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Latent and actual entrepreneurship in Europe and the US: some recent developments

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Abstract: This paper uses 2004 survey data from the 15 old EU member states and the US to explain country differences in latent and actual entrepreneurship. Other than demographic variables such as gender, age and education, the set of covariates includes the perception by respondents of administrative complexities, of availability of financial support and of risk tolerance as well as country-specific effects. A comparison is made with results using a similar survey in 2000. While a majority of the surveyed population identifies lack of financial support as an obstacle to starting a new business, the role of this variable in both latent and actual entrepreneurship appears to be even more counterintuitive in 2004 than in 2000: it has no impact on actual entrepreneurship and is positively related to latent entrepreneurship. Administrative complexities, also perceived as an obstacle by a large majority of the population, have the expected negative impact both for latent and actual entrepreneurship in both years. Country-specific effects are important both for latent and actual entrepreneurship and the comparison of 2000 and 2004 results suggests that, once all other factors are controlled for, an improvement in actual entrepreneurship in the EU relative to the US has taken place in the last four years. However, in terms of unweighted averages actual entrepreneurship remained about the same. Latent entrepreneurship dropped while this drop seems to have occurred evenly in the US and the EU member states.

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INTRODUCTION[1]

Entrepreneurial activity is at the heart of innovation, productivity growth, competitiveness, economic growth and job creation. Next to this identification with success at the aggregate level, entrepreneurial activity is also associated with personal success. Nevertheless, this engine of economic and social development is hardly dealt with in economic theory for at least five reasons. See Carree and Thurik (2003, 2006) for a survey of the literature on entrepreneurship and economic growth.

First, this may have to do with the changing role of entrepreneurial activity during the last century (Audretsch and Thurik, 2001 and 2004).[2] Second, there is no generally accepted definition of entrepreneurship (Bull and Willard, 1993; Lumpkin and Dess, 1996; OECD, 1998; van Praag, 1999; Wennekers and Thurik, 1999). Third, neo-classical economics and equilibrium theory left little room for the concepts of initiative, autonomy and the struggle with new ideas and uncertainty (Barreto, 1989; Baumol, 1968; Casson, 1982; Kirchhoff, 1994). Fourth, there is no unanimity about the origins of entrepreneurship (Blanchflower, 2004; Grilo and Thurik, 2004; OECD, 2000; Wennekers, Uhlaner and Thurik, 2002). Fifth, there is a controversy about the causality of the link between entrepreneurship and economic development (Audretsch, Carree, Thurik and van Stel, 2005).

There is a considerable gap in research linking entrepreneurship to economic growth. The reasons for this void in the state of knowledge about the impact of entrepreneurship on economic growth may be attributable to a paucity of theoretical frameworks linking entrepreneurship to growth as well as severe constraints in measuring entrepreneurship, let alone explaining entrepreneurship within a cross-national context. The present paper investigates the determinants of entrepreneurship and attempts to diminish the research gap. Moreover, insight in the determinants of entrepreneurship is crucial for shaping public policies and the assessment of their merits (Storey, 2003; Verheul, Wennekers, Audretsch and

Thurik, 2002). Particularly in Europe policy-makers overestimate the degree to which individuals may be encouraged or discouraged to become entrepreneurs. Hence a thorough investigation of the role of incentives and disincentives like the presence of administrative hurdles and the absence of financial and human capital is required.

The present paper follows the setup of Grilo and Irigoyen (2005) where 2000 survey data are used from the 15 EU member states and the US to establish the effect of demographic and other variables on latent and actual entrepreneurship. Latent entrepreneurship is measured by the probability of a declared preference for self-employment over employment. Other than demographic variables such as gender, age and education level, the set of explanatory variables includes country specific effects, the perception by respondents of administrative complexities and of availability of financial support and a rough measure of risk tolerance.

The contribution of Grilo and Irigoyen (2005) is that both the preference and the actual status of entrepreneurship are investigated in a multi-country setting using a structural two-equation model. They find that concerning administrative and financial obstacles, both perceptions play a significant negative role in self-employment status, in addition to its indirect effect through preferences. They conclude that these results, combined with the ones obtained for latent entrepreneurship, indicate that administrative complexities hinder both the willingness to become self-employed and its materialisation in actual status. Administrative complexities have both a direct and an indirect effect (through preferences) on actual entrepreneurship; while lack of financial support has only a direct effect on the fact of being self-employed but no significant impact on preferences. Using a different model explaining various entrepreneurial engagement levels, Grilo and Thurik (2004) conclude that, relative to never having considered setting up a business, the odds of the more active entrepreneurial position of having started a business are significantly negatively affected by a perception of

administrative complexity. However, they establish that the perception of lack of financial support has no discriminative effect across the various levels of entrepreneurial engagement.

The results of Grilo and Irigoyen (2005) reinforce the message that the degree of entrepreneurship varies widely across countries.[3] They show that country-specific effects are significant both for entrepreneurial drive and for entrepreneurial activity even after the effects on entrepreneurship of demographic and perception variables have been accounted for. The results show that no EU country scores better than the US, confirming the widespread belief of a more developed entrepreneurial spirit across the Atlantic. In our present paper – covering about 6200 respondents - we will try to establish whether this entrepreneurial spirit has changed over time comparing the outcomes using the 2004 survey data with those of 2000 following Grilo and Irigoyen (2005). See Grilo and Thurik (2005) for a comparison between the 15 old member states of the EU and the ten new ones using 2004 data.

The contribution of the present paper is the following: using an existing model and a large data set covering the 15 old member states of the EU and the US, it provides a glimpse of some factors behind both latent and actual entrepreneurship as well as the evolution of the influence of these factors between 2000 and 2004.

The present paper is organized as follows. Literature, data and method are dealt with in the sections “Determinants of entrepreneurship”, “Empirical literature and the level of the individual” and “Data”. Results are in “Analysis of latent entrepreneurship” and “Analysis of actual entrepreneurship”. Finally there is the usual “Conclusions” section.

DETERMINANTS OF ENTREPRENEURSHIP

Entrepreneurship is a multidimensional phenomenon spanning different units of observation ranging from the individual to the firm, region or industry and even nation (Davidsson, 2004; Wennekers and Thurik, 1999). Due to this multidimensional nature the

conceptual and theoretical approaches have built on a variety of disciplines such as economics, sociology and psychology (Wennekers, Uhlaner and Thurik, 2002). In the 20th century three scholars, Schumpeter, Kirzner and Knight, stand out in having shaped the subsequent literature on entrepreneurship through their vision of the phenomenon. Hébert and Link (1989) show that these three intellectual traditions can be traced to Cantillon's *Essai sur la Nature du Commerce en Général.* Casson (1982) and Wennekers and Thurik (1999) attempt to make a synthesis again.

The Schumpeterian tradition, breaking with the orthodox approach which tended to analyse market functioning and agents' decisions as an equilibrium phenomenon, stresses the inherent disequilibrium nature of market dynamics. In this school of thought entrepreneurship is almost impossible to dissociate from innovative performance. It is the driving force behind firm creation, and market dynamics is indeed seen as the consequence of entrepreneurial innovation. The entrepreneur is the 'persona causa' of pushing the economy out of equilibrium.

In the Kirznerian world entrepreneurs display manifest alertness to exploit previously unchartered (profit) opportunities. They are involved in a process of learning and discovery with the result that the economy is pushed back towards equilibrium. Kirznerian entrepreneurs operate in a later phase of the product life cycle than do Schumpeterian ones. In this view Schumpeterian entrepreneurs operate in the early phases of the product life cycle seeking to disrupt an equilibrium situation while the Kirznerian ones re-establish the equilibrium finding out what this product really is. Kirzner (1999) explained that the discrepancies may be overemphasized due to semantic ambiguities.

Knight's views have also strongly contributed to the subsequent literature on entrepreneurship by stressing the importance of two functions of entrepreneurs: (a) providers of entrepreneurial inputs who receive a return for (b) bearing (non-calculable) risk.

Grilo and Thurik (2005) distinguish between three strands in the literature of the determinants of entrepreneurship: economic theory and the level of the individual; empirical literature and the level of individual; and the framework approach. Elsewhere other classifications are given (Blanchflower, 2004; Verheul, Wennekers, Audretsch and Thurik, 2002). Our analysis concentrates on explaining individual behaviour with a strong empirical flavour and makes no a priori assumption about country differences. The latter will be treated as stylized facts and interpreted a posteriori. Hence, below we only give a short survey of the empirical literature dealing with the level of the individual.

EMPIRICAL LITERATURE AND THE LEVEL OF THE INDIVIDUAL

Some empirical literature has built on the insights from the occupational choice models and has sought to test the role of factors influencing self-employment decisions. These studies attempt to explain the probability of being or becoming self-employed. The earnings differential between self-employment and salaried employment plays a key role in these occupational choice models. Moreover, a variety of variables is used to describe the factors influencing returns to self-employment and to salaried employment, their relative risk, or the preferences and abilities of the individuals. Most studies in this area use longitudinal data for a given country and have as dependent variable the transition into self-employment and sometimes the business longevity and the exit from self-employment. Typical explanatory variables include age, gender, race, education, earnings, capital assets, previous professional experience, marital status, professional status of the parents, and scores from psychological tests. Examples of empirical work following this approach can be found in Bates (1990), Blanchflower (2004), Blanchflower and Meyer (1994), Blanchflower and Oswald (1998), Blau (1987), Douglas and Shepherd (2002), Evans and Leighton (1989 and 1990), Grilo and Irigoyen (2005), Grilo and Thurik (2004), Lin, Picot and Compton (2000), Rees and Shah

(1986), Reynolds (1997), Wagner (2003) and de Wit and van Winden (1989). In this summary we anticipate the use of the Flash Eurobarometer Survey 2004 and its data limitations.

Being (or becoming) self-employed received ample attention as a variable to be explained. Major influencing factors are listed below.

Most studies find that men have a higher probability of engaging in entrepreneurship than women. There are many sources, see for instance Minniti, Arenius and Langowitz (2005).

The likelihood of becoming self-employed varies with age. Many business owners are within the age category of 25 to 45 years old. See Reynolds, Hay and Camp (1999) and Storey (1994).

The level of education is a variable for which contrasting results have been obtained. The results vary regarding the existence of a significant impact and the nature of this impact. Among the studies finding that education has a significant impact, the nature of the impact varies from study to study – some find a positive relation others a negative one and still others a negative up to some level of education and positive thereafter. Cooper and Dunkelberg (1987) and Robinson and Sexton (1994) show that the self-employment decision is influenced by educational attainment. However, a study at the macro level by Uhlaner and Thurik (2004) shows that a higher level of education in a country is accompanied by a lower self-employment rate. See also de Wit and van Winden (1989). Blanchflower (2004) reports that education is positively correlated with self-employment in the US but negatively so in Europe.

Financial constrains, often evaluated through the role of capital assets in the probability of being self-employed, are generally found to have a negative impact on the decision to

become an entrepreneur. The argument behind the use and interpretation of capital assets to proxy financial constrains is the so-called equivalence theorem in Evans and Jovanovic (1989). See Cressy (1999) for a discussion of the limitations of this theorem.

Risk tolerance is found to increase the probability of being self-employed, see Grilo and Irigoyen (2005).

In cross country comparisons, and for the role of country specific effects, the few studies addressing this issue indicate that entrepreneurship is stronger in the US than in European countries (Acs, Arenius, Hay and Minniti, 2005 and Grilo and Irigoyen, 2005).

Preferences for self-employment, which can be seen as a measure of latent or potential entrepreneurship, have been less often analysed (Blanchflower, Oswald and Stutzer, 2001 and Grilo and Irigoyen, 2005). Some influencing factors are listed below. Although the concept of latent entrepreneurship clearly differs from that of nascent entrepreneurship (actually trying to start a new business) below we will also make some references to the literature about nascent entrepreneurship.

Being a male has a positive significant impact on wanting to start a new firm, while this preference is negatively affected by age (Grilo and Irigoyen, 2005; Blanchflower, Oswald and Stutzer, 2001). According to Reynolds, Bygrave, Autio, Cox and Hay (2002) men are about twice as likely involved in entrepreneurial activity than women. See also Minniti, Arenius and Langowitz (2005). Nascent entrepreneurship rates are highest in the age category of 25 to 34 years old, although some studies suggest that people increasingly start businesses at a younger age. See Delmar and Davidsson (2000).

The level of education does not have a significant impact on preferences for self-employment (Blanchflower, Oswald and Stutzer, 2001 and Grilo and Irigoyen, 2005). The

results of Davidsson and Honig (2003) and Delmar and Davidsson (2000) on nascent entrepreneurship show a clear education effect.

Grilo and Irigoyen (2005) have studied the role of perceptions of administrative complexities and financial constraints on latent entrepreneurship. The results indicate that perceived administrative complexities have a negative impact while perceived financial constraints do not seem to play a role.

Risk tolerance – a key factor for entrepreneurship – has, as could be expected, a positive impact on the preference for self-employment (Grilo and Irigoyen, 2005).

Concerning cross country comparisons and the role of country specific effects, Grilo and Irigoyen (2005) results indicate that for most EU countries entrepreneurial drive is lower than in the US. After controlling for other factors influencing self-employment preferences Greece, Ireland, Italy and Portugal are exceptions to this result. Blanchflower, Oswald and Stutzer (2001) also perform cross-country comparisons and find results compatible with these.

DATA

Data used are from the Flash Eurobarometer survey on Entrepreneurship conducted during April 2004 on a random sample from the EU member states, 3 other European countries and the US. The sample used here covers the 15 old member states and the US on the basis of approximately 6200 respondents[4]. Results are compared with those using the 2000 Flash Eurobarometer Survey, see Grilo and Irigoyen (2005). The survey provides information on variables such as age, gender, education and professional status, and includes questions to capture risk tolerance and the perception of the availability of financial support and of the complexity of administrative procedures on entrepreneurial activity. Two different indicators of entrepreneurship are used.

The first one aims at capturing the population's entrepreneurial drive (latent entrepreneurship). The following question provides the basis for the measure of entrepreneurial drive: suppose you could choose between different kinds of jobs. Which one would you prefer: being an employee or being self-employed? This is admittedly a simplified concept of latent entrepreneurship but has the advantage of consistency across all countries. As already remarked in Blanchflower, Oswald and Stutzer (2001) and Grilo and Irigoyen (2005), the answer to this type of questions can be misleading. In fact, its hypothetical flavour may unleash a value judgement over some attractive attributes associated with self-employment – independence, higher income, opportunity of tax evasion – without considering all the consequences of a more realistic setting.

The second indicator, used to measure actual entrepreneurship – percentage of actual self-employment – has been widely used in the empirical literature on entrepreneurship due to its generally good statistical availability and the ease in international comparisons.

In the next sections estimation results are presented of two probit equations relating the probability of revealing a preference for self-employment and the probability of actually being self-employed to various explanatory variables. More precisely we estimate the same set of equations as Grilo and Irigoyen (2005):

Pr (y_1=1|X) = F(Xb_1), where y_1 = 1 if the individual prefers self-employment and = 0 if the individual prefers employment and where X= (1, men, age, low education, high education, lack of financial support, presence of administrative complexities, risk tolerance, country dummies);

Pr (y_2=1|X, y_1) = F(Xb_2+y_1a), where y_2 = 1 if the individual is self-employed and = 0 if the individual is employed.

We performed an equation-by-equation probit estimation. Given the recursive nature of the model this procedure provides consistent estimators provided the error terms are uncorrelated across equations. Stel, Storey, Thurik and Wennekers (2005) use a similar setup in a two-equation model explaining the nascent entrepreneurship rate and the young business entrepreneurship rate using a sample of countries participating in the Global Entrepreneurship Monitor between 2002 and 2004.

The sample used in the estimation contains the observations of the active surveyed population (in the sense of being either employed or self-employed) and for which respondents have answered all the questions used to construct the explanatory variables.

"Age" is a straightforward continuous variable. "Education level" is captured through "age when finished full education" and contains three levels: the first encompasses all those with no education or having left school before the age of 15; the second those who left school between the age of 15 and 21; and the third those having left school past the age of 21. A dummy variable is used for the lower level and another for the higher level so that the intermediary level works as the base.

The perception of lack of available financial support, the perception of complexity of administrative procedures and risk tolerance are captured, respectively, by the following questions:

Do you strongly agree, agree, disagree or strongly disagree with the following statements?

- It is difficult to start one's own business due to a lack of available financial support.

- It is difficult to start one's own business due to the complex administrative procedures.

- One should not start a business if there is a risk it might fail.

For each statement a dummy variable was constructed. The dummy variables take the value "1" in the case of "strongly agree" or "agree" for the first two statements. For the third statement the risk tolerance dummy takes value "1" if "disagree" or "strongly disagree". Finally, country-specific effects are evaluated using country dummy variables with the US as the base.

Table I presents a summary description of some of these explanatory variables by country.

[Table I about here]

A striking aspect of Table I is that in all 16 countries the proportion of the respondents with a declared preference for self-employment is higher than that of those actually involved in entrepreneurial activities. This result was also reported in the 2000 survey (Grilo and Irigoyen, 2005). The unweighted average of the actually involved is 20%, whereas that of the declared preference is 48%. The US percentage of those actually involved (22%) is only somewhat higher than the average. The unweighted averages in 2000[5] were slightly higher: 21% for those actually involved and 52% for the declared preference. Like in 2000 the US percentage of the declared preference (67%) is the highest of the 16 countries. A high proportion of respondents perceiving a lack of financial support (unweighted average of 70%) and complex administrative procedures (unweighted average of 70%) may explain this untapped entrepreneurial potential. Alternative explanations may be that in the area of personality characteristics there are principle differences between the self-employed and the salaried employed (Beugelsdijk and Noorderhaven, 2005) other than perceptions or that there are simply not enough business opportunities (Verheul, Wennekers, Audretsch and Thurik, 2002).

The perceptions of the existence of lack of financial support (min = 39% in Finland; max = 89% in Greece) and of administrative complexities (min = 59% in Finland; max = 85%

in Portugal) are widely spread across the countries, with lack of financial support being perceived as often in the US as in the EU while administrative complexities are perceived more often in the EU than in the US. Clearly, both obstacles seem relevant in all countries (both unweighted averages are 70%). The unweighted averages in 2000 were somewhat higher: 78% for lack of financial support and 76% for administrative complexities. Concerning risk tolerance, the US population reveals a more positive attitude than in the EU and ranks the highest followed by Ireland and Greece; the lowest levels occur in Austria and Portugal. Also in 2000 the US population reported the highest risk tolerance but then Germany showed the lowest level. The unweighted average of risk tolerance remained about the same: 56% in 2000 and 55% in 2004.

Comparing 2000 and 2004 in terms of unweighted averages, we note that actual entrepreneurship remained about the same. This would be in line with the relatively stable risk tolerance indicator. The slight average drop from 21 to 20% is entirely due to a decrease in the US from 43 to 22%. The entrepreneurial drive dropped despite decreases in the perception of the lack of financial support and that of administrative complexities. This decrease seems to have occurred evenly in the US and the average of the EU member states. The same decrease in the 2000-2004 period is reported in the 2004 Executive Report of the Global Entrepreneurship Monitor (Acs, Arenius, Hay and Minniti, 2005) where the TEA (total entrepreneurial activity) index is used.

ANALYSIS OF LATENT ENTREPRENEURSHIP

This section uses the information concerning the revealed preference for self-employment vs. employment and establishes, by means of a probit regression, the impact of gender, age, education level, perception of availability of financial support, perception of complexity of administrative procedures, risk tolerance and country effects on the probability

of wanting to be self-employed. The sample used in the estimation contains the observations of the active surveyed population (in the sense of being either employed or self-employed) and for which respondents have answered all the questions used to construct the explanatory variables. We are implicitly assuming that not having answered one or more of the questions is not related to the preferences expressed. Table II presents the effects of each explanatory variable on the probability of preferring self-employment. Results for 2000 (Grilo and Irigoyen, 2005) and 2004 are given separately. A Likelihood Ratio test rejects the assumption of the coefficients of 2000 and 2004 being equal at the 5% level of significance.

[Table II about here]

Both for 2000 and 2004, men display a significantly higher probability of preferring to be self-employed than women. The impact of age is negative for 2000 data while for 2004 the probability of preferring self-employment decreases with age until the age of 42 but becomes higher the older one is after that age (this age value results from dividing the coefficient of the linear term by twice that of the quadratic term). For 2000 the regression with a quadratic impact of age leads to non-significant linear and quadratic coefficients. Nevertheless in a regression with only a linear term the associated coefficient is significantly negative (Grilo and Irigoyen, 2005). The level of education does not play a role in explaining preferences for self-employment in any of the two years studied.

The role of the perceived availability of financial support proves to be even more puzzling in 2004 than in 2000. In 2000 this perception is not significant in explaining the preference for self-employment while in 2004 this variable becomes statistically significant but with a somehow surprising positive coefficient. This would suggest that respondents perceiving a lack of financial support are more driven towards entrepreneurial activities. Clearly, it can not be excluded that these results be due to the lack of realism of the survey. Nevertheless an alternative explanation could be the presence among the respondents of two

different groups: those who are aware of the real situation concerning availability of financial support, and those who are not and thus have answered these questions on the basis of an uneducated guess. In econometric terms this argument can be seen as an omitted variable problem. If those who are informed are so because their entrepreneurial spirit is stronger[6] it can be shown that within each of these groups the expected negative correlation between preferences for self-employment and perception of lack of financial support may exist, while this correlation becomes positive when the two groups are taken together, as they have to be in our analysis.

Even if individuals' entrepreneurial drive is not hindered by the presence of such obstacles, it has to be investigated whether these financial constraints – by holding back potential entrepreneurs –are part of the explanation for the disparity between actual status and revealed preferences.

The perception of administrative complexities has a negative impact on the preference for self-employment in both years, and can thus be identified as an obstacle for entrepreneurial drive. This result confirms the importance of initiatives aiming at simplifying administrative procedures, as well as measures ensuring a widespread dissemination of information regarding the existing facilities for setting up a new business, such as one-stop shops and business support centers.

As one would have expected, the risk tolerance increases the preference for self-employment. This result is found in both years and confirms the wide-spread belief that risk tolerance is a fundamental driving force for entrepreneurship. The level of risk tolerance is generally lower in the EU than in the US. From Table 1 it can be computed that the unweighted average of risk tolerance in the EU countries is 54 whereas that in the US is 75. Its lower level in the EU is probably one of the main factors behind the weaker entrepreneurial spirit in EU countries relative to the US.

Concerning the impact of nationality on entrepreneurial drive once other factors are controlled for, both the 2000 and the 2004 survey show that every EU nationality fares worse or at par with American nationality. This situation has not improved in 2004 when three countries worsened their position relative to the US (Greece, Italy and Portugal) while only Spain moved from worse to at par. Because these country results refer to comparisons with the US once differences in the other explanatory variables are accounted for, deterioration does not necessarily mean that entrepreneurial drive has decreased. Nevertheless, it turns out, as stated before, that indeed this period has witnessed a slight erosion of latent entrepreneurship.

ANALYSIS OF ACTUAL ENTREPRENEURSHIP

This section establishes, by means of a probit regression, the impact of gender, age, education level, preference for self-employment, perception of availability of financial support, perception of complexity of administrative procedures, risk tolerance and country effects on the probability of being self-employed. Table III presents the effects of each explanatory variable on actual employment status. We use ‘being self-employed’ as dependent variable, in other words, we look at the stock rather than the flow into self-employment. Empirical studies on determinants of self-employment have used either, depending on the characteristics of the data. Clearly, our data precludes the estimation of flows. When comparing results from estimations using these two concepts some caution is warranted since the effect of a particular explanatory variable on a stock variable combines its effect on entry into self-employment with its impact on survival and exit. The sample used is the same as in the previous section.Results for 2000 (Grilo and Irigoyen, 2005) and 2004 are given separately. Moreover, we compare the results of the estimation concerning the actual employment status with the results on preferences from the previous section. A Likelihood

Ratio test rejects the assumption of the coefficients of 2000 and 2004 being equal at the 5% level of significance.

[Table III about here]

Given that the dependent variable refers to actual status which is the result of a decision made at some point in the past, it would have been desirable to have as explanatory variables the perceptions of financial support and administrative complexities at the moment such decisions were taken. We do not have this information, nevertheless there are two reasons why the perceptions at the moment the survey was conducted may still be relevant: first, for some individuals these perceptions may not have changed significantly; second, even for those who adjusted their perception of obstacles the fact that they remained self-employed is then also influenced by the revised perceptions.

Gender has no significant impact on the probability of being self-employed in 2000 but the situation seems to have changed in 2004 where, even after controlling for preferences, being a man increases the probability of being self-employed. In other words, and combining these results with the ones from the previous section, the gender differential in preferences does not materialize in the actual professional status in 2000 but it does so in 2004 where women appear as both less willing to engage and less engaged in entrepreneurship. The results for 2004 suggest that if one wants women to fulfill their full role and potential in an entrepreneurial economy action has to be taken at several levels. Investigating the reasons behind the gender differential in willingness to be an entrepreneur and acting upon it could be combined with more direct actions in facilitating the materialization of such wish by tackling specific obstacles to female entrepreneurship (Verheul, Uhlaner and Thurik, 2005; Verheul, van Stel and Thurik, 2006).

The probability of being self-employed increases with age while, as we have seen in the previous section, the probability of preferring self-employment decreases with age. As in the

case of preferences, regression using 2000 data with a quadratic impact of age leads to non-significant linear and quadratic coefficients. Nevertheless when a regression with only a linear term is performed the associated coefficient is significantly positive. As for 2004 data, omission of the square term leads also to a statistically significant positive impact of age. There is a natural explanation for the discrepancy in the effect of age on latent and actual entrepreneurship: younger people, though more willing to engage in self-employment than older people (e.g. due to lower risk-aversion), face more stringent constraints, and are less able to fulfill their aspirations (e.g. due to having less collateral or less business experience). From a dynamic perspective one can think of young cohorts in which a large fraction wants to be self-employed, but few are, due to lack of opportunities. As time goes by, some of them seize the opportunity of becoming self-employed, which explains why older cohorts display a higher fraction of self-employment. In other words, this discrepancy may be just the result of a time lag between the moment the willingness to become self-employed arises and the moment an opportunity to actually become self-employed materializes. The discrepancy may even be exacerbated since older people, though less willing to become self-employed, are pushed into self-employment, or kept in the self-employment situation chosen when younger, by labor market conditions. The extreme case is that after the age of compulsory retirement being employed is no longer an option.

For 2000 data the relationship between education and self-employment seems to be U-shaped while in 2004 this relation appears to be negative up to the intermediate education level and non-existent for higher levels.

Not surprisingly, the fact of having a preference for self-employment increases the probability of actually being self-employed. To the extent that these preferences have not changed over time, it appears that being self-employed is, at least partially, the expression of a genuine wish rather than an accident or a constrained choice.

Concerning administrative and financial obstacles, in 2000 both perceptions play a significant negative role in self-employment status, over and above its indirect effect through preferences. The 2004 survey confirms the role of administrative complexities but does not acknowledge lack of financial support as a hindering factor for entrepreneurial activity. Using data from Flash Eurobarometers 134 and 146 (2002 and 2003) Stel and Stunnenberg (2004) find similar results at the country level.

These results, combined with the ones obtained for latent entrepreneurship, indicate that administrative complexities hinder both the willingness to become self-employed and its materialization in actual status. They have both a direct and an indirect effect (through preferences) on actual entrepreneurship. Moreover, this role does not appear to have changed between 2000 and 2004. As for lack of financial support, the situation seems to have changed from only a direct effect on self-employment but no significant impact on preferences in 2000 to an even more intriguing situation in 2004 when lack of financial support has no impact on actual entrepreneurship and seems to play a positive role in preferences.

For both years, risk tolerance has no significant impact in the structural self-employment estimation but it becomes significant when preferences are omitted from the explanatory variables. This suggests that its impact on actual status is through preferences.

Concerning the impact of nationality on entrepreneurial participation, once other factors are controlled for, an important change seems to have taken place between 2000 and 2004. In fact, while in 2000 all countries except Portugal fared worse or at par with the US, 2004 appears to have witnessed a revival of entrepreneurial engagement in the EU member states relative to the US with some countries faring better than the US, and only two displaying lower entrepreneurial activity than the US. For 2004 data, only the France and Luxembourg dummies are statistically negative while Belgium, Greece, the Netherlands and Finland score better than the US and the remaining countries display no statistically significant difference

with the US. These results have to be interpreted with caution since they do not imply that actual entrepreneurship has increased in these countries but rather that the impact of nationality has become less damaging for entrepreneurial activity once other factors are accounted for. In particular, this reasoning applies at given preferences for actual self-employment which, as reported before, have been eroded in the period 2000 to 2004.

CONCLUSIONS

The analyses presented provided a glimpse of the factors behind latent and actual entrepreneurship and allowed a view of the evolution of the effects of these factors between 2000 and 2004. The most important results can be summarized as follows. Strikingly, though an overwhelming majority of the surveyed population identifies lack of financial support as an obstacle to starting a new business, in 2004, the role of this variable in both latent and actual entrepreneurship appears to be even more counterintuitive than in 2000 by having no impact on entrepreneurial activity and being positively related to entrepreneurial drive. This result deserves further research since it is difficult to believe that the possible shortcomings of the survey can be responsible for such consistent results across years and methodologies. On the contrary, administrative complexities, also perceived as an obstacle by a large majority of the population, has the expected negative impact both in entrepreneurial drive and activity in both years.

Gender-wise, data from 2004 confirms the male bias in preference for self-employment already observed in 2000 and re-enforces the view of a male dominated entrepreneurial world by finding, unlike in 2000, a positive impact of being a men on the probability of being self-employed over and above the effect caused by a gender differential in preferences.

The regression results show that country-specific effects are important both for latent and for actual entrepreneurship and the comparison of 2000 with 2004 results suggests that,

once all other factors are controlled for, an improvement in actual entrepreneurship in the EU relative to the US has taken place in the last four years. The results regarding country-specific effects raise the question of whether these country differences are to be traced to intrinsic cultural differences or rather to more prosaic material considerations such as differences in labor market legislation, social security regimes, job security, tax environment, bankruptcy legislation, etc. The sectoral composition of economic activity might also play a role in explaining differences across countries in terms of both measures of entrepreneurship. Some sectors such as tourism-related activities may present lower barriers and be less demanding in terms of human or financial resources required to start a business. This may create a bias towards countries where these activities are more demanded. Though the relative roles of cultural differences versus economic incentives cannot be precisely assigned in the context of this study, the changes in the role of the country dummy variables in the actual entrepreneurship regression, and the fact that similar changes did not take place concerning latent entrepreneurship, may be interpreted as meaning that, indeed, these more prosaic considerations may go a long way in explaining country differences. In fact, it is hard to believe that cultural aspects could have drastically changed in four years. Also, the modest chances in the role of country dummies on latent entrepreneurship seem to confirm the role of more material, easier to change in the short run, country differences.

Comparing 2000 and 2004 in terms of unweighted averages, we reported that actual entrepreneurship remained about the same. The slight average drop of 21 to 20% is entirely due to a decrease in the US from 43 to 22%. The entrepreneurial drive dropped from an unweighted average of 52% to 48%. This drop seems to have occurred evenly in the US (from 71 to 67%) and in the EU member states (from 50 to 47%).

Future research should concentrate on the explanation of the country differences: to what extent are cultural aspects, sectoral composition of economic activity, market legislation,

tax environment, bankruptcy law, job security, social security regimes, etc determining factors. Also, the role of the level and speed of economic development should be investigated (Audretsch, Carree, Thurik and van Stel, 2005): to what extent do they have a moderating or mediating influence on the variables used in the present study. Lastly, the role of the wage level relative to self-employment income is not available in the present data set while it is generally assumed to be important in shaping entrepreneurial activity.

REFERENCES

Acs, Z.J., Arenius, P., Hay, M. & Minniti, M. 2005. *Global Entrepreneurship Monitor: 2004 executive report.* Babson Park, MA: Babson College & London: London Business School.

Audretsch, D.B., Carree, M.A., van Stel, A.J. & Thurik, A.R. 2002. Impeded industrial restructuring: The growth penalty. *Kyklos*, 55(1): 81-97.

Audretsch, D.B., Carree, M.A., Thurik, A.R. & van Stel, A.J. 2005. Does self-employment reduce unemployment. *Discussion paper D5057*. London, Centre for Economic Policy Research.

Audretsch, D.B. & Thurik, A.R. 2001. What is new about the new economy: Sources of growth in the managed and entrepreneurial economies. *Industrial and Corporate Change,* 10(1): 267-315.

Audretsch, D.B. & Thurik, A.R. 2004. A model of the entrepreneurial economy. *International Journal of Entrepreneurship Education,* 2: 143-166.

Barreto, H. 1989. *The Entrepreneur in Economic Theory; Disappearance and Explanation*. London, Routledge.

Bates, T. 1990. Entrepreneur human capital inputs and small business longevity. *The Review of Economics and Statistics,* 72: 551-559.

Baumol, W.J. 1968. Entrepreneurship in economic theory. *American Economic Review, Papers and Proceedings*, 58(2): 64-71.

Beugelsdijk, S. & Noorderhaven, N. 2005. Personality characteristics of self-employed; An empirical study. *Small Business Economics,* 24: 159-167.

Blanchflower, D.G. 2004. Self-employment: More may not be better. *Working Paper 10286*. Cambridge, MA: National Bureau of Economic Research.

Blanchflower, D.G. & Meyer, B.D. 1994. A longitudinal analysis of the young self-employed in Australia and the United States. *Small Business Economics,* 6: 1-19.

Blanchflower, D.G. & Oswald, A.J. 1998. What makes an entrepreneur? *Journal of Labor Economics,* 16(1): 26-60.

Blanchflower, D.G., Oswald, A. & Stutzer, A. 2001. Latent entrepreneurship across nations. *European Economic Review,* 45: 680-691.

Blau, D. 1987. A time-series analysis of self-employment in the US. *Journal of Political Economy,* 95: 445-467.

Bull, I. & Willard, G.E. 1993. Towards a theory of entrepreneurship. *Journal of Business Venturing,* 8: 183-195.

Carree, M., Stel, A. van, Thurik, A.R. & Wennekers, S. 2002. Economic development and business ownership: An analysis using data of 23 OECD countries in the period 1976-1996. *Small Business Economics,* 19(3): 271-290.

Carree, M.A. & Thurik, A.R. 2003. The impact of entrepreneurship on economic growth. In D.B. Audretsch & Z.J. Acs (Eds.), *Handbook of Entrepreneurship Research*: 437-471. Boston/Dordrecht: Kluwer Academic Publishers.

Carree, M.A. & Thurik, A.R. 2006. *The Handbook of Entrepreneurship and Economic Growth (international library of entrepreneurship).* Cheltenham, UK and Brookfield, US: Edward Elgar Publishing Limited, forthcoming.

Casson, M.C. 1982. *The Entrepreneur: An Economic Theory.* Oxford: Martin Robertson.

Cooper, A.C. & Dunkelberg, W.C. 1987. Entrepreneurial research: Old questions, new answers and methodological issues. *American Journal of Small Business,* 1: 11-23.

Cressy, R. 1999. The Evans and Jovanovic equivalence theorem and credit rationing: Another look. *Small Business Economics,* 12: 295-297.

Davidsson, P. & Honig, B. 2003. The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing,* 18: 301-331.

Davidsson, P. 2004. *Researching Entrepreneurship*. International Studies in Entrepreneurship, Boston etc: Springer Science Inc.

Delmar, F. & Davidsson, P. 2000. Where do they come from? Prevalence and characteristics of nascent entrepreneurs. *Entrepreneurship and Regional Development,* 12: 1-23.

Douglas, E.J. & Shepherd, D.A. 2002. Self-employment as a career choice: Attitudes, entrepreneurial intentions, and utility maximization. *Entrepreneurship Theory and Practice,* 26(3): 81-90.

Evans, D.S. & Jovanovic, B. 1989. An estimated model of entrepreneurial choice under liquidity constraints. *Journal of Political Economy*, 97: 808-827.

Evans, D.S. & Leighton, L.S. 1989. Some empirical aspects of entrepreneurship. *American Economic Review*, 79: 519-535.

Evans, D.S. & Leighton, L.S. 1990. Small business formation by unemployed and employed workers. *Small Business Economics,* 2: 319-330.

Grilo, I. & Thurik, A.R. 2004. Entrepreneurship in Europe. *Papers on Entrepreneurship, Growth and Public Policy no 30-2004*. Max Planck Institute of Economics, Jena, Germany.

Grilo, I. & Thurik, A.R. 2005. Entrepreneurship in the old and the new Europe. *Papers on Entrepreneurship, Growth and Public Policy*. Max Planck Institute of Economics, Jena, Germany.

Grilo, I. & Irigoyen, J.M. 2005. Entrepreneurship in the EU: To wish and not to be. *Small Business Economics,* forthcoming.

Hébert, R.F. & Link, A.N. 1989. In search of the meaning of entrepreneurship. *Small Business Economics,* 1: 39-49.

Kirchhoff, B.A. 1994. *Entrepreneurship and Dynamic Capitalism*. Westport, CT: Praeger.

Kirzner, I.M. 1999. Creativity and/or alertness: a reconsideration of the Schumpeterian entrepreneur, *Review of Austrian Economics*, 11: 5-17.

Lin, Z., Picot, G. & Compton, J. 2000. The entry and exit dynamics of self-employment in Canada. S*mall Business Economics*, 15: 105-125.

Kouriloff, M. 2000. Exploring perceptions of a priori barriers to entrepreneurship: A multidisciplinary approach. *Entrepreneurship Theory and Practice,* 25(2): 59-79.

Lumpkin, G.T. & Dess, G.G. 1996. Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review,* 21: 135-172.

Minniti, M., Arenius, P. & Langowitz, N. 2005. *Global Entrepreneurship Monitor: 2004 report on women and entrepreneurship*. Centre for Women's Leadership at Babson College / London Business School.

OECD. 1998. *Fostering Entrepreneurship, the OECD Jobs Strategy*. Paris: OECD.

OECD. 2000. *OECD Employment Outlook*. Paris: OECD.

Praag, M.C. van. 1999. Some classic views on entrepreneurship. *De Economist,* 147: 311-335.

Rees, H. & Shah, A. 1986. An empirical analysis of self-employment in the UK. *Journal of Applied Econometrics,* 1: 95-108.

Reynolds, P.D. 1997. Who starts new firms? – Preliminary explorations of firms-in-gestation. *Small Business Economics*, 9: 449-462.

Reynolds, P.D., Hay, M. & Camp, S.M. 1999. *Global Entrepreneurship Monitor: 1999 executive report*. Babson College, London Business School and the Kauffman Center for Entrepreneurial Leadership.

Reynolds, P.D., Bygrave, W.D., Autio, E., Cox, L.W. & Hay, M. 2002. *Global Entrepreneurship Monitor, 2002 executive report.*, Babson College, London Business School and Kauffman Foundation.

Robinson, P.B. & Sexton, E.A. 1994. The effect of education and experience on self-employment success. *Journal of Business Venturing,* 9: 141-156.

Stel, A.J. van & Stunnenberg, V. 2004. Linking business ownership and perceived administrative complexity: An empirical analysis of 18 OECD countries. *Papers on Entrepreneurship, Growth and Public Policy no 35-2004.* Max Planck Institute of Economics, Jena, Germany.

Stel, A. van. 2005. COMPENDIA: Harmonizing business ownership data across countries and over time. *International Entrepreneurship and Management Journal,* 1: 105-123.

Stel, A. van, Storey, D., Thurik, A.R. & Wennekers, S. 2005. From nascent to actual entrepreneurship: The effect of entry barriers. *Papers on Entrepreneurship, Growth and Public Policy*. Max Planck Institute of Economics, Jena, Germany, forthcoming.

Storey, D.J. 1994. *Understanding the Small Business Sector*. London/New York: Routledge.

Storey, D.J. 2003. Entrepreneurship, small and medium sized enterprises and public policies. In D.B. Audretsch and Z.J. Acs (Eds.), *Handbook of Entrepreneurship Research*: 476-511. Boston/Dordrecht: Kluwer Academic Publishers.

Uhlaner, L. & Thurik, A.R. 2004. Post-materialism: A cultural factor influencing total entrepreneurial activity across nations. *Papers on Entrepreneurship, Growth and Public Policy no 07-2004.* Max Planck Institute of Economics, Jena, Germany.

Verheul, I., Wennekers, S., Audretsch, D. & Thurik, A.R. 2002. An eclectic theory of entrepreneurship: Policies, institutions and culture. In: D.B. Audretsch, A.R. Thurik, I. Verheul and A.R.M. Wennekers (Eds.), *Entrepreneurship: Determinants and Policy in a European-US Comparison:* 11-81. Boston/Dordrecht: Kluwer Academic Publishers.

Verheul, I., Uhlaner, L. & Thurik, A.R. 2005. Business accomplishments, gender and entrepreneurial self-image. *Journal of Business Venturing,* 20: 483-518.

Verheul, I., Stel, A. van. & Thurik, A.R. 2006. Explaining female and male entrepreneurship across 29 countries. *Entrepreneurship and Regional Development,* forthcoming.

Wagner, J. 2003. Testing lazear's jack-of-all-trades view of entrepreneurship with German micro data. *Applied Economics Letters,* 10: 687–689.

Wennekers, A.R.M. & Thurik, A.R. 1999. Linking entrepreneurship and economic growth. *Small Business Economics,* 13: 27-55.

Wennekers, A.R.M., Uhlaner, L. & Thurik, A.R. 2002. Entrepreneurship and its conditions: A macro perspective. *International Journal of Entrepreneurship Education,* 1(1): 25-64.

Wit, G. de & Winden, F.A.A.M. van. 1989. An empirical analysis of self-employment in the Netherlands. *Small Business Economics,* 1: 263-272.

Table I

Distribution of variables by country (2004)

	Actual Entrepreneurship	Latent Entrepreneurship	Low Education	High Education	Financial Support	Administrative Complexities	Risk Tolerance	Observations
Belgium	**19**	**36**	**7**	**43**	**76**	**76**	**46**	**470**
Denmark	**13**	**37**	**4**	**70**	**52**	**81**	**52**	**245**
Germany	**18**	**46**	**8**	**44**	**74**	**69**	**46**	**506**
Greece	**43**	**57**	**18**	**45**	**89**	**71**	**62**	**465**
Spain	**19**	**62**	**23**	**38**	**80**	**76**	**58**	**360**
France	**10**	**41**	**8**	**44**	**81**	**75**	**62**	**524**
Ireland	**27**	**63**	**13**	**30**	**66**	**70**	**69**	**239**
Italy	**21**	**52**	**28**	**22**	**85**	**74**	**55**	**461**
Luxembourg	**10**	**51**	**9**	**44**	**79**	**65**	**48**	**238**
Netherlands	**20**	**35**	**6**	**42**	**48**	**60**	**60**	**524**
Austria	**20**	**46**	**22**	**20**	**69**	**62**	**38**	**215**
Portugal	**21**	**63**	**40**	**27**	**86**	**85**	**41**	**439**
Finland	**23**	**33**	**4**	**68**	**39**	**59**	**60**	**222**
Sweden	**15**	**37**	**6**	**45**	**74**	**71**	**51**	**270**
UK	**18**	**46**	**17**	**26**	**59**	**66**	**58**	**501**
USA	**22**	**67**	**2**	**59**	**70**	**60**	**75**	**553**

Source: Eurobarometer 160.

The values (percentage of observations answering “1”) are computed for the observations used in the regressions in Tables II and III (observations for which there is no missing value for any of the independent and dependent variables). This means that only employed and self-employed are represented while retired, students, unemployed etc are not part of this sub-sample.

Table II

Effects on the probability of preferring to be self-employed

	2000		2004	
	dF/dx	P>|z|	dF/dx	P>|z|
Male	**0.139***	**0.000**	**0.149***	**0.000**
Age	**-0.006**	**0.124**	**-0.007483***	**0.021**
Age (squared)	**0.000**	**0.274**	**0.0000875***	**0.019**
Low education	**-0.042**	**0.157**	**0.013**	**0.542**
High education	**-0.005**	**0.781**	**0.000**	**0.987**
Perc. lack of financial support	**0.016**	**0.405**	**0.047***	**0.002**
Perc. administrative complexity	**-0.040***	**0.029**	**-0.036***	**0.014**
Risk tolerance	**0.059***	**0.000**	**0.096***	**0.000**
Belgium	**-0.286***	**0.000**	**-0.270***	**0.000**
Denmark	**-0.309***	**0.000**	**-0.256***	**0.000**
Germany	**-0.179***	**0.000**	**-0.181***	**0.000**
Greece	**0.054**	**0.259**	**-0.106***	**0.001**
Spain	**-0.101***	**0.036**	**-0.042**	**0.237**
France	**-0.157***	**0.000**	**-0.236***	**0.000**
Ireland	**-0.048**	**0.301**	**-0.038**	**0.346**
Italy	**-0.056**	**0.242**	**-0.147***	**0.000**
Luxembourg	**-0.213***	**0.000**	**-0.140***	**0.000**
Netherlands	**-0.267***	**0.000**	**-0.287***	**0.000**
Austria	**-0.307***	**0.000**	**-0.185***	**0.000**
Portugal	**0.001**	**0.975**	**-0.021**	**0.551**
Finland	**-0.409***	**0.000**	**-0.287***	**0.000**
Sweden	**-0.302***	**0.000**	**-0.265***	**0.000**
United Kingdom	**-0.176***	**0.000**	**-0.195***	**0.000**
Observations	**3782**		**6232**	
LR chi2 / Degrees of freedom	**419.74**	**23**	**518.88**	**23**
Prob>chi2	**0.0000**		**0.0000**	
LogLikelihood	**-2410.49**		**-4058.495**	
Pseudo R2	**0.0815**		**0.0601**	

Source: Flash Eurobarometer 83 and 160.

* indicates significance at the 5% level.

A Likelihood Ratio test rejects the assumption of the coefficients of 2000 and 2004 being equal. The restricted LogLikelihood value = -6503.28. Hence LR = 68.78 with a critical value of 35.17 (23 degrees of freedom and 5% level of significance).

The above results differ slightly from the original Grilo and Irigoyen (2005) results because there a discrimination is made between West- and East Germany and age (squared) is left out. The coefficient of age is negative and significant and those of Germany are negative and significant where that of East-Germany < that of West-Germany.

Table III

Effects on the probability of being self-employed

	2000		2004	
	dF/dx	P>|z|	dF/dx	P>|z|
Male	**-0.008**	**0.546**	**0.046***	**0.000**
Age	**0.004**	**0.158**	**0.004**	**0.056**
Age (squared)	**0.000**	**0.935**	**0.000**	**0.704**
Low education	**0.066***	**0.003**	**0.045***	**0.004**
High education	**0.050***	**0.000**	**-0.014**	**0.177**
Preference for self-employment	**0.181***	**0.000**	**0.243***	**0.000**
Perc. lack of financial support	**-0.050***	**0.001**	**0.009**	**0.445**
Perc. administrative complexity	**-0.052***	**0.000**	**-0.032***	**0.003**
Risk tolerance	**0.017**	**0.192**	**0.009**	**0.395**
Belgium	**-0.154***	**0.000**	**0.054***	**0.037**
Denmark	**-0.198***	**0.000**	**-0.019**	**0.529**
Germany	**-0.194***	**0.000**	**0.027**	**0.263**
Greece	**-0.024**	**0.438**	**0.253***	**0.000**
Spain	**-0.159***	**0.000**	**0.009**	**0.737**
France	**-0.246***	**0.000**	**-0.053***	**0.018**
Ireland	**-0.017**	**0.589**	**0.057**	**0.057**
Italy	**-0.063**	**0.055**	**0.031**	**0.214**
Luxembourg	**-0.166***	**0.000**	**-0.081***	**0.003**
Netherlands	**-0.113***	**0.000**	**0.076***	**0.003**
Austria	**-0.159***	**0.000**	**0.036**	**0.272**
Portugal	**0.123***	**0.000**	**0.002**	**0.932**
Finland	**-0.132***	**0.000**	**0.121***	**0.001**
Sweden	**-0.260***	**0.000**	**0.004**	**0.901**
United Kingdom	**-0.154***	**0.000**	**0.013**	**0.584**
Observations	**3782**		**6232**	
LR chi2 / Degrees of freedom	**527.43**	**24**	**1087.16**	**24**
Prob>chi2	**0.000**		**0.000**	
LogLikelihood	**-1669.12**		**-2582.68**	
Pseudo R2	**0.1364**		**0.1739**	

Source: Flash Eurobarometer 83 and 160.

* indicates significance at the 5% level.

A Likelihood Ratio test rejects the assumption of the coefficients of 2000 and 2004 being equal. The restricted LogLikelihood value = -4325.75. Hence LR = 147.90 with a critical value of 36.42 (24 degrees of freedom and 5% level of significance).

The above results differ slightly from the original Grilo and Irigoyen (2005) results because there a discrimination is made between West- and East Germany and age (squared) is left out. The coefficient of age is negative and significant and those of Germany are negative and significant and about the same.

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[2] See van Stel (2005) for a description of a data set covering the developments of business ownership rates across countries over the last three decades of the last century.

[3] See Reynolds, Bygrave, Autio, Cox and Hay (2002) for evidence on various measures of entrepreneurship and their significantly different levels across the countries using the GEM data set. See Audretsch, Carree, Stel and Thurik. (2002) for evidence using business ownership data of the European Observatory and Carree, van Stel, Thurik and Wennekers (2002) for evidence using 23 OECD countries of the Compendia data set.

[4] This survey was conducted on behalf of the European Commission's Enterprise Directorate-General, and the key findings are presented in *Flash Eurobarometer 160* "Entrepreneurship", European Commission 2004, available at "http://europa.eu.int/comm/public_opinion/flash/fl160_en.pdf".

[5] The number of observations, i.e., countries, in 2000 is 17 since West and East Germany are treated separately.

[6] As Kouriloff (2000) notes, "An individual with a definitive business opportunity in mind would have investigated barriers more carefully than someone with no opportunity in mind. The latter may be unaware of some barriers or imagine non-existent ones".