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The perverse effect of fatalism on entrepreneurial selection

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Abstract

This paper presents a theoretical model explaining how fatalistic beliefs may influence a person's choice as to whether to become an entrepreneur. The key assumption of the model is that fatalism affects the expected effectiveness of the efforts that will be exerted in running an entrepreneurial project. The main prediction is that fatalism will be a serious obstacle to high ability entrepreneurs but not necessarily to low ability ones. Using GEM and WVS data, we confirm that the effect of fatalism is much stronger for opportunity driven entrepreneurs than for necessity driven entrepreneurs.

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1. Introduction

It is well accepted that entrepreneurship is an engine of economic growth. A better understanding of the individual and contextual factors that favour entrepreneurship and thereby promote sustainable economic growth is needed. In this paper, we define the entrepreneur as someone who, given the cultural and institutional framework in which he/she operates, has the necessary cognitive (and non-cognitive) skills to discover and exploit a profit opportunity yielding an expected return higher than that he/she would get as a wage-earner. Economic analysis has shown that the ability to discover and exploit profit opportunities and, eventually people's assessment of the well-being derived from different occupational choices, is shaped also by people's personality traits (Almund et al., 2011, Fritsch and Rusakova, 2010) and by culturally-based values and beliefs (Guiso et al., 2006).

Cultural values and beliefs may influence entrepreneurship both directly, through their effects on opportunity perceptions, and indirectly, through the interplay with the institutional context (Tabellini, 2010; Aghion et al., 2009).

Building on these premises, this paper aims to assess how a cultural trait, namely, fatalism, affects occupational choices and entrepreneurship. For fatalism, we take people's propensity to believe that their destinies are ruled by an unseen power, fate, rather than by their will. Ruiu (2013) offers empirical support to the view that fatalism is not a mere consequence of objective individual characteristics (such as income, age, gender, health, etc.) but is, at least in part, culturally determined. In particular, according to Guiso et al. (2006), cultural beliefs can be defined as: «those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation» (p.23). This definition allows to highlight the salient characteristics of culture. Culture is a collective not individual attribute, and is slow moving being an inheritance that fathers leave to sons. Ruiu (2013) shows that fatalism is characterized is a very time-persistent beliefs and that it is strongly associated with adherence to a religious faith, where religions are seen as one of the main channel of intergenerational transmission of values and beliefs.[1]

This result is of particular interest since establishing if fatalism is cultural in origin is important for dealing with the issue of reverse causality. In fact, if a tendency to fatalism is a cultural heritage (from fathers to sons), it is legitimate to consider them exogenous to labour market outcomes and then as determinants of entrepreneurial choices. However, how do fatalistic beliefs influence entrepreneurial selection?

The analytical framework proposed here is as follows: personal characteristics which are looked upon positively in the labour market, for instance, cognitive abilities, may also positively influence entrepreneurial ability. However, if fatalism influences the perceived link between ability and probability of entrepreneurial success, it induces people to believe that their efforts will have little effect on the probability of them successfully running a firm. This, in extreme cases of fatalism, may lead to a raising of the ability required of people to become entrepreneurs to levels that are so high as to induce only "out of necessity" entrepreneurs (those for whom the value of being employed is particularly low) into creating new businesses.

The paper is organized as follows. Section 2 presents a simple model to show how fatalism may affect entrepreneurial selection. Section 3 illustrates the empirical strategy and results. Section 4 sketches the main conclusions.

[1] In particular, Ruiu (2013) shows that once controlled for socio-economic factors, religious people (with no large differences among different faiths) are more fatalistic than declared atheists. See also Acevedo (2008) for a discussion on the role of religion in determining fatalistic tendencies.

2. Incorporating fatalistic tendencies into a simple model of occupational choice

Here, we present a simple model to illustrate the main prediction about the effects of fatalism on entrepreneurial choices. Consider a closed economy, composed of a workforce of risk neutral individuals of a size normalized to unity. In this economy the individuals have two options: becoming entrepreneurs or working for others.

The production function combines one manager/owner with labour to produce Y homogeneous units of output sold at a unit price. The wage rate is indicated by w.

The individuals are heterogeneous with respect to their ability as workers, b. Let us assume that $b \in [0, \bar{b}]$ is distributed among the population according to a distribution with cdf given by F(b) with $F(0) = 0, F(\bar{b}) = 1$.

Assume that b is perfectly observable and that a worker endowed with a level of ability equal to b is able to offer b efficiency units of labour. Then the return of being an employee for the i-th individual is W= wbi.

The production function is given by:

$$Y = \alpha n^{\gamma}, with\ 0 < \gamma < 1$$

Where α is the level of the entrepreneurial ability. n are efficiency units of labour. Now, suppose that the individuals do not know ex-ante their level of entrepreneurial ability.

We indicate with s an exogenous culturally determined level of fatalism. Specifically, if s=1, the individuals are extremely fatalistic whereas s=0 indicates the opposite situation.

Therefore, if s=1, the individual believes that entrepreneurial success is determined by fate. Since fate is inscrutable, fatalistic individuals attach the same probability to each possible event included in the interval $[0, \bar{b}]$. Hence, fatalistic individuals believe that the level of their entrepreneurial ability is distributed according to $\alpha \sim U[\underline{\alpha}, \bar{\alpha}]$ with $[\underline{\alpha}, \bar{\alpha}]$ such that E(α)>0 but is very small.

If instead s=0, individuals believe that the level of their entrepreneurial ability is a deterministic function (α= b) of their level of ability b.[2] If an individual is not fatalistic, they believe that luck does not play a role in determining the success of an entrepreneur.

A fatalistic individual (s=1) with a level of ability equal to b will become an entrepreneur if:

$$\pi(\alpha, w) := max_n \frac{\underline{\alpha} + \bar{\alpha}}{2} n^{\gamma} - wn \geq wb$$

A non-fatalistic (s=0) individual with a level of ability equal to b will become an entrepreneur if:

$$\pi(b, w) := max_n bn^{\gamma} - wn \geq wb$$

In the latter case, solving the maximization problem gives the optimal labour demand:[3]

$$n(b, w) = \left[\frac{w}{\gamma b}\right]^{\frac{1}{\gamma - 1}}$$

Note that the labour demand is decreasing in w and increasing in b. How does profit react to an increase in b?

[2] The model of entrepreneurial choice presented here is very similar to those originally proposed by Lucas (1978).

[3] It is also straightforward to derive the solution for fatalistic entrepreneurs.

$$\frac{\partial \pi}{\partial b} = n(b,w)^{\gamma} + b\gamma n(b,w)^{\gamma-1} n'\left(b,w\right) - wn'\left(b,w\right) = \\ = n(b,w)^{\gamma} + n'\left(b,w\right)\left[b\gamma n(b,w)^{\gamma-1} - w\right]$$

Then, using the fact that n(b,w) satisfies the f.o.c. of the maximization problem, i.e., $b\gamma n(b,w)^{\gamma-1} - w = 0$, we have:

$$\frac{\partial \pi}{\partial b} = n(b,w)^{\gamma} > 0$$

from which it is easy to also show that $\frac{\partial^2 \pi}{\partial b^2} > 0$.

On figure 1, we will show the solution to the occupational choice problem for generic individuals endowed with a level of ability equal to b: on the vertical axis we plot the value of being a worker (represented by the black curve departing from the origin) and the value of being an entrepreneur corresponding to different levels of s.

The horizontal curve represents the value of being an entrepreneur of an extremely fatalistic individual. In this case, the individual will opt for entrepreneurship only when his level of ability as worker is extremely low, i.e. when b<bL. Let us denote these individuals as necessity driven entrepreneurs.

The red curve represents the value of being an entrepreneur when s=0. In this case only high ability individuals with b>bH will become entrepreneurs. Let us denote these individuals as opportunity driven entrepreneurs.

The blue curve represents the value of being an entrepreneur for individuals with intermediate levels of fatalism (0<s<1). For these individuals the expected level of entrepreneurial ability is given by sE(α) + (1-s)(b). With respect to cases of s=0, the curve is translated upward because a higher number of individuals believe that fate plays a role in determining entrepreneurial ability. At the same time the blue curve is more flat than the red curve because individuals are less convinced of the role that their ability, b, plays in determining their entrepreneurial success.

When 0<s<1 both necessity and opportunity driven entrepreneurs are present in the market. In particular, only those who are endowed with a level of ability below/above b_{LL}/b_{HH} will become necessity driven/opportunity driven entrepreneurs. However, note that the number of high ability entrepreneurs is much lower than in the previous case.

To finish off the model, note that the economy is in equilibrium when w is such that the total labour demand is equal to the total labour available. Consider, for simplicity's sake, a case where s =1 (similar arguments apply to other cases) :

$$\underbrace{\int_{b_H(w)}^{\bar{b}} n(b,w) f(b) db}_{L^D} = \underbrace{\int_{0}^{b_H(w)} b f(b) db}_{L^S}$$

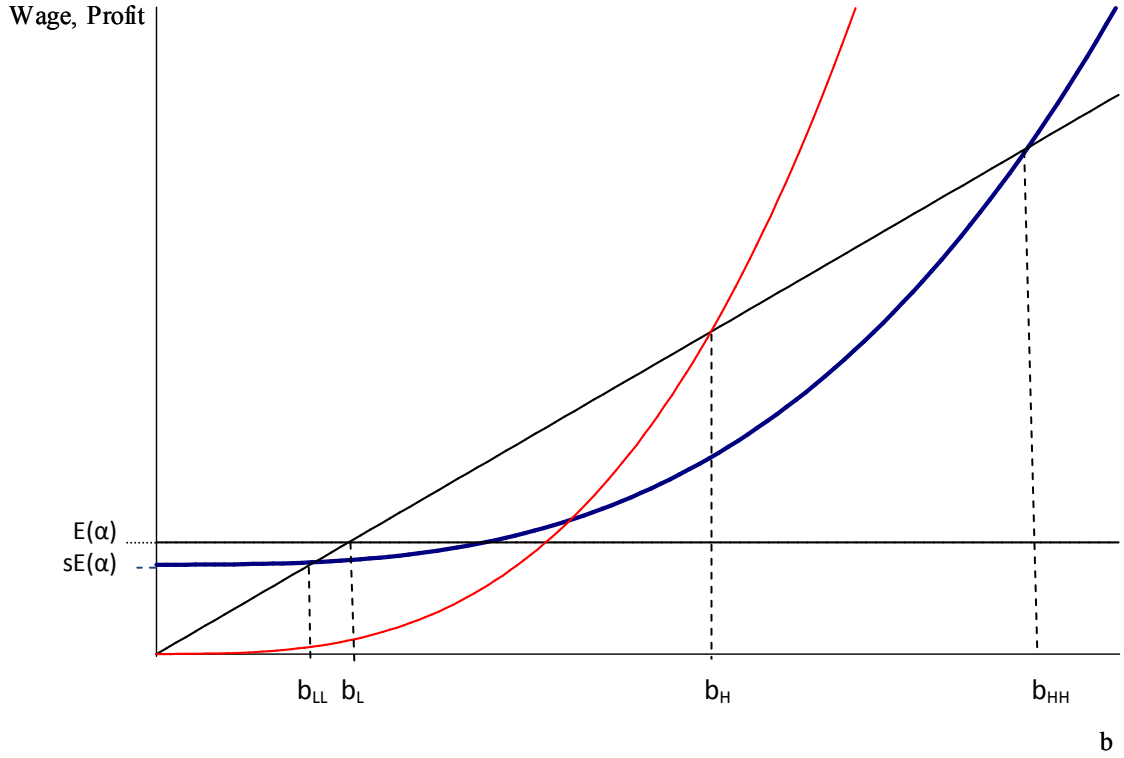
Using Leibniz's rule for the differentiation of LD, we have:

$$\frac{d}{dw} L^D = \underbrace{-\frac{db_H\left(w\right)}{dw} n\left(w, b_H\left(w\right)\right) f\left(b_H\left(w\right)\right) + \int_{b_H(w)}^{\bar{b}} \frac{\partial n\left(w,b\right)}{\partial w} f\left(b\right) db}_{<0}$$

$$\frac{d}{dw}L^s = \underbrace{\frac{\partial b_H(w)}{\partial w} b_H(w) f\left(b_H(w)\right)}_{>0}$$

Therefore, the continuity of Ls and LD ensures that a unique w* exists.

Figure 1: Occupational choice



3. Empirical strategy

In this section we will present some empirical evidence using data at the country level. Consider the following cross country linear model:

(1) $Entrepreneurship = \beta_0 + \beta_1 x_i + \beta_2 fatalism_i + u \text{ with } i = i,...,j \text{ and where}:$

$E(u) = 0,\ Cov(x_i, u) = 0, Cov(fatalism_i, u) = 0 \text{ for } \forall\ i$

Our measure of entrepreneurship is given by the GEM Total Early stage entrepreneurship (from now, TEA) index calculated in 2005 for the following 34 countries: Argentina, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Hungary, Iceland, India, Ireland, Italy, Japan, South Korea, Latvia, Mexico, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovenia, South Africa, Spain, Sweden, Switzerland, UK and USA.[4] This index is calculated as percentages of nascent (those starting

[4] See Appendix II for a brief description of Global Entrepreneurship Monitor (GEM) data. The 2005 is the year that allows the largest comparability between countries included in WVS (data source for the indicator of fatalism) and those included in GEM data. Due to 2005 data unavailability for Czech Republic and India the year of reference is 2006. For Romania and Russian Federation the year of reference is 2007, while 2004 is used for Poland and Portugal and 2002 for South Korea.

a business) or young entrepreneurs (those that own and manage a firm with less than 3.5 years of existence) among the adult population. This specification of the dependent variable will allow us to test whether fatalism affects the inflow into entrepreneurship as predicted by the model presented in section 2. As alternative dependent variables, we will use two further indicators from GEM: the percentage of "out of necessity" entrepreneurs and the percentage of "out of opportunity" entrepreneurs. The former variable is called *teanec* while the latter is called *teaopp*. GEM allows to distinguish two kind of entrepreneurs on the basis of their declared motivations for starting a business. In particular, "necessity driven" entrepreneurs include those who have declared of being involved in TEA because they had no other option for work. Hence, this indicator will be interpreted as measure of low ability entrepreneurs in the context of the theoretical model presented above. Opportunity driven entrepreneurs are instead those who have declared of being driven by opportunity as opposed to finding no other option for work and who indicate that the main driver for being involved in this opportunity is being independent or increasing their income, rather than just maintaining their income. We will consider this class of entrepreneurs as high quality entrepreneurs.

Since opportunity driven entrepreneurs are those for whom fatalism may play a substantial role in the process of discovering an entrepreneurial project, we expect that the relation between *teaopp* and *fatalism* is stronger than the relation between *tenec* and *fatalism*.

x represents the set of control variables. The control variables (described in detail in Table 1) are: the average level of human capital approximated by the percentage of tertiary schooling attained in the population, real pro capita gdp in PPP, the square of the real pro capita gdp, the growth rate of the gdp pro capita, an indicator *legal* capturing the quality of the legal system, an indicator of labour market flexibility, an indicator of the flexibility of business regulation, the unemployment rate, the percentage of high tech export with respect to total manufactured exports, an indicator capturing the attitude toward economic freedom called *ecfree*, the population growth rate, an indicator named "credit" capturing how much government borrowing crowds out private borrowing. See Table 1 for a formal definition of these variables and Table 4 in the appendix I for a data overview on some important variables.

As measures of fatalism we will use the variable *fat90* obtained by calculating the country mean level of the variable *fatalism* for the 1990 WVS (see Table 1). The choice of the latter indicator lets us the problem of reverse causality. One may in fact argue that "being at the helm" will increase the perception of control and then the higher the number of entrepreneurs, the lower the fatalistic tendencies, however, it is not realistic to think that the current level of entrepreneurship influences the past level of fatalism.

It is important to note, however, that the choice of the lagged measure of fatalism does not rule out the possibility of an endogeneity problem, i.e., $Cov(fatalism_i, u)$ may be different from 0. This may happen for instance when there is a serial correlation in the dependent variable. For this reason, an instrumental variable approach is needed.

To use the IV approach, with the potential endogenous level of fatalism, we need an observable variable, z, not found in equation (1) that satisfies two conditions. First, z must be uncorrelated with u (the variable z must be exogenous in equation 1). The second condition involves the relation between z and our measure of fatalism. In particular, *fat90* must be projected linearly onto all the exogenous variables:

$$(1)\quad fatalism_i = \alpha_0 + \alpha_1 x_i + \alpha_2 z_i + \varepsilon \text{ for } i = i,\ldots j \text{ and where } E(\varepsilon) = 0,\ Cov(x_i, \varepsilon) = 0,\ Cov(z_i, \varepsilon) = 0$$

The key assumption in this linear projection is that the coefficient $\alpha_2 \neq 0$, in other words the variable z, must be partially correlated with fatalism once controlled for the other exogenous variables.

Our candidate for instrumental variables are called *disast* and *lib*. *Disast* is given by the ratio between the number of persons killed by natural disasters (geophysical, meteorological, hydrological, climatological and biological disasters) and the number of natural disasters that occurred in each country from 1980 to 2010.[5]

The source of this variable is the Emergency Events Database (EM-DAT) created and managed by the Centre for Research on the Epidemiology of Disasters (CRED). EM-DAT contains essential core data on the occurrence and effects of over 18,000 mass disasters in the world from 1900 to present. The database is compiled from various sources, including UN agencies, non-governmental organizations, insurance companies, research institutes and press agencies. There exist various studies outside of economics showing that fatalism significantly impacts both the preparedness of individuals to announced natural disasters, i.e., fatalism is an obstacle to the adoption of self-protecting behaviours, and the ability to cope with the psychological consequences of natural disasters, i.e., fatalism amplifies the post-traumatic stress suffered by the victims of such disasters (Perilla et al., 2002; Wheaton, 1983; McClure et al., 2001; McClure, 2006). Hence, we expect that fatalism is positively related to the variable *disast*.

The variable *lib* is an index that captures the importance given to freedom of speech in each country. The source of this variable is Teorell et al. (2010). Specifically, Teorell et al. (2010) obtained the indicator *lib* by using the following 2000 WVS question: «If you had to choose, which one of the things on this card would you say is most important? (Rank first and second choice). Maintaining order in the nation; Give people more say in important government decisions; Fighting rising prices; Protecting freedom of speech».

The respondents' first and second priorities for «giving people more say in important government decisions» and «protecting freedom of speech» are added to a four-point index, whereby three points are assigned for both items being ranked first and second, two points for one of these items being ranked first, one point for one of these items being ranked second and zero for none of these items being ranked first or second. The index *lib* is then given by the country mean of the variable build as described above. As noted by Wildavsky for fatalistic cultures: «…[] There is no point in their having preferences on public policy because what they prefer would not, in any event, matter» (1987, p.7). Hence, we expect that a country characterized by higher fatalistic tendencies will pay little attention to freedom of speech and expression.

One possible problem of using this variable as an instrument is that it may capture also a general attitude toward economic freedom and then may thereby affect entrepreneurship.

However, since we are controlling both for the level of economic freedom as captured by the indicator *labflex, busflex, legal* and for the attitude toward economic freedom, we believe that this criticism does not apply here.[6]

In table 2, the pairwise correlation between the variables listed in table 1 are shown, while in Figure 2 the three indices of entrepreneurship (*tea, teanecentr and teaopp*) are plotted against the index of fatalism (*fat90*).

We are aware that the ideal way to test the theoretical model presented in section 2 is to use micro level data. However, the main problem is that GEM Survey does not contain a question

[5] For a detailed definition of the various types of natural disasters included in *disast* see http://www.emdat.be/classification. As suggested by an anonymous referee, the share of total population killed by disaster would be more suited to the instrument's purpose. The choice of using the number of killed for event is mainly driven by the difficulty, with the available data, to precisely individuate the area hit by the event and therefore the associated population at risk.

[6] As noted by an anonymous referee, many dictatorship are characterized by very flexible markets. However, also the opposite is true, that is, there are also democratic countries characterized by very rigid regulations. Therefore this seems to suggest that these concerns about the relation between freedom of speech and economic freedom may be of scarce relevance.

to measure fatalism, while even if World Value Survey contains information on fatalistic tendencies, is not designed to analyze entrepreneurship and hence it does not allow for instance to clearly distinguish between self-employed (e.g. professional workers, craftsmen, etc.) from entrepreneurs in strictu sensu or between nascent and establisher entrepreneurs. Furthermore WVS does not investigate on the individual motivations for becoming an entrepreneur, therefore not allowing to distinguish opportunity driven entrepreneurs and necessity driven entrepreneurs.

The analysis proposed here is than limited to assess whether country country-heterogeneity in the level of fatalism may help in explaining cross country heterogeneity in the level of TEA, giving particular attention to opportunity driven TEA which is interpreted as the indicator of high ability entrepreneurship in the context of the theoretical model presented in the first section.

Figure 2: Index of Entrepreneurship against fat90

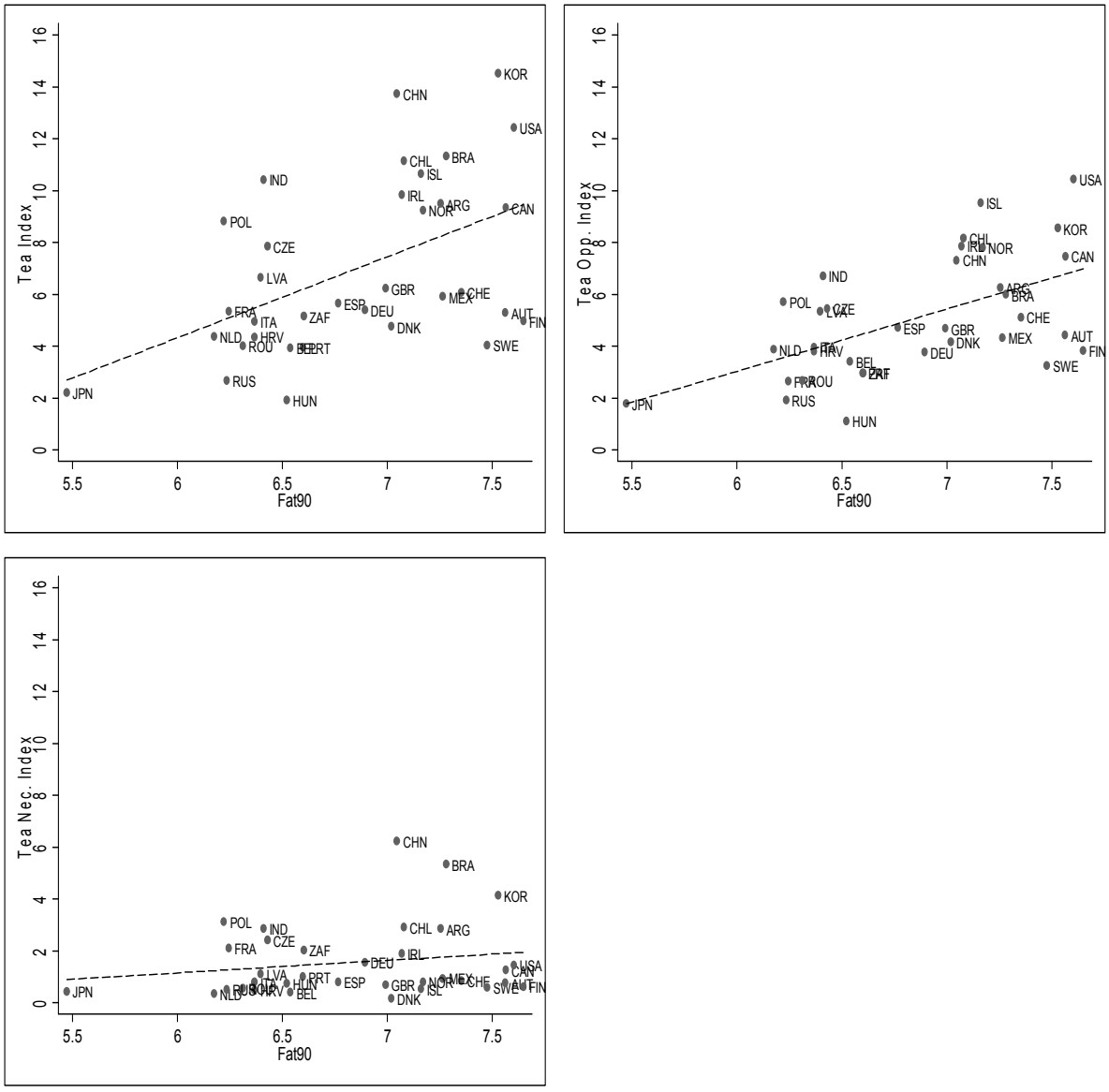


Table 1: Variable definitions and sources

gdpc	GDP pro capita at a constant price and in PPP (base year 2003). For each country we take the year correspondent to GEM year. Our elaboration on IMF data: W.E.O. Database. http://www.imf.org/external/pubs/ft/weo/2010/02/weodata/index.aspx
growth	Annual growth rate of the GDP pro capita at a constant price and in PPP (base year 2003). For each country we take the year correspondent to GEM year.
tertiary	Percentage of Tertiary Schooling Attained in Population. Year: 2005. Source: Barro and Lee (2013).
legal	This indicator varies from 0 (worst result) to 10 (best result) is based on two sub-component ("law" and "order") equals half of the total . The "law" sub-component assesses the strength and impartiality of the legal system, and the "order" sub-component assesses popular observance of the law. Source: Gwartney and Lawson (2009)
Busflex	This index is designed to identify the extent to which regulations and bureaucratic procedures restrain entry and reduce competition. It ranges from 0-10 where 10 indicates the maximum level of flexibility in the regulation of business activities. This index considers the following types of regulations: price controls, oppressiveness of administrative requirements, stringency of bureaucracy costs, costs (in terms of money and time) of starting a business, costs (in terms of money and time) of obtaining a license, the diffusion of corruption, costs of tax compliance. Source: Gwartney and Lawson (2009)
Labflex	This index measures the flexibility of the labour market and ranges from 0-10, where 10 is the highest level of flexibility. This index takes account of the following labour market regulations: minimum wages, dismissal regulations, centralized wage setting, extension of union contracts to non-participating parties, and conscription. Source: Gwartney and Lawson (2009)
Fat90	Our measures of fatalism are based on the following WVS question: «Some people feel they have complete free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale (1 means "none at all" and 10 means "a great deal") to indicate how much freedom of choice and control you feel you have over the way your life turns out». Higher values for this response will correspond to lower fatalistic tendencies. In the following, the variable obtained from this question is called *fatalism*. The mean level of the variable *fatalism* at the country level for the 1990-1994 WVS. Source: 1990-1994 WVS
Ecfre	The country mean level indicator of the attitude toward economic freedom obtained from the 2005 WVS question: «How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. Sentences: Private ownership of business should be increased (1) vs Government ownership of business should be increased (10).» Due to the lack of data for 2005, we used data from the 2000 WVS for the following countries: AUT, BEL, CZE, DNK, HUN, ISL, IRL, LVA, PRT. Source: WVS 2005, WVS 2000
high_tec	Percentage of high tech exports on total manufactured exports. High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. Source: World Bank http://data.worldbank.org/
unemp	% of labour force without work but available for and seeking employment. Source: World Bank
credit	This indicator measures how much government borroiwing crowds out private borrowing. It is calculated as the government fiscal deficit as a share of gross saving. Since the deficit is expressed as a negative value, higher numerical values result in higher ratings. The formula used to derive this indicator was (-Vmax - Vi) / (Vmax + Vmin) multiplied by 10. Vi is the deficit to gross investment ratio, and the values for Vmax and Vmin are set at 0 and -100.0% respectively. The formula allocates higher ratings as the deficit gets smaller (i.e., closer to zero) relative to gross saving.. Source: Gwartney and Lawson (2009)
popgr	Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Source: World Bank

Table 2: Correlation Matrix

	fat90	tea	teaopp	teanec	busflex	labflex	legal	credit	unemp	high_tec	gdppc	growth	lib	disast	tert	ecfree
tea	0.50															
	(0.00)															
teaopp	0.56	0.92														
	0.00	0.00														
teanec	0.18	0.74	0.43													
	(0.31)	(0.00)	(0.00)													
busflex	0.27	-0.23	0.05	-0.63												
	(0.12)	(0.20)	(0.76)	(0.00)												
labflex	-0.17	-0.06	0.15	-0.38	0.31											
	(0.33)	(0.75)	(0.39)	(0.03)	(0.08)											
legal	0.23	-0.02	0.21	-0.41	0.71	0.27										
	(0.19)	(0.89)	(0.24)	(0.01)	(0.00)	(0.12)										
credit	0.21	0.26	0.26	0.14	0.10	-0.20	0.11									
	(0.23)	(0.14)	(0.13)	(0.42)	(0.57)	(0.25)	(0.52)									
unemp	-0.19	-0.13	-0.24	0.17	-0.14	-0.25	-0.47	0.02								
	(0.28)	(0.46)	(0.16)	(0.35)	(0.42)	(0.16)	(0.00)	(0.91)								
high_tec	0.34	0.26	0.31	0.04	0.37	0.26	0.45	0.01	-0.49							
	(0.05)	(0.13)	(0.08)	(0.82)	(0.03)	(0.13)	(0.01)	(0.96)	(0.00)							
gdppc	0.27	-0.14	0.15	-0.56	0.79	0.32	0.76	0.02	-0.34	0.47						
	(0.12)	(0.44)	(0.40)	(0.00)	(0.00)	(0.06)	(0.00)	(0.93)	(0.05)	(0.00)						
growth	-0.13	0.34	0.20	0.41	-0.54	-0.09	-0.28	0.23	0.02	-0.16	-0.64					
	(0.47)	(0.05)	(0.25)	(0.01)	(0.00)	(0.63)	(0.11)	(0.19)	(0.91)	(0.37)	(0.00)					
lib	0.32	-0.10	0.13	-0.39	0.54	0.29	0.42	0.08	-0.14	0.14	0.69	-0.65				
	(0.06)	(0.59)	(0.47)	(0.02)	(0.00)	(0.01)	(0.01)	(0.66)	(0.42)	(0.42)	(0.00)	(0.00)				
disast	-0.38	-0.09	-0.21	0.14	-0.53	-0.16	-0.28	-0.03	-0.06	-0.24	-0.33	0.19	-0.36			
	(0.03)	(0.63)	(0.24)	(0.43)	(0.00)	(0.372)	(0.11)	(0.87)	(0.74)	(0.18)	(0.06)	(0.27)	(0.04)			
tertiary	0.18	0.07	0.24	-0.28	0.34	0.31	0.42	0.17	-0.30	0.33	0.50	-0.09	0.21	0.02		
	(0.30)	(0.68)	(0.17)	(0.11)	(0.05)	(0.07)	(0.01)	(0.35)	(0.08)	(0.06)	(0.00)	(0.62)	(0.24)	(0.92)		
ecfree	-0.17	0.29	-0.02	0.54	-0.69	-0.37	-0.61	0.17	0.35	-0.43	-0.78	-0.42	-0.49	0.38	-0.30	
	(0.33)	(0.24)	(0.92)	(0.00)	(0.00)	(0.03)	(0.00)	(0.35)	(0.04)	(0.01)	(0.00)	(0.00)	(0.00)	(0.03)	(0.09)	
popgr	-0.03	0.09	0.06	0.14	-0.27	-0.13	-0.49	-0.01	0.32	-0.28	-0.28	0.21	-0.03	0.22	-0.04	0.51
	(0.87)	(0.62)	(0.73)	(0.44)	(0.11)	(0.48)	(0.00)	(0.97)	(0.07)	(0.11)	(0.11)	(0.24)	(0.88)	(0.21)	(0.80)	(0.00)

P values in parenthesis

3.1 Empirical Results

Before discussing the results of the estimation of equation (1), we will give some comments on Table 2.

The variable *fat90* is positively and significantly correlated with *tea*, *teaop,* and with the high tech exports, while for *teanec* the positive correlation is not statistically different from 0. We argue that since an increase in *fat90* corresponds to lower levels of fatalism then these relations between the indicator of fatalism and the indicator of entrepreneurship go in the expected direction. Regarding the correlation coefficient between *fat90* and the candidates as instrumental variables, *lib* and *disast* are 0.32 (significant at 10%) and -0.38 (significant at 5%) respectively, and go in the expected direction.

The flexibility of business regulation is negatively correlated with the rate of necessity driven entrepreneurs. This apparently counterintuitive relation can be explained using an argument originally proposed by Parker (2007), that is, less regulation implies also that *low quality* or *illegal* entrepreneurs find it easier to enter into the market. This is particularly true when the sample includes transitional and developing economies where in general law enforcement is weak. The general lowering of the products' quality can make consumers less willing to demand goods and services from entrepreneurs and hence decreases the aggregate demand.

Furthermore, a low entrepreneurial quality may also produce negative consequences for the credit market. Specifically, if the probability of repaying a loan depends on the quality of the entrepreneur which is not perfectly observable by the lenders, this will be reflected in higher interest rates also for good entrepreneurs (see Ghatak et al., 2007).
Since necessity entrepreneurs are presumably more subject to the unfair competition of low quality entrepreneurs, this can explain the observed negative relation between the flexibility of regulation and necessity driven entrepreneurship (see also Van Stel et al. 2007 on this point).
All the indicators of entrepreneurship are positively with economic growth however for *teaopp* the correlation is not significant).
For what regards the relationship the unemployment rate and entrepreneurship it can noted that the conditions in the labor market have been identified as a determinant of employment status choice however the nature of the relationship is still not clear and is still under debate.
On one hand, there is who believes that high unemployment encourages self-employment (Evans and Leighton, 1990; Blanchflower, 2000) by providing an income producing activity for otherwise displaced workers, the so called "refugee effect" of entrepreneurship. On the other hand, Stuetzer et al. (2014) argue that a low and shrinking unemployment rate, indicates a favourable economic context that can stimulate business start-up intentions and start-up activity. The negative/positive sign of the simple pairwise correlation (however not statistically significant) between *teaopp*/*teanec* and unemployment rate seems to support both the refugee effect hypothesis for necessity entrepreneurship and Stuetzer et al.' argument for opportunity entrepreneurship. We will come back on this point later in the discussion.
The other correlations are all very reasonable. For example, education is positively correlated with the level of gdp per capita, with the quality of the legal system and with the flexibility of regulation, while it is negatively correlated (the result is however not statistically significant) with the rate of necessity entrepreneurship giving further support to the suitability of this indicator in capturing the *"refugee effect"* of entrepreneurship for low educated people (see Poscke, 2008). *Ecfree* is negative ly related to labour and business flexibility and with *lib*.
The results of the estimation of equation (1) are reported in Table 3.[7] Specifically, in column (1) the tea index is regressed against *fat90* and all other controls described in Table 1, in column (3) *teanec* is used instead of *tea*, while column (5) *teaopp* is the dependent variable. To gain degree of freedom (and then more precise estimates), in column 2, 4, 6 we selected the variables to include in the model by the means of a backward stepwise procedure based on the AIC criterion. In column 7 we report the IV estimation where *teaopp* is the dependent variable and fatalism is instrumented by *disast* and *lib* (the included instruments are all the variables inserted in the model reported in column 5).[8]
Fat90 is positively and significantly related with all three indicators of entrepreneurship (however for *teanec* fatalism becomes significant only after the selection procedure). The model selected in column 2 suggests that a unit increase in the variable *fat90* implies an increase of about 2.7 percentage point in the tea index.
A unit increase in *fat90* leads to an increase of about 2.1 percentage point in the Tea Opp (this result does not change a lot between the full and the parsimonious model) while the same unit increase leads to an increase of about 0.8 in the rate of necessity driven entrepreneurs (column 4).
Given that the cross country average of the Tea, Tea Opp. Index, Tea Nec are about 7%, 5% and 1.6% , respectively, these are not a negligible effect.

[7] Given that the sample is rather small, the size and significance of the results should be interpreted with caution.
[8] In Table 6 in appendix I, we report also the first stage of the IV proposed in column 7.

Table 3: OLS Cross Country evidence on the role of fatalism

	(1) tea	(2) tea	(3) teanec	(4) teanec	(5) teaopp	(6) teaopp	(7) teaopp
gdppc	-0.001*	-0.001***	-0.000*	-0.000*	-0.000*	-0.000***	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
gdppcsquare	0.000**	0.000***	0.000	0.000	0.000**	0.000***	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
growth	-0.101		-0.133		0.011		0.036
	(0.302)		(0.107)		(0.209)		(0.167)
fat90	2.835**	2.670***	0.629	0.817**	2.075**	2.106***	2.849***
	(1.065)	(0.880)	(0.377)	(0.318)	(0.736)	(0.608)	(1.023)
legal	1.018	0.761*	0.421*	0.262	0.638	0.562*	0.605
	(0.684)	(0.446)	(0.242)	(0.159)	(0.473)	(0.297)	(0.374)
labflex	0.313		-0.069		0.424	0.400	0.540**
	(0.432)		(0.153)		(0.298)	(0.236)	(0.267)
busflex	-1.315*	-0.880	-0.876***	-0.810***	-0.559		-0.660
	(0.747)	(0.574)	(0.264)	(0.223)	(0.516)		(0.421)
credit	0.454		0.182		0.272		0.243
	(0.507)		(0.180)		(0.351)		(0.278)
unemp	0.096		0.097*	0.107**	0.021		0.031
	(0.134)		(0.047)	(0.043)	(0.093)		(0.074)
high_tec	0.090	0.082	0.065***	0.057***	0.020		0.009
	(0.059)	(0.049)	(0.021)	(0.019)	(0.041)		(0.034)
ecfree	-0.624		-0.080		-0.390		-0.300
	(1.122)		(0.397)		(0.775)		(0.618)
tertiary	0.016		-0.005		0.009		0.005
	(0.052)		(0.018)		(0.036)		(0.029)
popgrowth	1.450	1.133	0.279		1.154	0.991*	0.981
	(1.232)	(0.823)	(0.436)		(0.851)	(0.560)	(0.697)
_cons	-10.366	-7.290	0.425	-0.592	-11.225	-12.464**	-17.016*
	(11.585)	(6.467)	(4.098)	(2.410)	(8.005)	(5.022)	(8.922)
N	34	34	34	34	34	34	34
adj. R^2	0.392	0.490	0.594	0.638	0.388	0.494	0.354
AIC	75.08	66.02	4.41	-2.53	49.94	39.71	

Underidentification test (Anderson canon. corr. LM statistic):	14.748	Chi-sq(2) P-val =	0.0006
Sargan statistic (overidentification test of all instruments):	1.04	Chi-sq(1) P-val =	0.3067
Endogeneity test of endogenous regressors:	0.889	Chi-sq(1) P-val =	0.3459
Weak identification test (Cragg-Donald Wald F statistic):	7.27		
Stock-Yogo weak ID test critical values: 10% maximal IV size	19.93		
15% maximal IV size	11.59		
20% maximal IV size	8.75		
25% maximal IV size	7.25		

Standard errors in parentheses ; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We will first give some comments on the estimation reported column 6.
To have a clearer idea of the role of fatalism in opportunity driven entrepreneurship, consider, for instance, that fat90 is equal to 7.6 in USA and 5.5 in Japan and that according to the empirical model selected in column 6, all else equal, USA will be characterized by a Tea Opp index higher of about 4.4 point than that relative to Japan.
Coherently with the theoretical model, the effect of fatalism (both statistically and in terms of magnitude) is stronger for opportunity driven entrepreneurship than for necessity driven entrepreneurship.[9]
With regards to other controls, confirming the findings obtained by Wennekers et al. (2005), we find evidence of a quadratic relationship between opportunity entrepreneurship and per capita gdp. We also confirm the positive relation between opportunity entrepreneurship and population growth. In particular Wennekers et al. argue that «...[a] growing population provides opportunities for new economic activity as new and bigger consumer markets emerge because of the growing population (2005, p. 300). Also the positive relation between the indicator legal and opportunity entrepreneurship is very reasonable. Coherently with Van Stel et al. (2007), we find that the flexibility of labour market is positively correlated with opportunity entrepreneurship (the significance however is only at 10.1%), while the other controls are not selected by the selection procedure.
As observed by Van Stel et al. there are two main explanations for the positive effect of labour market flexibility on opportunity entrepreneurship: «… [o]n the side of employees, the safety of their paid job is less which may make them more likely to decide to start their own business (push effect). On the side of the entrepreneurs, they have more flexibility in running their business which makes business ownership more attractive (pull effect)» (2007, p.183).
The fact that only few control variables survived to our selection procedure, may be interpreted as an evidence compatible with the idea proposed by Baumol according to which: «...[h]olding that entrepreneurs are always with us and always play some substantial role. ... [H]ow the entrepreneurs act at a given time and place depends heavily on the rules of the game –the reward structure of the economy- that happen to prevail. Thus the central hypothesis here is that it is the set of rules and not the supply of entrepreneurs or the nature of their objectives that undergoes significant changes from one period to another and helps to dictate the ultimate effect on the economy via the allocation of entrepreneurial resources» (1990 p. 894).
Hence, according to Baumol, the institutional setting and its functioning determines how entrepreneurs channel their efforts but entrepreneurs are always present in a society. The scant significance of institutional controls however is not a new empirical findings. For instance, Bosma and Schutjens (2011) in their analysis of 127 regions across 17 European countries, found that start-up barriers, employment protection and legal origin (with the exception of Scandinavian countries) are not associated with entrepreneurial opportunities perception while Bjørnskov and Foss (2008) find a not significant effect of both legal quality and the extent of the regulatory framework on TEA opp.
For what regards Necessity entrepreneurship, the negative relation between the flexibility of business regulation and the indicator of *"out of necessity"* entrepreneurship found in the correlation matrix is confirmed by OLS regression. The ideal way to empirically test the hypothesis as to whether flexibility can be counterproductive for entrepreneurship if not accompanied by strong law enforcement, is to include an interaction term between the indicator of legality and the indicator capturing the flexibility of regulation. However, in our

[9] The standardized beta coefficients associated to the model reported in column 4 and in column 6 indicate that a standard deviation increase in fatalism leads to 49% of a standard deviation increase in teaopp and a 30% in teanec.

case this operation is impossible because, given the small size of the sample, it will cause a serious problem of collinearity.

The positive effect of the unemployment rate on necessity entrepreneurship gives support to the above mentioned "*refugee effect*" hypothesis while the negative relation between the capita gdp and *teanec* captures the fact that necessity entrepreneurship is more diffused in low income countries.

The positive relation between high-tech export and *teanec* is apparently surprising however it may be a consequence of the so called "statistical illusion effect" of international trade statistics.[10] That is, it is well know that especially for low income countries high-tech exports include a significant part of labour-intensive segments of high-tech electronics in the context of international production sharing. In particular, Shrolec (2007) shows that developing countries typically attract manufacturing-based fragments of global production networks in electronics, while technology-intensive activities remain concentrated elsewhere. Hence, this low skill concentration of the high-tech industry outbreak in developing countries may explain the observed positive relation between necessity driven entrepreneurship and the indicator *high-tec*.

For what regards the result relative to Tea, recalling that this dependent variable includes both opportunity and necessity entrepreneurship, it seems reasonable that the selected final model includes only the most significant variables of the model (4) and (6).

In the appendix I (table 5) we present some specification tests for the model reported in column (2), (4) and (6) of Table 3. Specifically, we use the Ramsey Regression Equation Specification Error Test (RESET) test which is a test for the correct specification of the functional form of the conditional mean of the dependent variable. Specifically, this test consists of regressing y on x and on $\hat{y}^2$, $\hat{y}^3$, $\hat{y}^4$ and jointly testing if the coefficients of $\hat{y}^2$, $\hat{y}^3$, $\hat{y}^4$ are zero. The reset test suggests that the functional form is correctly specified for tea and for teaopp but not for teanec. This is probably due to the above mentioned interaction effect between legality and regulation. However, this interaction is not testable using cross country data.

The residuals of each model were subjected to a test for normality. In particular, the output of the Shapiro-Wilk test for normality is reported. In all three cases, the null hypothesis of the normal distribution of the residuals cannot be rejected. We report also a Breusch-Pagan Lagrange multiplier test for heteroskedasticity. The result suggests that in all the models the assumption of homoskedasticity is not violated.

Finally, when *fat90* is instrumented *disast* and *lib* (column 7 of Table 3), it turns out to be still significant at 1%.

Note that the coefficient of *fat90* is larger with respect to the coefficient obtained using the ordinary least squares approach, suggesting that reverse causality is not a major problem.

With regards to the relevance of the instrument, the under-identification test shows that the model is well identified and the instruments is relevant. However, it also seems that it can be claimed that there is weak identification.[11]

The partial Rsquare between fat90 and the two excluded instruments, once the other regressors are controlled for, is 0.32, the F statistic for the joint significance of the excluded instruments in the first stage regression is 4.56 (significant at 5%). We report also a weak identification test based on the critical values tabulated by Stock and Yogo (2005).

[10] The statistical illusion consists in the fact the high- tech exports may be wrongly interpreted as an indicator of technological intensity in production. However, this indicator includes especially for low income countries a low skill fragment of the high tech sector.

[11] In table 6 (Appendix I) We rerun the IV using only *lib* as instrument. The problem of weak identification become less severe. This is not surprising since as noted by Angrist and Pischke (2009) the that just-identified 2SLS is approximately unbiased.

In the presence of weak instruments the loss of the precision of IV estimates will be severe, so standard errors can become many times larger (and t-statistic smaller) with respect to inconsistent OLS. Another consequence of having weak instruments is that "endogeneity bias" will not be removed using IV, and possibly made worse.

We report a test for endogeneity[12] implemented using the option endog of the Stata command ivreg2 (see Baum et al.,2007). The null hypothesis is that there are no endogenous variables or that endogeneity does not affect the OLS estimator. The null hypothesis is not rejected. Hence this result suggests that *fat90* can be treated as exogenous and OLS is potentially preferable to IV. However, note that this test is not valid if the instruments are not valid. The results of the Sargan-Hansen test of over-identifying restrictions show that the joint null hypothesis (the instruments are uncorrelated with the error term and that the excluded instruments are correctly excluded from the estimated equation) cannot be rejected.

Finally, given the validity of the instruments and the result of the endogeneity test, OLS is preferable to IV estimation.

In Table 7 in appendix I, we present a further robustness check. In particular, the analyses for *teanec* and *teaopp* are replicated but with the inclusion of the share of workforce employed in the industrial sector (the variable is named *industries*). In particular in column 1 *teanec* is regressed against all control variables but without fatalism, in column 2 *fat90* is included in the analysis, in column 3 the output of the backward procedure of variable selection is reported. The same analyses are reported for *teaopp* in column 4,5,6. The start point for the selection procedure is the full model reported in column 2 and 5 for *teanec* and *teaopp*, respectively.

The inclusion of fat90 leads both in model 2 and model 5 to an increase in the adjusted R square while leaving unchanged the significance of other variables (the main differences are those relative to the statistical significance of per capita gdp and its square).

The variable *industries* is not statistically significant both for necessity driven entrepreneurship and opportunity driven entrepreneurship. Furthermore, *industries* is excluded from the final models (columns 3 and 6) by the backward procedure of variable selection which leads to the same results reported in table 3.

4. Conclusion

In this paper, we have sketched a simple theoretical model explaining how fatalistic beliefs may influence an individual's choice of becoming an entrepreneur. The key assumption of the model is that fatalism affects the expected effectiveness of the efforts that will be exerted in running an entrepreneurial project. The main conclusion is that fatalism has a "perverse" effect on entrepreneurial selection. In particular, we maintain that fatalism has a negative impact on the ratio of high ability entrepreneurs, while it may not prevent low quality entrepreneurship. In other words, fatalism can be viewed as a cheating referee that, in a qualification round for the Olympic high jump competition, elevates the minimum height required to qualify only for high ability athletes while leaving more or less unchanged the bar for mediocre ones.

This prediction has received empirical support from an IV approach where fatalism is instrumented by the number of victims of natural disasters and by the attitude toward freedom

[12] The endogeneity test implemented by ivreg2 (STATA), is defined as the difference of two Sargan-Hansen statistics: one for the equation with the smaller set of instruments, where the suspect regressor(s) are treated as endogenous, and one for the equation with the larger set of instruments, where the suspect regressors are treated as exogenous. The estimated covariance matrix used guarantees a non-negative test statistic which under the null hypothesis is distributed according to a chi-squared with degrees of freedom equal to the number of regressors tested. See Baum et al. (2007).

of speech. The main limitation of the empirical analysis proposed here is that it is conducted at country level and this does not allow to consider for instance a possible interaction effect between fatalism and human capital accumulation. Another obvious limitation is the small sample size.

A possible development of this work is to integrate at micro level, the two main data sources used in this paper to overcome this limitation and more accurately test the prediction of the proposed theoretical model.

A further possible extension both on the theoretical and empirical ground is to investigate which role personality traits, in addition with cultural traits, play in determining the expected return of different occupational choices.

Appendix I

Table 4: Main variables of the empirical analysis

Country	tea	teaopp	teanec	fat90	labflex	busflex	unemp	gdppc
Argentina	9.49	6.26	2.85	7.25	5.1	5.5	10.6	10275.65
Austria	5.28	4.42	0.75	7.56	5.9	7.2	5.2	32111.68
Belgium	3.93	3.4	0.39	6.54	6.6	7.6	8.4	30339.26
Brazil	11.32	5.99	5.33	7.28	3.8	4.2	9.3	8157.81
Canada	9.33	7.46	1.25	7.56	8.2	7.8	6.8	33192.05
Chile	11.15	8.16	2.9	7.08	6	7.1	8	11637.29
China	13.72	7.3	6.22	7.05	5	3.9	4.2	3895.96
Czech Republic	7.85	5.45	2.4	6.43	7.7	4.9	7.1	20406.38
Denmark	4.75	4.16	0.15	7.02	7.4	8.4	4.8	31595.57
Finland	4.97	3.83	0.61	7.65	4.8	8.7	8.4	29115.08
France	5.35	2.64	2.11	6.24	5.5	7.3	8.9	28874.34
Germany	5.39	3.76	1.55	6.89	3.9	7.4	11.1	28748.41
Hungary	1.9	1.11	0.74	6.52	6.8	6.5	7.2	15841.98
Iceland	10.66	9.53	0.52	7.16	8	8.9	2.6	33339.76
India	10.42	6.71	2.86	6.41	7.2	4.9	4.4	2198.15
Ireland	9.83	7.86	1.87	7.07	7.5	7.8	4.3	36766.97
Italy	4.94	3.96	0.79	6.37	6.5	6.2	7.7	26685.07
Japan	2.2	1.77	0.43	5.47	8.5	7.4	4.4	28483.63
Latvia	6.65	5.35	1.1	6.4	5.7	6.4	8.9	12468.67
Mexico	5.91	4.32	0.92	7.26	5.7	5.7	3.5	11736.84
Netherlands	4.36	3.89	0.34	6.17	6.7	7	4.7	32886.08
Norway	9.25	7.8	0.8	7.17	4.9	7.7	4.6	45007.35
Poland	8.83	5.71	3.11	6.22	6.4	5.8	19	12376.22
Portugal	3.95	2.96	0.99	6.6	5.3	6.1	6.7	19566.59
Romania	4.02	2.68	0.56	6.31	6.7	6.5	6.4	10214.69
Russia	2.67	1.92	0.51	6.23	6.2	4.4	6.1	13212.25
Slovenia	4.36	3.81	0.49	6.37	5.6	6.5	6.5	22076.03
South Africa	5.15	2.95	2.02	6.6	6.1	6.4	26.7	8077.38
South Korea	14.52	8.55	4.12	7.53	4.5	6.2	3.7	19245.09
Spain	5.65	4.71	0.8	6.77	5.3	6.6	9.2	26062.29
Sweden	4.04	3.24	0.58	7.48	5.1	8	7.7	31601.87
Switzerland	6.06	5.11	0.84	7.35	7.6	7.8	4.4	34026.68
United Kingdom	6.22	4.67	0.7	6.99	8.5	7.6	4.6	30212.68
United States	12.44	10.45	1.45	7.6	9.1	7.3	5.1	40162.76
Total	6.96	5.06	1.56	6.84	6.29	6.7	7.39	22958.78

Table 5: Specification tests

Ramsey RESET test using powers of the fitted values of tea
Ho: model has no omitted variables
F(3, 27) = 1.66
Prob > F = 0.2034

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of tea
chi2(1) = 0.42
Prob > chi2 = 0.5177

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
rstudtea	34	0.98249	0.611	-1.026	0.84750

The analysis of standardized residuals (not reported here) reveals that there are no residuals with an absolute value in excess of 2.5. Hence it is possible to conclude that there are no problematic outliers

Ramsey RESET test using powers of the fitted values of teaopp
Ho: model has no omitted variables
F(3, 26) = 0.41
Prob > F = 0.7469

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of teaopp
chi2(1) = 0.48
Prob > chi2 = 0.4879

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
rstudopp	34	0.97953	0.715	-0.700	0.75807

The analysis of standardized residuals (not reported here) reveals that there are no residuals with an absolute value in excess of 2.5. Hence it is possible to conclude that there are no problematic outliers

Ramsey RESET test using powers of the fitted values of teanec
Ho: model has no omitted variables
F(3, 23) = 4.07
Prob > F = 0.0186

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of teanec
chi2(1) = 1.99
Prob > chi2 = 0.1582

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
rstudnec	34	0.97968	0.710	-0.715	0.76263

The analysis of standardized residuals (not reported here) reveals that there are no residuals with an absolute value in excess of 2.5. Hence it is possible to conclude that there are no problematic outliers

Table 6: Just identified IV estimation

In column 1 we show the first stage of the IV reported in column 7 of table 3, while in column 2 and 3 we report the first stage and second stage of the 2SLS where fat90 is instrumented using only *lib.*

	(1) fatalism90	(2) First Stage	(3) Second Stage
disast	-0.001	-	-
	(0.001)		
lib	0.952*	1.206**	-
	(0.488)	(0.445)	
gdppc	-0.000**	-0.000**	-0.000*
	(0.000)	(0.000)	(0.000)
gdppcsquare	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)
growth2	-0.006	0.025	0.021
	(0.063)	(0.058)	(0.163)
legal2	0.068	0.031	0.625*
	(0.125)	(0.123)	(0.366)
labflex	-0.214**	-0.232***	0.471*
	(0.078)	(0.078)	(0.269)
busflex	0.086	0.180	-0.600
	(0.153)	(0.133)	(0.416)
credit	-0.037	-0.065	0.260
	(0.100)	(0.098)	(0.272)
unemp	-0.012	-0.006	0.025
	(0.024)	(0.024)	(0.073)
high_tec	0.017	0.021*	0.015
	(0.011)	(0.010)	(0.034)
ecfree	-0.142	-0.152	-0.353
	(0.198)	(0.201)	(0.607)
tertiary	0.015	0.014	0.007
	(0.010)	(0.010)	(0.028)
popgrowth	0.178	0.099	1.084
	(0.229)	(0.222)	(0.688)
fatalism90	-	7.622***	2.388**
		(1.511)	(1.093)
_cons	8.080***		-13.569
	(1.541)		(9.327)
N	34		34
adj. R^2	0.248		0.382
Underidentification test (Anderson canon. corr. LM statistic):12.87 Chi-sq(1) P-val =0.0003			
Weak identification test (Cragg-Donald Wald F statistic): 12.193			
Stock-Yogo weak ID test critical values: 10% maximal IV size 16.38			
15% maximal IV size 8.96			
20% maximal IV size 6.66			
25% maximal IV size 5.53			
Endogeneity test of endogenous regressors:0.113 Chi-sq(1) P-val = 0.7365			

Standard errors in parentheses ;* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Robustness check

The variable industries is given by the percentage of employment in industry on total employment . Industry corresponds to divisions 2-5 (ISIC revision 2) or tabulation categories C-F (ISIC revision 3) and includes mining and quarrying (including oil production), manufacturing, construction, and public utilities (electricity, gas, and water). Source: World Development Indicators, World Bank.

	(1)	(2)	(3)	(4)	(5)	(6)
	teanec	teanec	teanec	teaopp	teaopp	teaopp
gdppc	-0.000	-0.000	-0.000*	-0.001*	-0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
gdppcsquare	0.000	0.000	0.000	0.000**	0.000*	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
growth	-0.123	-0.113		-0.023	0.013	
	(0.114)	(0.111)		(0.251)	(0.220)	
labflex	-0.194	-0.100		0.080	0.422	0.400
	(0.150)	(0.159)		(0.332)	(0.316)	(0.236)
busflex	-0.899***	-0.944***	-0.810***	-0.400	-0.565	
	(0.288)	(0.281)	(0.223)	(0.635)	(0.558)	
credit	0.196	0.177		0.341	0.272	
	(0.186)	(0.181)		(0.411)	(0.360)	
legal	0.467*	0.438*	0.262	0.748	0.639	0.562*
	(0.252)	(0.245)	(0.159)	(0.556)	(0.487)	(0.297)
unemp	0.101*	0.105**	0.107**	0.007	0.021	
	(0.051)	(0.049)	(0.043)	(0.112)	(0.098)	
ecfree	-0.141	-0.078		-0.618	-0.390	
	(0.410)	(0.401)		(0.905)	(0.795)	
tertiary	-0.008	-0.009		0.015	0.009	
	(0.020)	(0.020)		(0.044)	(0.039)	
popgrowth	0.424	0.295		1.623	1.155	0.991*
	(0.444)	(0.441)		(0.981)	(0.874)	(0.560)
industries	-0.031	-0.022		-0.032	-0.002	
	(0.029)	(0.029)		(0.064)	(0.057)	
high_tec	0.068***	0.062**	0.057***	0.043	0.019	
	(0.022)	(0.022)	(0.019)	(0.048)	(0.043)	
fat90		0.570	0.817**		2.070**	2.106***
		(0.388)	(0.318)		(0.770)	(0.608)
_cons	5.968*	1.472	-0.592	5.195	-11.135	-12.464**
	(3.192)	(4.360)	(2.410)	(7.049)	(8.648)	(5.022)
N	34	34	34	34	34	34
adj. R^2	0.562	0.586	0.638	0.155	0.356	0.494
AIC		5.38	-2.53		51.94	39.71

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

APPENDIX II

The World Value Survey (WVS) is a worldwide investigation of basic values and the beliefs of individuals in a large cross-section of countries (more than 80) conducted by the World Value Survey Association. The survey contains information about demographics (sex, age, education, etc.), self-reported economic conditions, political preferences, attitudes and religion. A drawback of the WVS is that, not being designed for the study of occupational choice, it does not allow us to obtain a clear identification of entrepreneurs.

The Global Entrepreneurship Monitor (GEM) research program is an annual assessment of the national level of entrepreneurial activity conducted by the GEM consortium. The aim of the research program is to obtain internationally comparative high quality research data on entrepreneurial activity at the national level. Representative samples of at least 2,000 individuals in the adult population are annually drawn for every country.

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