Business Startups: Cultural-Economic Controversy

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The purpose of this paper is to examine whether national cultural differences and/or economic, macroeconomic indicators are dominant in explaining business startups in selected EU countries. Among Hofstede's national cultural differences, we have used the individualism-collectiveness index measuring preference behavior that promotes one's self interest, while the power distance index measures tolerance of citizens in terms of social inequality in terms of superiors or subordinates; the uncertainty avoidance index reflects tolerance towards uncertainty and ambiguity among citizens, while the masculinity index measures whether the society is male centered (Hofstede 2003). The last variable in the model related to culture is the corruption index (Transparency International 2008), which reflects how sensitive the nation is towards corruption. Among the macroeconomic indicators we have looked at whether the firm birth rate in an economy is strongly influenced by the given average wage rate, overall productivity level among nations, index for profitability and real per capita GDP growth. Findings show that with some exclusion, cultural factors are as important as economic indicators in explaining national business startups. Towards this end we have used factor and principle component analysis towards explaining the strength of the relationship among the variables.

Key Words: business startups, Hoftstede's model
JEL *Classification:* M31, M13

Introduction

There is a rich literature on entrepreneurship's contribution to economic development. The majority of the literature focuses on business creation leading to job creation, and on output creation which may eventually increase productivity through technological change (Acs and Amaros 2008, 122). In the same line of work, the environmental factors shape the interdependencies between economic indicators, and institutions which

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shape up the cultural domain make significant contributions to business startups. Critical economic determinants and the role of economic transactions have strong implications for demand and supply dynamics in an economy (North 1990). This in no way neglects the institutional setting, which strongly influences entrepreneurial activity and its technological reflections (Jorgenson 2001). There are also studies which look at knowledge factors which strongly influence success or failure of the pre-startup phase within a business (Gelderen, Thurik and Bosma 2006). A technological change causes a structural change in the production and decision making process towards a firm's struggle to adapt itself to a competitive environment (Chesbrough 1999) for survival. Following a similar route, Geert Hofstede looks at national cultural differences in mapping the cultural structure of a country. Hofstede's cultural values basically aim to map out a general sociological viewpoint of factors that actually aim to reflect the difference of nations reflected as cultural factors. These factors can be defined by five distinct factors, where some attention is needed for the definition. The power distance index focuses on the power and inequality level of a culture; to elaborate on the matter, this measure looks at the order of hierarchy and equality within a certain culture. In business terms, a view on subordinate and ordinate and the level of distance in formality versus informality can be seen as a good assumption. Individualism looks at how much the culture of nations is geared towards collective action or decision, or quite the opposite of individualistic decision making. Masculinity looks at the male centeredness, or the opposite way around focus of a society within male- versus female-centered values. The uncertainty avoidance index looks at how the culture of a nation is open or closed to the discussion of certain topics, and hence to uncertainty avoidance; in business format this measure tries to approach how a business discusses certain topics at hand in terms of being covert in signifying intent versus being open and direct on the matter. There are several critics who strongly criticize the assumptions behind the cultural factors that Geert Hofstede uses (Gould 1981). More recent critics look at the implications of the criteria factors and the explanatory power of these factors for national comparisons (McSweeney 2002). Although Geert Hofstede's cultural difference index has been discussed both positively and criticially in many studies, its explanatory approach has been used in many academic researches, course books (from international marketing to international business, etc.) and by business world practitioners; it should be considered as a suitable tool to under-

stand the differences between nations and be able to define similarities or groupings based on its framework. Looking at research that reflects differences between nations on cultural levels, some being explanable to an extent in various research studies, has encouraged also incorporating other difference reflecting indexes. One of the issues of greatest concern, both to nations and to business conducted within and in-between, can be seen as corruption. Many institutions including the United Nations have formed conventions, taskforces or policies to overcome this issue. A fairly good measure that reflects differences or similarities between nations is produced annually by Transparency International (2008). From a 10-point scale the index views 178 countries from being highly corruption clean (10) to highly corrupt (0). As well as looking at the defining power of cultural and structural values of nations, economic markers are also included into the research. Determinants like birth (birth rate), wages, productivity (productivity level of the nation), Gross Operating Ratio (in abbreviation GOR; defined as operating expenses divided by operating revenues) and growth (gross domestic product growth rate) are included into the research in order to understand the dominant explaining factors in terms of explaining business startups in selected EU countries.

The Model

To test our hypothesis on whether national cultural factors are as important as economic factors among selected EU member countries towards startups, we have adopted factor analysis (principal component analysis) to test the statistical significance of the relationship between nations. Factor analysis basically allows the study at hand to define relation between multiple variables by narrowing down these variables into 'factors' that are differently formed from each other (Kleimbaum, Lawrence and Keith 1988). Through principal component analysis of maximum variance between variables an attempt is made to define the factors (primary, secondary, tertiary, etc.). For the study at hand, in terms of business startups, the nations involved are viewed through two dimensions, which are also modeled. It is assumed that in model one, cultural factors and the business effects of corruption sensitivity perform a role in business startups. In the second model, it is assumed that economic factors play a role in business startups. Looking at their level of importance will allow us to better understand their importance from a multidisciplinary (but also highly related) point of view. The countries used in this research are: Bulgaria, Czech Republic, Estonia, Spain, Italy, Luxembourg, Hungary, the

Netherlands, Portugal, Romania, Slovakia, Finland, Sweden, the United Kingdom, and the EU15 average has been taken for the analysis (Eurostat 2007, 24–26). Per capita GDP growth has been taken in terms of purchasing power for the selected European countries (Eurostat 2008). All data used in terms of cultural factors and economic factors are originating from variables observed within a 5 year period, which is also covered in the literature, thus encouraging us to do likewise in this research. It is a fact that social trends and cultural knowledge change over time but not at a fast pace, therefore the research conducted is rationalized in order to be suitable and assumed to be applicable.

The first model attempts to measure the significance of Hofstede's model of national cultural factors in terms of the firms birth rate (startups). Below, one can see that factor scores of selected EU countries show that Hofstede's cultural factors are statistically significant in explaining behavioral differences among nations. For the cultural factors, the created correlation matrix requires 0.35 and the above parameter values to be statistically significant. Table 1 shows that the calculated data for most factors, with the exception of the masculinity factor, pass the test. Total variance explained shows that, for the data given for selected EU countries, the model explains 45.286 and 75.017 respectively. This shows the power of significance for the given test. In principle component analysis, one other critical calculation is related to Keiser Meier Olkin (KMO) and Bartlett's test. The critical value for KMO (is within the acceptable value range) and Bartlett's test significance (.000) also confirms that the model structured and tested is statistically significant. But due to Correlation matrix values being less than 0.35 for masculinity, we will omit this factor and re-run our model.

In our first model, running into difficulties related to the significance of the correlation matrix values for masculinity (M), we rerun the model omitting the M variable for the same country groups. Previous research and literature also indicate that the masculinity index of Hofstede's Cultural Values was proven to be found least explanatory (Cateora, Gilly and Graham 2009, 107). Consistent with previous research and literature our analysis also excluded the masculinity variable. Table 4 shows the run of the model with the removal of M. The test passes all statistical requirements. The total variance explained in table 5 shows us that for the data given for selected EU countries, the model explains 61.993 percent of the estimate respectively. This shows the power of significance for the given test. In principle component analysis, one other critical calculation is re-

TABLE 1 Correlation matrix of birth and Hofstede's cultural values model

Correlation	Birth	PDI	I	M	UA	C
Birth	1.000	.499	−.402	.078	.134	−.455
PDI	.499	1.000	−.661	.504	.413	−.747
I	−.402	−.661	1.000	.133	−.678	.523
M	.078	.504	.133	1.000	.084	−.534
UA	.134	.413	−.678	.084	1.000	−.631
Corruption	−.455	−.747	.523	−.534	−.631	1.000

NOTES Abbreviated variables used are birth (birth rate), power distance index (PDI), individualism/collectivism (I), masculinity (M), uncertainty avoidance (UA), sensitivity to corruption (C).

TABLE 2 Total variance explained for birth and Hofstede's cultural values model

C	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
1	3.222	53.695	53.695	3.222	53.695	53.695	2.717	45.286	45.286
2	1.279	21.322	75.017	1.279	21.322	75.017	1.784	29.731	75.017
3	.894	14.899	89.917						
4	.399	6.650	96.566						
5	.146	2.436	99.002						
6	.060	.998	100.000						

NOTES Column headings are as follows: (1) total, (2) % of variance, (3) cumulative %; C – component. Extraction method: principal component analysis.

TABLE 3 KMO and Bartlett's test for birth and Hofstede's cultural values model

Kaiser-Meyer-Olkin measure of sampling adequacy = .534
Bartlett's test of sphericity: approx. chi-square = 48.611, df = 15, sig. = .000

lated to KMO and Bartlett's test. The critical value for KMO (in acceptable value range) and Bartlett's test significance (.000) also confirms that the model structured and tested is significant, as can be seen in table 6.

Given the above calculations, the factor scores of Romania, Bulgaria, Portugal, Slovakia, Czech Republic and Spain have a changing sign with respect to the EU15 Average, and with respect to the higher average of Estonia, Hungary, Italy, Luxembourg, Finland, Netherlands, United Kingdom and Sweden. Factor scores reflecting a ranking, high positive

TABLE 4 Correlation matrix table for startups with Hofstede's cultural values model with masculinity variable removed

Correlation	Birth	PDI	I	UA	C
Birth	1.000	.499	–.402	.134	–.455
PDI	.499	1.000	–.661	.413	–.747
I	–.402	–.661	1.000	–.678	.523
UA	.434	.413	–.678	1.000	–.631
Corruption	–.455	–.747	.523	–.631	1.000

NOTES Abbreviated variables used are birth (birth rate), power distance index (PDI), individualism/collectivism (I), uncertainty avoidance (UA), sensitivity to corruption (C).

TABLE 5 Total variance table for birth and Hofstede's cultural values model with masculinity removed

C	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	(1)	(2)	(3)	(1)	(2)	(3)
1	3.100	61.993	61.993	3.100	61.993	61.993
2	.920	18.391	80.384			
3	.488	9.769	90.153			
4	.398	7.965	98.118			
5	.094	1.882	100.000			

NOTES Column headings are as follows: (1) total, (2) % of variance, (3) cumulative %; C – component. Extraction method: principal component analysis.

TABLE 6 KMO and Bartlett's test for birth and Hofstede's cultural values model with masculinity removed

Kaiser-Meyer-Olkin measure of sampling adequacy = .536
Bartlett's test of sphericity: approx. chi-square = 33.961, df = 10, sig. = .000.

value shows a stronger relationship between cultural factors and business startups with respect to negative scores. In this sense we can say that, based on variables of birth rate, power, distance index, individualism, uncertainty avoidance and corruption, countries do have a single explanatory factor. However, in any case all statistical findings seem to be significant. Consequently, table 7 illustrates the distribution of factor scores for selected EU countries. This simply shows that the first groups of countries are far more influenced by cultural factors with respect to the second half.

Our second model attempts to explain the role of the economic factors

TABLE 7 Factor scores for birth and Hofstede's cultural values with masculinity removed

Country	Factor scores	Country	Factor scores
Romania	2.06816	Hungary	–0.15480
Bulgaria	1.28998	Italy	–0.16357
Portugal	0.92318	Luxembourg	–0.52304
Slovakia	0.84320	Finland	–0.98542
Czech Republic	0.34033	Netherlands	–1.15468
Spain	0.25490	United Kingdom	–1.16669
EU15 Average	–0.00482	Sweden	–1.52414
Estonia	–0.04259		

TABLE 8 Correlation matrix of birth rates and other economic indicators

Correlation	Birth	Wage	Productivity	GOR	Growth
Birth	1.000	–.564	–.511	–.068	.548
Wage	–.564	1.000	.969	.089	–.642
Productivity	–.511	.969	1.000	.130	–.550
GOR	–.068	.089	.130	1.000	–.226
Growth	.548	–.642	–.550	–.226	1.000

NOTES Abbreviated variables used are birth (birth rate), wage (wage), productivity level of the nation (productivity), gross operating ratio (GOR) (defined as operating expenses divided by operating revenues), gross domestic product growth rate (growth).

for business startups. Towards this goal, we have selected the birth rate of startups, average wage rate, average labor productivity, gross operating ratio and gross domestic product growth rate in explaining the statistical significance of these factors for business startups. Accordingly, table 8 shows that, with the exception of the gross operating ratio, the rest of the variables are statistically significant in explaining firm birth rates defined as business startups. As stated earlier, the correlation matrix values for given variables should be above 0.35 to be statistically acceptable.

The total variance explained in table 9 shows that for the data given for selected EU countries, the model explains 58.923 percent of the estimate, respectively. Thus, this forces us to eliminate the GOR variable which is a measure of firm level operating efficiency. One can clearly at this point look at the GOR variable as not being a value-sharing variable in explaining business startups with the economic indicators of birth, wages, productivity and growth. At a micro level this shows us that the operating

TABLE 9 Total variance explained for birth rates and other economic indicators

C	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	(1)	(2)	(3)	(1)	(2)	(3)
1	2.946	58.923	58.923	2.946	58.923	58.923
2	.996	19.911	78.834			
3	.616	12.316	91.150			
4	.421	8.417	99.566			
5	.022	.434	100.000			

NOTES Column headings are as follows: (1) total, (2) % of variance, (3) cumulative %; C – component. Extraction method: principal component analysis.

TABLE 10 KMO and Bartlett's test for birth rates and other economic indicators

Kaiser-Meyer-Olkin Measure of sampling adequacy = .605
Bartlett's test of sphericity: approx. chi-square = 63.640, df = 10, sig. = .000.

TABLE 11 Correlation matrix for birth rates and other economic indicators with GOR removed

Correlation	Birth	Wage	Productivity	Growth
Birth		.006	.013	.008
Wage	.006		.000	.002
Productivity	.013	.000		.007
Growth	.008	.002	.007	

NOTES Abbreviated variables used are birth (birth rate), wage (wage), productivity level of the nation (productivity), gross domestic product growth rate (growth).

efficiency which might affect the profitability of a firm is not statistically significant in explaining business startups. This could be due to the average values which will not influence sector startups.

The critical value for KMO (in acceptable value range) and Bartlett's test significance (.000) also confirms that the model structured and tested is significant, as can be seen in table 10, but due to the low value of relation among correlation/s the significance levels and factor analysis run with the GOR variable has to be discarded.

After the elimination of GOR we have the following calculations. The correlation matrix shows us that there is a good relationship between the variables with their correlation values on table 11. The total variance of the variables within factor analysis basically describes 72.825 percent of

TABLE 12 Total variance explained for birth rates and other economic indicators with GOR removed

C	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	(1)	(2)	(3)	(1)	(2)	(3)
1	2.913	72.825	72.825	2.913	72.825	72.825
2	.619	15.463	88.288			
3	.445	11.116	99.404			
4	.024	.596	100.000			

NOTES Column headings are as follows: (1) total, (2) % of variance, (3) cumulative %; C – component. Extraction method: principal component analysis.

TABLE 13 KMO and Bartlett's test for birth rates and other economic indicators with GOR removed

Kaiser-Meyer-Olkin measure of sampling adequacy = .653
Bartlett's test of sphericity: approx. chi-square = 62.675, df = 6, sig. = .000

the estimate in terms of the European countries considered within the research (table 12).

The critical value for KMO (in good value range) and Bartlett's test significance (.000) also confirms that the model structured and tested is significant, as can be seen from table 13.

Considering the above calculations, the factor scores for Sweden, Italy, Finland, Netherlands, Luxembourg, Cyprus, United Kingdom, EU15 average, Portugal and Slovenia have a changing sign with respect to Spain, Czech Republic, Hungary, Slovakia, Lithuania, Latvia, Bulgaria, Estonia and Romania, where all factor scores are statistically significant for both signs. As stated earlier factor scores reflecting a ranking, high positive value show a stronger relationship between cultural factors and business startups with respect to negative scores. Table 14 shows the distribution of factor scores for selected EU countries in terms of economic indicators. This divides the countries into two groups: those which are more heavily influenced by the economic indicators than those within the second group.

Conclusion

This paper aims to explore whether Hofstede's model on national cultural factors and selected economic indicators shows significant differences influencing startups among selected EU countries. The research findings

TABLE 14 Factor scores of birth after GOR with economic indicators

Country	Factor scores	Country	Factor scores
Sweden	1.43510	Portugal	0.16859
Italy	1.37428	Slovenia	0.11819
Finland	1.27406	Spain	–0.04685
Netherlands	0.95383	Czech	–0.47536
Luxembourg	0.89521	Hungary	–0.60180
Cyprus	0.79525	Slovakia	–0.75243
United Kingdom	0.63036	Lithuania	–1.01568
EU15 Average	0.53673		

indicate that Hofstede's model based on national cultural factors is statistically significant in explaining firm birth rates for the given EU countries. Thus, this assessment emphasizes that cultural factors influence risk taking and other cultural attributes in explaining the entrepreneurial behavior of the selected EU countries.

The estimated model simply shows that, although Hofstede's national cultural factors are statistically significant in explaining the business startups in the addressed countries, Romania, Bulgaria, Portugal, Slovakia, Czech Republic and Spain are far more positively influenced by national cultural factors.

But, for the given EU countries, it is also true that factors such as wage rate, productivity, economic growth are also relevant in explaining firm birth rates. But one should note that, Sweden, Italy, Finland, Netherlands, Luxembourg, Cyprus, United Kingdom, EU15 average, Portugal and Slovenia are far more sensitive to selected economic factors in terms of business startups. Thus, subsequently these indicators can be used as predictive factors for future calculations.

The paper finalizes the analysis comparing two sets of data groups, (cultural and economic) by ranking them in terms of their impact on business startups. The major outcome of this paper is that the relatively new EU countries are far more responsive to cultural factors in explaining business startups, while the prosperous founder EU countries are far more responsive to macroeconomic indicators.

All these findings are restricted to the variables included and to the selected years in terms of statistical testing. For future research one can test whether the statistical findings of the paper will be consistent for different years, in order to test the long run stability of the study.

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