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Entrepreneurial Culture as Determinant of Nascent Entrepreneurship

Position paper

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Entrepreneurial Culture as Determinant of Nascent Entrepreneurship

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ABSTRACT

This paper develops indicators for entrepreneurial culture and investigates their effect on the rate of nascent entrepreneurship. We choose three measures from the World Value Survey. These include two desired job characteristics, i.e. the opportunity to use initiative and the possibility to achieve something, as well as an indicator of internal locus of control as our indicators for entrepreneurial culture. Controlling for economic, institutional and demographic determinants of nascent entrepreneurship we find a positive and significant relationship between entrepreneurial culture and nascent entrepreneurship.

JEL-Codes: J23, L16, M13, O11, Z10

Keywords: Nascent entrepreneurship, entrepreneurial culture, economic development

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1. Introduction

The importance of entrepreneurship for economic development has triggered research on the fundamentals of entrepreneurship. Cross-national differences in levels of entrepreneurial activity have been explained by economic, demographic and institutional factors (Wennekers et al. 2005, Van Stel, 2006). However, differences in value systems and cultural orientations towards entrepreneurship have been argued to affect entrepreneurship as well. McClelland's (1961) seminal study on children's stories and the role of Need for achievement in explaining cross national differences in economic development is perhaps the most well known example of this type of research. Other nation level studies like those from Lynn (1991), Shane (1993), and Hofstede (1980) fit this line of reasoning. Most recently, Wennekers et al. (2005) have studied the relationship between a country's rate of entrepreneurial dynamics (as measured by nascent entrepreneurship), its level of economic development and entrepreneurial culture. They find a U-shaped relationship between a country's business ownership rate and the level of economic development (cf. Carree et al, 2002). They also find a positive relationship between culture and nascent entrepreneurship. However, as a proxy for culture, the authors use the influence of entrepreneurial role models, as represented by the prevalence of incumbent business owners, on nascent entrepreneurship. Secondly, they include a (former) centralized command dummy, because they argue that over many decades of the 20th century, culture and institutions in the (formerly) communist countries have become unfavourable or even hostile to self-employment.

Acknowledging the importance of their analysis and findings, their measure of culture is rather incomplete. Whereas others have applied Hofstede's framework to account for cultural differences in a more complete manner, the disadvantage of Hofstede's cultural dimensions is the fact that these reflect general cultural characteristics. They do not measure cultural aspects of a society specifically relating to its entre-

preneurial orientation. Moreover, Hofstede's measures are based on his work in the early 1970s.

In this paper we use more complete and direct indicators for entrepreneurial culture. We use data from the European Value Studies and the World Value Survey to indicate entrepreneurial culture. This additional data set allows us to test the relationship between entrepreneurial culture and nascent entrepreneurship. Building on the analyses of Wennekers et al. (2005), we use the Global Entrepreneurship Monitor 2002 data for nascent entrepreneurship. Controlling for economic, institutional and demographic factors we find a positive and significant effect of entrepreneurial culture on nascent entrepreneurship.

The structure of this paper is as follows. First, we briefly discuss the relevant literature on nascent entrepreneurship, entrepreneurial culture and the hypothesized relationship between these two concepts. Next, we describe our empirical research method and the data we use. We then present the regression results and discuss the outcomes. Finally, we present our conclusions, together with the limitations of our study and suggestions for future research.

2. Literature review

Rates of entrepreneurship differ over time and by country (Wennekers et al. 2005). Whereas some countries score consistently high on indicators of entrepreneurial activity (e.g. The United States), other countries remain in a backward position. Interestingly enough though, entrepreneurship theorists (e.g. Schumpeter, 1934, McClelland, 1961) and recent empirical work (Lynn, 1991, Shane, 1993, Davidsson, 2004, Wennekers et al. 2005) suggest a role for culture next to structural factors in explaining these cross-country differences. Certain societal values may be conducive to start-up activity and economic dynamism.

The first author who systematically described this was David McClelland. He argued his concept of achievement motivation to be crucial for economic development (McClelland, 1961). Though his analysis of 22 countries has been criticized for lack of robust results and questionable proxy measures, such as the use of changes in electricity generation to measure economic development (O'Farrell, 1986; Schatz, 1965; Frey, 1984; Gilleard, 1989; Beugelsdijk and Smeets, 2005), McClelland made the first attempt to actually measure entrepreneurial culture and relate it to economic development.

Thirty years later Lynn (1991) made a similar attempt by scoring the value system of students in 41 countries and combining these into one national indicator of entrepreneurial attitude. Though again just like McClelland Lynn does not use economic models to test for alternative explanations, his analysis does yield interesting results. He found that especially a society's orientation towards competitiveness is related to economic growth rates. Most recently, Granato et al. (1996) used the World Value Survey to develop an achievement motivation indicator and relate this to economic growth. Acknowledging that their analysis is embedded in a modern economic growth framework, re-analysis suggests their main finding on the positive role of an entrepreneurial culture is based on weak measures and omitted variables (Beugelsdijk and Smeets, 2005).

Instead of relating entrepreneurial culture to economic growth, a more limited number of authors have related societal values to indicators of entrepreneurship directly. Shane (1993) for example, applied Hofstede's four dimensional culture framework to study national differences in rates of innovation. He found that culture, defined as 'the collective programming of the mind which distinguishes the members of one group from another' (Hofstede, 1980, p. 25), affects a country's innovativeness. More specifically, Shane (1993) found that the cultural value of uncertainty acceptance is strongly related to rates of innovation. Morris et al (1994) relate Hofstede's individualism dimension to corporate entrepreneurship. They focus on individualism as it has been asso-

ciated with the willingness of people to violate norms and their level of achievement motivation (Hofstede 1980), both of which are associated with entrepreneurship. Their findings suggest that optimal levels of individualism exist. Despite its conceptual attractiveness and availability for a large number of countries, the Hofstede dimensions reflect general cultural characteristics, and have not been developed to score and rank societies in terms of their (lack of) entrepreneurial culture.

Most recently, Wennekers et. al. (2005) have built a model in which they explain levels of entrepreneurship in a sample of 33 countries. Culture is operationalised by indirect measures such as a dummy variable for the communist heritage. Acknowledging that Wennekers et al. (2005) are the first to actually relate levels of entrepreneurship to culture in such a broad empirical framework, their culture measure seems incomplete and rather rough. Theoretically, developing measures for (entrepreneurial) culture based on underlying theory and reflecting true value differences may improve existing analysis and contribute to the literature.

In other words, it seems attractive to develop a measure for entrepreneurial culture, by building upon micro insights regarding the value orientation of entrepreneurs. Based on the fundamental belief that entrepreneurs are different, socio-psychologists have tried to find distinguishing personality characteristics. Schumpeter (1934) already associated entrepreneurs with ‘the dream and the will to found a private kingdom, usually, though not necessarily, also a dynasty. [...] Then there is the will to conquer: the impulse to fight, to prove oneself superior to others, to succeed for the sake, not of the fruits of success, but of success itself. [...] Finally, there is the joy of creating, of getting things done, or simply of exercising one’s energy and ingenuity’ (Schumpeter, 1934:93). Other works by scholars like Rotter (1966), Brockhaus (1982), Sexton and Bowman (1985), Chell et al. (1991) and Thomas and Mueller (2000) confirmed the general idea that entrepreneurs have distinguishing personality characteristics. In an at-

tempt to summarize the personality trait literature, Cromie (2000) concludes there are (at least) seven characteristics distinguishing entrepreneurs or business owners from non-entrepreneurs. Without going into detail, these relate to McClelland's 'Need for achievement' (McClelland, 1961), Rotter's idea of (internal) locus of control (Rotter, 1966), risk taking, and creativity.

In this paper we follow the above approach by developing well-informed indicators of entrepreneurial culture. The measure we develop relates to core concepts of entrepreneurial trait research. Advantages of this approach over the existing literature are the facts that our measures are a) not general cultural indicators but relate specifically to entrepreneurial culture and, b) embedded in micro insights of literature on entrepreneurial trait research. The empirical analysis pertains to the sample of 33 countries used in Wennekers et al. (2005). Using nascent entrepreneurship from the Global Entrepreneurship Monitor as an indicator of entrepreneurial activity, we test the following hypothesis:

H₁: Countries characterised by a culture, which can be characterised as entrepreneurial will – ceteris paribus – experience higher rates of entrepreneurial activity.

To test this hypothesis we apply the framework developed by Wennekers et al. (2005). In this framework a range of variables, among which level of economic development, institutional characteristics like tax level and social security system, and demographic characteristics, explain nascent entrepreneurship.

3. Data and method

3.1 Data

As mentioned above, we use the data used in Wennekers et al. (2005) for our analysis. This is the Global Entrepreneurship Monitor (GEM) data set 2002, in which 37 countries participated. Additionally, we use data from the European Values Studies (EVS) and the World Values Survey (WVS) 1999. As the EVS/WVS were conducted in 1990 and 1999, we have chosen for the most recent data of 1999. Matching these three data files results in 33 observations (see Appendix). The GEM data set includes various indicators of entrepreneurship, as well as a wide selection of explanatory variables from standardized national statistics. The EVS/WVS data set contains information about basic values, attitudes and preferences of the European respectively World population. For a more detailed description, we refer to Reynolds et al. (2002) for GEM and Halman (2001) for EVS/WVS.

Our dependent variable is the same as in Wennekers et al. (2005), the gross inflow into entrepreneurship. This is in our analysis represented by the metric *nascent entrepreneurship*. Data on nascent entrepreneurship in 2002 are taken from the GEM 2002 Adult People Survey. This database contains various entrepreneurial measures constructed based on at least 2000 respondents per country. The nascent entrepreneurship rate is defined as the number of people actively involved in starting a new venture, as a percentage of the adult population (18-64 years of age).

For our indicator of culture, we consider several variables from the EVS/WVS database that are possibly linked to entrepreneurship. These include qualities that children can be encouraged to learn at home, aspects of a job people say are important, some political views and measures for the loci of control. We have investigated the relationship between these variables and nascent entrepreneurship both theoretically and empirically. Finally, three variables were chosen to represent entrepreneurial culture.

These three variables are ‘initiative’, ‘achieving’ and ‘personal influence’¹, and have a strong theoretical base due to their embeddedness in trait research.

‘Initiative’ corresponds with one of the key meanings of entrepreneurship, namely ‘to take in hand’ (Wennekers, 2006). The term entrepreneurship is derived from the French verb ‘entreprendre’, which means ‘to do something’ and is also related to the old verb ‘emprendre’, meaning ‘to commence, to begin’. These meanings show the initiative taking nature of entrepreneurship.

‘Achieving’ is another relevant variable, as many studies have researched the cultural dimension of entrepreneurship. This started with the seminal research of McClelland (1961). He found a strong positive relationship between measures of need for achievement and the rate of economic growth. Recently, Beugelsdijk and Smeets (2005) have empirically re-estimated McClelland’s thesis. They conclude that there is indeed a theoretical relationship between entrepreneurial culture and economic growth, but that it is more complex than the simple linear relationship as hypothesized by McClelland.

Finally, *‘personal influence’* represents the internal locus of control, based on Rotter (1966). The locus of control measures to which extent individuals consider to have personal influence on (outcomes of) events in their life. An internal locus of control refers to the perception of individuals that they can influence (the outcomes of) events by means of personal commitment and personal capacities. It reflects the extent to which people feel that luck and fate do not determine what happens to them. In other words they feel they control the environment by the actions *they* take, and not some third party. An external locus of control on the other hand refers to the perception of in-

¹ The corresponding questions in the European Values Studies for these three variables are:

Initiative: “Which aspects of a job do you think are important in a job? An opportunity to use initiative.”

Achieving: “Which aspects of a job do you think are important in a job? A job in which you can achieve something.”

Personal influence: “Why are there people in this country who live in need? Because of laziness and lack of will-power.”

The national scores reflect the percentage of respondents answering the indicated categories on these questions.

dividuals that (outcomes of) events occur at random and exogenously. In other words, individuals who think that they cannot influence (outcomes of) events are said to have an external locus of control. Entrepreneurs are generally considered to have an internal locus of control.

3.2 Method of analysis

We carry out three series of regressions. First, we regress nascent entrepreneurship on per capita income, as is done in Wennekers et al. (2005), using a data set of 33 countries. We test various models by varying the control variables, resulting in a standard model that will be the basis for further regression analysis. Second, we include the indicators of culture. We add the three above mentioned culture variables one by one and, all three at one time. Finally, as the three culture variables are strongly intercorrelated, we cluster the three variables in one composite factor and include this factor in our regression model. Doing so, we investigate whether entrepreneurial culture influences the nascent entrepreneurship rate, while controlling for a range of other determinants.

3.3 Control variables

When examining the relationship between nascent entrepreneurship on the one hand and entrepreneurial culture on the other hand, there are other variables that determine the rate of nascent entrepreneurship in a country. We use a number of economic, institutional and demographic variables as controls for testing our hypothesis.

Level of economic development is measured as the *per capita income*. Gross national income per capita 2001 is expressed in purchasing power parities per US \$, and these data are taken from the 2002 World Development Indicators database of the World Bank. To test for the curvilinear effect, we also include the squared term.

To control for the institutional context, we include variables on a country's fiscal and social security system. The impact of *taxes* on the level of entrepreneurial activity is complex and even paradoxical (Verheul et al., 2002). On the one hand high tax rates reduce the return on entrepreneurship (Gentry and Hubbard, 2000). On the other hand self-employment may offer greater opportunities to evade or avoid tax liabilities. For a selection of 12 OECD countries spanning the period 1972-1996, Parker and Robson (2004) find a significantly positive effect of personal income tax rates on self-employment. Other studies, among which Kreft and Sobel (2003), Schuetze and Bruce (2004) and Bruce (2000), find a similar positive effect. Our control variable is tax revenues as % of GDP (1999), taken from Table 2.2.09 of the World Competitiveness Yearbook 2001.

Like taxes, the effect of *social security* on entrepreneurial activity may also be two-sided. First, we may expect a negative impact in so far as generous social security for employees increases the opportunity costs of entrepreneurship. In this respect, social security benefits determining the opportunity costs of unemployed persons may also interact with unemployment (Noorderhaven et al. 2004). Second, social security in general may positively affect entrepreneurial activity by creating a safety net in case of business failure. However, empirical studies find a negative relationship between social security and entrepreneurial activity (Wennekers et al., 2005; Davis and Henrekson, 1999; Parker and Robson, 2004; Brouwer et al., 2004). Social security cost as a percentage of GDP (2000), taken from Table 2.2.01 of the World Competitiveness Yearbook 2001, is used as our control variable.

Population growth and the age distribution are relevant in the demographic context. *Population growth* is expected to have a positive effect on entrepreneurship (Armington and Acs, 2002). A growing population provides opportunities for new economic activity as new and bigger consumer markets emerge because of the growing population

(demand side of entrepreneurship). Population growth may also be a push factor to engage in new economic activity in order to make a living, particularly when population growth is driven by immigration (supply side of entrepreneurship). The population growth 1996-2002 is taken from the US Census Bureau IDB (International Data Base).

As regards *age distribution*, while start-ups occur in all relevant age groups, the prevalence rate of nascent entrepreneurship is often seen to be highest in the age group between 25 and 34 (Delmar and Davidsson, 2000; Verheul et al., 2002). Regarding the age composition of the population in 2002, we have shares in total population of five age groups: 20-24, 25-34; 35-44; 45-54 and 55-64 years. These data are also taken from the International Data Base of the US Bureau of the Census.

A correlation matrix for the dependent and independent variables is presented in Table 1. The table is based on 33 observations, excluding the countries with missing values for several variables (also see Appendix). Because the ‘age group variables’ are highly inter-correlated, only the population share of age group 45-54 years, which is most strongly (negatively) correlated with nascent entrepreneurship, is included in the table.

TABLE 1 ABOUT HERE

4. Results

To examine the hypothesized relationship between nascent entrepreneurship on the one hand and culture on the other hand, we carried out three series of regressions. First, we have regressed nascent entrepreneurship on per capita income, as is done in Wennekers et al. (2005), using our data set of 33 countries². For this purpose, we have used the

² Although we know at forehand that we have only 28 observations for the variable ‘personal influence’, we use the 33 observations to maximise the number of observations. As a robustness check, we have also regressed the first and second series of regressions using 28 observations; no significant differences were found unless noted in the text.

variables of the full model of Wennekers et al. (2005)³, i.e. including the full set of control variables. Estimation results are shown in table 2. The first column, model 1a, shows that both per capita income and per capita income squared are significant ($p < .10$), confirming the previously found U-shaped relationship between GDP per capita and nascent entrepreneurship. From a certain level of economic development onwards, entrepreneurship starts to rise again as per capita income increases still further. Wennekers et al. (2005) explain this curvilinear relationship by the lower levels of entrepreneurship in industrial economies versus agriculture and service based economies.

We have re-examined the control variables to come to a so-called standard model with fewer variables. In this standard model, we have excluded the proxy variables for culture that Wennekers et al. (2005) used, namely business ownership and the (former) centralised command economies' dummy. These two variables were included in the analyses by the authors to proxy the effect of culture when testing the relationship between nascent entrepreneurship and the level of economic development. Our regression result (second column of table 2, model 1b) shows that the adjusted R^2 decreases from 0,61 in the full model to 0,57 in the standard model without their proxies for culture. Moreover, the quadratic effect of per capita income is stronger in model 1b. We use this standard model as basis for further regression analysis when using the new measures for entrepreneurial culture.

To test our hypothesis, we include the indicators of culture in our analysis. We do so by adding these one by one (model 2a-2c) or all three at one time (model 3). Model 2a (column 3 of table 2) shows that adding the variable 'initiative' significantly affects levels of nascent entrepreneurship (though at a 10% level). We find a similar effect when adding the culture variable 'achieving' to the standard model: the effect of achieving is significantly positive at a 10% level (model 2b). In both models, the quad-

³ See table III of Wennekers et al. (2005).

ratic effect of per capita income remains significant. Adding our third culture variable ‘personal influence’ to the standard model⁴, we find a strong significant positive effect of this variable on nascent entrepreneurship at a 5% level (model 2c). Unfortunately, we lose 5 observations due to missing data on this third indicator of entrepreneurial culture. Closer analysis of the data shows that the weaker quadratic effect of per capita income in this latest model is due to the five missing values. Figure 1 and 2 also illustrate this reduced sample effect. Whereas figure 1 shows the U shaped relationship for the full sample, figure 2 illustrates the relationship between GDP per capita and nascent entrepreneurship for the reduced sample of 28 observations. Three of the five missing values, namely Singapore, Australia and Switzerland, are on the increasing part of the U-curve. New-Zealand is above the curve, while Taiwan is beneath. Figure 2 reveals the weaker U-shape relationship between nascent entrepreneurship and the level of economic development. The U-shape is suppressed by the elimination of the five observations.

FIGURE 1 AND 2 ABOUT HERE

Model 3 shows the results of including all three indicators of entrepreneurial culture simultaneously (sixth column of table 2). Results show that none of the culture variables has a significant effect on nascent entrepreneurship anymore. However, when adding them separately, they had a significant effect (see model 2a, 2b and 2c). This confirms strong multicollinearity between these three culture variables, as already became clear from the correlation table. To correct for this, we applied principal components analysis and developed a new composite scale including the three variables. Doing so, yields one variable representing entrepreneurial culture, explaining 67% of total

⁴As we mentioned before, there are five missing values for this variable, for the countries Australia, Chinese Taipei (Taiwan), New Zealand, Singapore and Switzerland.

variance. Cronbach's alpha of this new scale equals 0.743 suggesting a reliable measure. In our final regressions we add the new variable to the standard model. Results are shown in model 4 (seventh column of table 2). The model shows that the single variable, representing entrepreneurial culture, has a significant positive effect on nascent entrepreneurship at a 5% level. As in the previous models with the reduced number of observations, per capita income does not significantly affect nascent entrepreneurship in a U-shaped manner⁵. With respect to the other control variables we find a consistent positive and significant effect of population growth on nascent entrepreneurship, as expected. Population share is not significant in the reduced sample.

TABLE 2 ABOUT HERE

5. Conclusions

A society's cultural orientation is argued to affect its level of entrepreneurial activity. In terms of empirical tests of this relationship however, evidence is either based on indirect measures of entrepreneurship like innovation, incomplete or general measures of culture or directed towards the relationship between aspects of a society's culture and its general level of economic development.

In this paper we developed a specific measure reflecting entrepreneurial culture based on micro insights from entrepreneurial trait research. Using the EVS/WVS 1999 data, we have chosen three variables that can be argued to proxy the concept of entrepreneurial culture, namely initiative, achieving and personal influence. These three variables have a strong theoretical background. Initiative corresponds with the key meaning of entrepreneurship, namely 'to do something' and 'to commence' (Wennekers, 2006).

⁵ A regression with a linear specification of per capita income (not in table 2) does however show a significant negative influence at a 5% level on nascent entrepreneurship, while a significant positive effect at a 10% level for culture retains.

This meaning shows the initiative taking nature of entrepreneurs. Achieving is related to the need for achievement of McClelland (1961). Finally, personal influence represents the internal locus of control, based on Rotter (1966). An internal locus of control refers to the perception of individuals that they can influence (the outcomes of) certain happenings by means of personal commitment and personal capacities. Entrepreneurs are in literature considered to have an internal locus of control. Principal components analysis indicates there is one underlying measure, which we label entrepreneurial culture.

To test the hypothesized effect of entrepreneurial culture on nascent entrepreneurship, we used the GEM 2002 data for the 33 countries for which we have EVS/WVS data on culture. We found support for the hypothesis that the influence of the cultural dimension on nascent entrepreneurship is significantly positive. The previous finding on the U-shaped relationship between the level of economic development and nascent entrepreneurship is partly confirmed in our research. We also found however that this quadratic effect becomes weaker when including the single measure for entrepreneurial culture. Closer analysis shows that this is due to the reduced sample and the associated (five) missing observations. Population growth has also a significant positive effect on nascent entrepreneurship, as expected.

The most important conclusion is that, to our knowledge, this first empirical investigation on the relationship between entrepreneurial culture and the rate of (nascent) entrepreneurship shows a significant and positive relationship. This is an important finding. If entrepreneurial culture matters for entrepreneurship, there might be a policy implication for the educational system to pay more attention to the development of entrepreneurial attitudes.

It also puts the recent finding by Beugelsdijk and Smeets (2005) into perspective. They re-estimated McClelland's thesis and found no support for his thesis that differences in economic growth rates can be explained by societal differences in 'Need for

achievement'. Moreover, it has also been found that there is no linear relationship between entrepreneurial activity and economic growth (Van Stel et al. 2005). All in all, these findings combined seem to result in the following picture on the interrelationship of entrepreneurial culture, entrepreneurship and economic growth; Entrepreneurial culture does affect levels of entrepreneurship, but has no direct effect on economic growth, because the mediating variable entrepreneurship is not related to growth in a linear way. Future research on this issue is however needed to substantiate this blunt claim.

Obviously, a number of limitations reduce the scale of generalisation of our findings. First, the five missing observations for the variable personal influence have an undesirable impact on our results. Yet, it was no option to exclude this variable, because this variable has the most significant effect on nascent entrepreneurship, as compared with the other culture variables. For future research, we suggest to make a scale of the variables initiative and achieving. As this scale will be based on 33 observations, it is then possible to investigate the effect of the five missing values on the scale. Second, the analysis is focused on differences in nascent entrepreneurship across countries at one moment in time only. By involving rates of nascent entrepreneurship of subsequent years in the analysis together with some cyclical variables, we could have obtained more robust results. Furthermore, we could have shown that the effect of the cultural dimension is probably structural.

Table 1 Descriptives and cross-correlations (33 observations)

	Mean	St. dev.	1.	2.	3.	4.	5.	6.	7.	8.	9. ¹	10. ¹
1. Nascent entrepreneurship rate	4.62	2.66	1.00									
2. Social security cost	17.23	13.36	-0.48**	1.00								
3. Tax revenue	31.92	11.21	-0.46**	0.34	1.00							
4. Population growth 1996-2002	4.25	4.71	0.53**	-0.37*	-0.58**	1.00						
5. Population share 45-54 yr.	13.03	1.96	-0.65**	0.29	0.55**	-0.42*	1.00					
6. Per capita income	20.25	8.92	-0.37*	-0.01	0.62**	-0.11	0.54**	1.00				
7. Initiative	53.27	11.78	0.17	-0.30	0.16	-0.01	0.01	0.20	1.00			
8. Achieving	63.67	15.18	0.20	-0.32	0.11	0.07	0.05	0.22	0.77**	1.00		
9. Personal influence ¹ / locus of control	24.57	8.92	0.57**	-0.30	-0.56**	0.47*	-0.29	-0.26	0.32	0.37	1.00	
10. Entrepreneurial culture (factor) ¹	0.00	1.00	0.31	-0.33	-0.02	0.20	0.00	0.14	0.90**	0.91**	0.61**	1.00

* $p < 0.10$

** $p < 0.05$

¹ N = 28, because personal influence is known for only 28 observations. Missing observations for the following countries: Australia, Taiwan, New Zealand, Singapore and Switzerland.

Table 2 Explaining nascent entrepreneurship in 2002

	Model 1a: Full model with limited observations	Model 1b: Standard model	Model 2a: Standard model with 1 culture variable	Model 2b: Standard model with 1 culture variable	Model 2c: Standard model with 1 culture variable	Model 3: Standard model with 3 culture variables	Model 4: Standard model with factor 'entre- preneurial culture'
Constant	10.1 (3.1)	12.9 (4.6)	10.9 (3.8)	11.0 (3.8)	2.4 (0.8)	1.2 (0.4)	1.7 (0.6)
Business ownership	0.15 (2.2)						
Social security cost as % of GDP	-0.031 (1.1)	-0.053 (1.9)	-0.032 (1.1)	-0.034 (1.2)	-0.015 (0.8)	-0.008 (0.4)	-0.006 (0.3)
Communist country	0.41 (0.2)						
Tax revenue as % of GDP	0.093 (1.9)	0.081 (1.6)	0.069 (1.4)	0.074 (1.5)	0.063 (1.5)	0.053 (1.2)	0.023 (0.6)
Population growth 1996-2002	0.24 (2.7)	0.23 (2.5)	0.23 (2.6)	0.23 (2.5)	0.60 (4.6)	0.65 (4.7)	0.64 (5.1)
Population share 45-54 years old	-0.48 (1.4)	-0.48 (2.2)	-0.50 (2.4)	-0.48 (2.3)	-0.08 (0.0)	0.06 (0.3)	0.05 (0.3)
Per capita income	-0.44 (1.9)	-0.48 (2.4)	-0.55 (2.8)	-0.56 (2.8)	-0.30 (1.8)	-0.29 (1.7)	-0.25 (1.6)
Per capita income, squared	0.010 (1.9)	0.010 (2.0)	0.012 (2.4)	0.012 (2.5)	0.006 (1.3)	0.005 (1.2)	0.005 (1.1)
Initiative			0.051 (1.8)			-0.023 (0.7)	
Achieving				0.038 (1.7)		0.033 (1.3)	
Personal influence					0.071 (2.2)	0.050 (1.3)	
Factor / scale 'entrepreneurial culture'							0.049 (2.1)
<i>Adjusted R²</i>	<i>0.61</i>	<i>0.57</i>	<i>0.60</i>	<i>0.60</i>	<i>0.83</i>	<i>0.83</i>	<i>0.82</i>
<i>Observations</i>	<i>33</i>	<i>33</i>	<i>33</i>	<i>33</i>	<i>28</i>	<i>28</i>	<i>28</i>

Note: Absolute t-values in parentheses.

Figure 1 Nascent entrepreneurship versus per capita income, the U-shape relationship (based on model 1b), N = 33

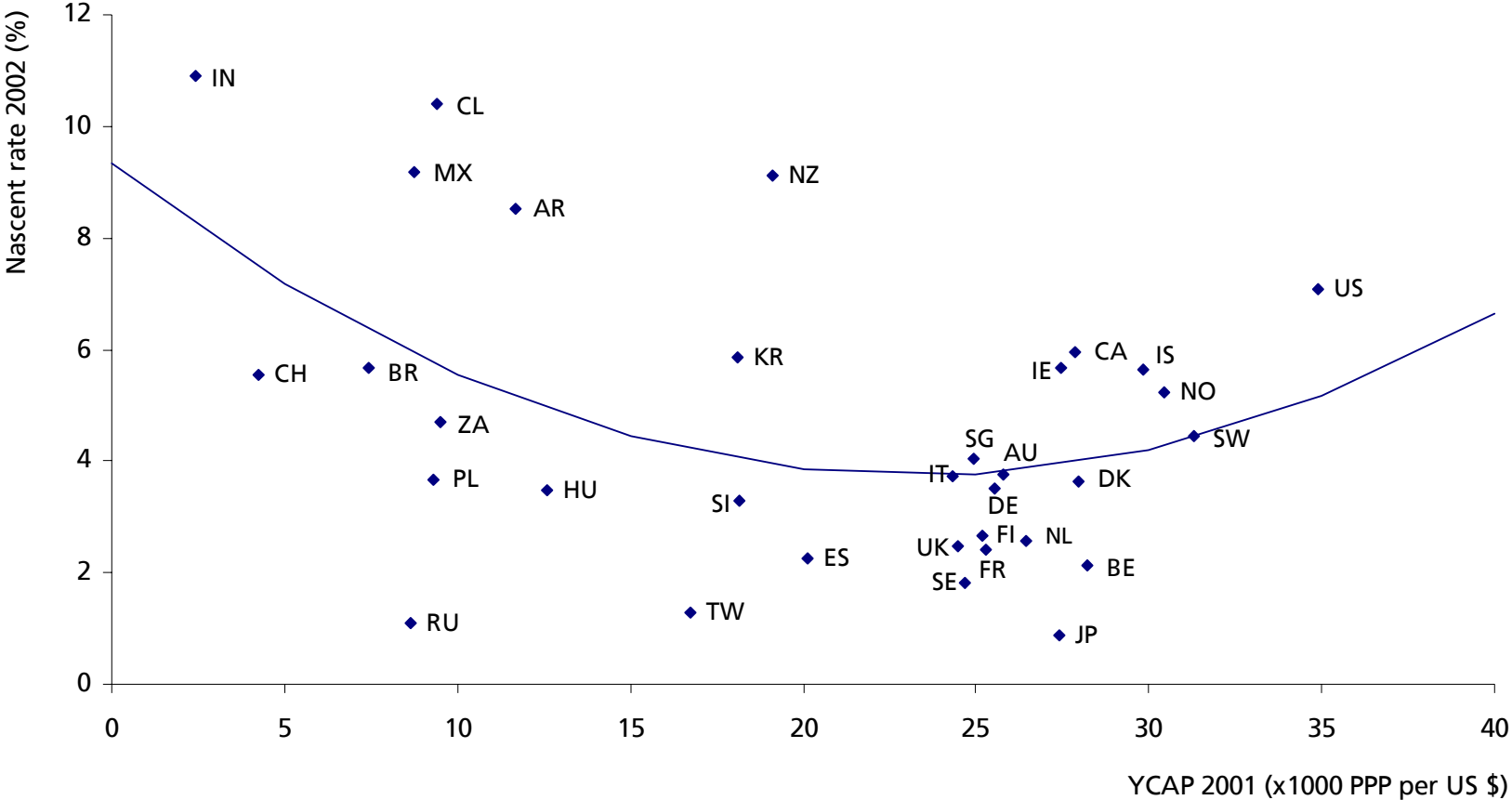
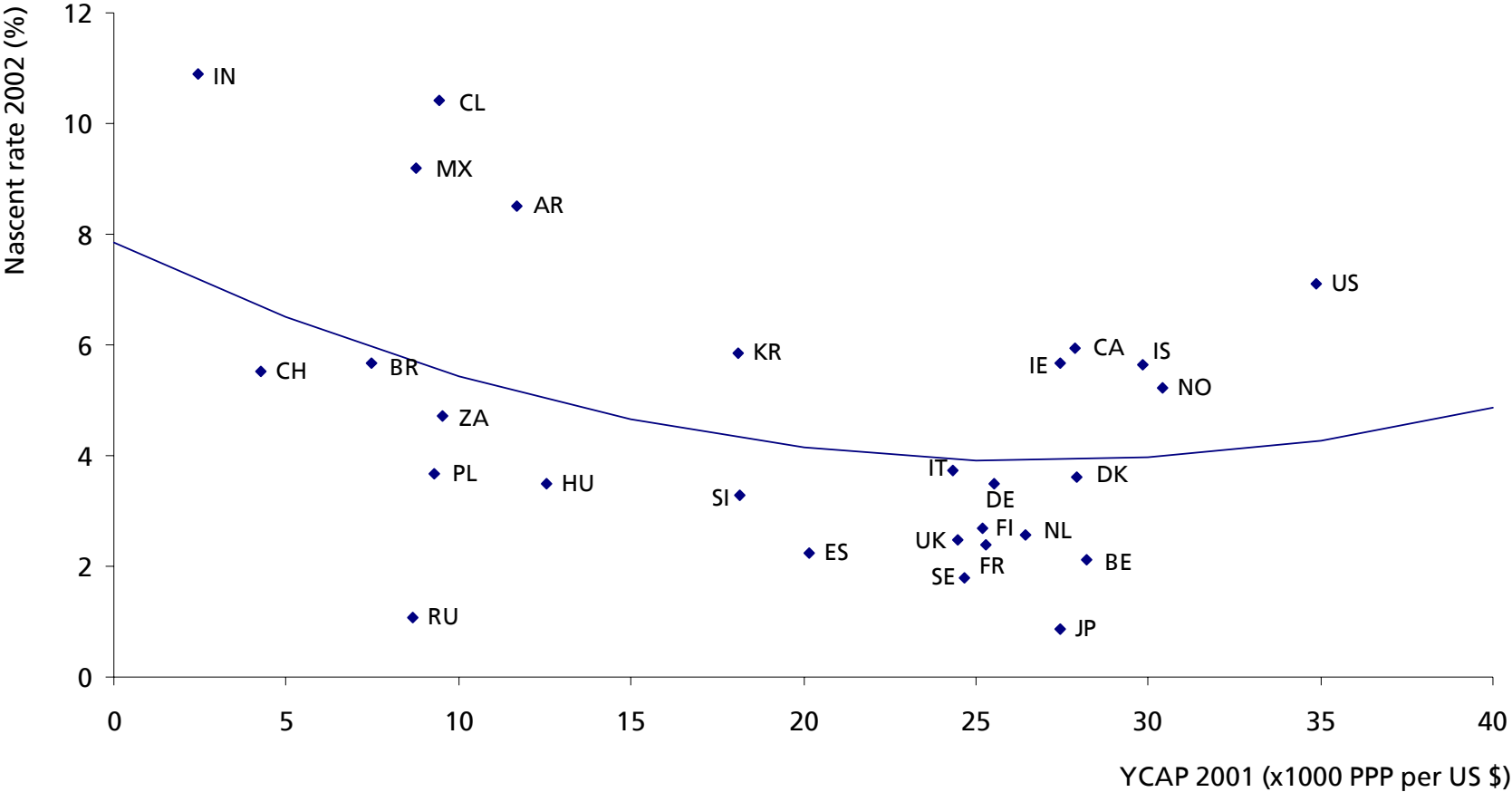


Figure 2 Nascent entrepreneurship versus per capita income, the U-shape relationship (based on model 2c), N = 28



Appendix Participating countries GEM 2002 and match with EVS/WVS 1999

	GEM 2002	EVS/WVS 1999
1 ARGENTINA	x	x
2 AUSTRALIA	x	x
3 BELGIUM	x	x
4 BRAZIL	x	x
5 CANADA	x	x
6 CHILE	x	x
7 CHINA	x	x
8 CHINESE TAIPEI (TAIWAN)	x	x
9 CROATIA	x ¹	x
10 DENMARK	x	x
11 FINLAND	x	x
12 FRANCE	x	x
13 GERMANY	x	x
14 HONG KONG	x	
15 HUNGARY	x	x
16 ICELAND	x	x
17 INDIA	x	x
18 IRELAND	x	x
19 ISRAEL	x	x ¹
20 ITALY	x	x
21 JAPAN	x	x
22 KOREA	x	x
23 MEXICO	x	x
24 NETHERLANDS	x	x
25 NEW ZEALAND	x	x
26 NORWAY	x	x
27 POLAND	x	x
28 RUSSIA	x	x
29 SINGAPORE	x	x
30 SLOVENIA	x	x
31 SOUTH AFRICA	x	x
32 SPAIN	x	x
33 SWEDEN	x	x
34 SWITZERLAND	x	x
35 THAILAND	x	
36 UNITED KINGDOM	x	x
37 UNITED STATES	x	x

¹ Croatia and Israel are not included in the regression analysis due to a lack of data for several independent variables.

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