0.561*** (0.135)	0.0372 (0.0842)	0.0517 (0.699)	0.537*** (0.126)
married	-0.143* (0.0748)	-0.550 (0.418)	-0.163 (0.0999)	-0.158** (0.0752)	-0.787** (0.319)	-0.151 (0.0926)
family size	-0.0947*** (0.0190)	0.111 (0.0894)	-0.00720 (0.0276)	-0.101*** (0.0191)	0.121 (0.0872)	0.0378 (0.0256)
family income			-7.22e-07 (1.17e-06)			-7.93e-07 (2.10e-06)
parental education			0.0241*** (0.00759)			0.0245*** (0.00792)
father entrepreneur (dummy)			0.185** (0.0745)			0.188** (0.0757)
Constant	0.587* (0.353)	6.610* (3.693)	-1.625*** (0.530)	0.715* (0.406)	2.155 (1.996)	-1.245** (0.535)
Rho0	-0.1650*** (0.0575)			-0.2186*** (0.0862)		
Rho1	-0.8031*** (0.1692)			-0.44404 (0.3644)		
Wald test of indep. eq.						
Prob > chi2	0.0066			0.0362		
Observations	4490	4490	4490	4496	4496	4496
Robust standard errors in parentheses						
*** p 0.01, ** p 0.05, * p 0.1						

Notes: This table show estimation of equations (6.1), (6.2) and (6.3). All nominal variables are deated using 2003 consumer price index. In columns (I) and (II) the dependent variable is the log change in net wealth, normalized by household income as of time t-4 (Italy) or t-5 (US), for wage earners and switching entrepreneurs, respectively. In the probit equation (column III) those who switch to entrepreneurship according to *switch1* and *switch2* are considered. Estimation of equations (6.1) (6.2) and (6.3) is implemented through maximum likelihood.

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