Hofstede's Cultural Indicators, Knowledge Economy and Entrepreneurship in Arab Countries

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Abstract:

This paper looks at the links between cultural variables, knowledge indices and entrepreneurship in Arab countries. It uses the *Hofstede's cultural dimensions and World Bank data to show how these variables are connected. The outputs from Arab countries are also compared to those from the Eastern European economies. The outcomes do clearly indicate the existence of links between cultural dimensions, access to knowledge and enterprise creation with of a gap between Arab and Eastern European Economies. The results show also that entrepreneurship is linked to cultural variables in Arab countries. This implies that further economic and social policies are needed to ensure the promotion of the culture of the knowledge economy and entrepreneurship in Arab countries.*

Keywords: *Hofstede dimensions, Knowledge economy, Entrepreneurship, Arab countries, Eastern Europe*

Introduction

Different reports and publications have been discussing series of initiatives devoted to the promotion of the knowledge economy and enterprise creation in Arab countries. These countries have been recently showing economic performances that are

not consistent with the expansion of knowledge components and with the development of new enterprises as most of them face high levels of unemployment including for skilled labor.

Knowledge economy is assumed to be linked to business development where private initiatives are among the main drivers of an overall macroeconomic and social growth. But, the way of doing business and mainly the starting of a business provide important indications about how enterprises are created (Driouchi and Malki, 2011). It seems that the context of Arab countries show the prevalence of more public businesses and government related transactions. As the growth of the number of enterprises indicates how market economy is promoted, it also indicates how private initiatives lead to enterprise creation.

Different authors have been looking at these imperfections. Some authors emphasize the social and economic imperfections already existing in these economies. Others focus on the existence of rents and other economic distortions that prevent from looking at alternative and innovative means to push further the frontiers of these economies. Others insist on the role of culture and societal organization in pursuing initiatives related to the development of the knowledge economy. The present paper follows the theoretical trend that focuses on the role of cultural dimensions in facilitating access to knowledge and the promotion of enterprises. It uses the data from the World Bank in relation to Hofstede's dimensions of cultural attributes.

The present paper is composed of four sections. The first one looks at the variety of approaches related to the constraints facing Arab countries in relation to access to knowledge and to enterprise creation. The second section focuses on the theoretical

framework used in this paper. The third section consists in empirical investigations that relate knowledge and enterprise creation using the selected datasets including those suggested by Hofstede. The last section discusses the findings and their economic policy implications.

I. Literature Review

Farzanegan (2012) attributes the limited creation of enterprises in Arab countries to the negative economic effects of the excessive rents from natural resources. To the author, resource-rich countries of the Middle East and North Africa have the highest youth unemployment rate in the world while other parts of the world are experiencing an increasing trend in the creation of new enterprises as a potential solution to unemployment. However, the Arab region has the lowest records in new business establishments. Acs, Braunerhjelm, Audretsch and Carlsson (2009) show how knowledge spillovers following research and development spending create opportunities for entrepreneurs. Other authors include those that focus on new firms as an indicator of entrepreneurship and of higher economic growth and productivity (Black and Strahan, 2002; Djankov, La Porta, de Silanes and Shleifer, 2002; Klapper, Laeven, and Rajan, 2006). The development of new enterprises leads also to higher employment (Birch, 1979) and Birch (1987), more technological innovations (Acs & Audretsch, 1990), and higher levels of education (Dias & McDermott, 2006).

Schwalje (2012) argues that Arab countries are pursuing knowledge-based economic development founded on flawed practices as initiated by international firms and domestic organizations including governments. To this author, the adoption of the knowledge economy concept by the Arab region has been motivated by the enhancement of the

welfare of individuals. These characteristics could be valued in the labor market to match high wage employment opportunities expected to be generated by emerging high skill, knowledge-based industries. However, the high wage, high skills jobs associated with knowledge-based industries have not materialized in the region and are increasingly subject to competition from the emergence of low wage, high skill workers in other developing countries. The failure of Arab economies to deliver on the livelihood generating promises of knowledge-based development has caused economic impediments.

This same author and in another paper (Schwalje, 2011) shows the low match between the skills of public sector employees and the work roles they perform particularly at lower administrative levels. The author cites Al-Yahya, Vengroff (2004) who introduces the evidence that formal educational qualifications are frequently not related to current jobs and a high number of public sector employees who believe their current jobs require low levels of their perceived skills and capabilities. Citing deficiencies in soft skills like communication, teamwork, analytical skills, and innovative thinking, a recent survey of the private sector also found that 46% of regional CEOs do not believe that education and training systems in the Arab World prepare students for the workplace.

In addition, the author insists on the impacts of knowledge economy on skills formation and claims that vocational training could have a negative reputation regionally. This may force students to study abroad which perpetuates the brain drain of talented students.

The Arab world suffers also from a weak innovation system in which R&D spending is significantly lower than in the developed world with very little private sector funding (UNESCO, 2010). Regulatory frameworks do not protect intellectual property leading to

low level of patents and stifling private R&D expenditure. There is a weak government policy making in research and innovation

Furthermore, the research function has gradually been marginalized in Arab universities. University research centers are few and do not have access to critical resources (UNESCO, 2003).

Qatar has launched in 2011 a new education and training strategy aiming at the following objectives: quality, equity, inclusiveness, portability, and mobility. The country has even developed new frameworks and processes to effectively manage the new resources allocated to the education and training sectors along with the improvement of the reforms' implementation, policy making, as well as monitoring progress to go in line with the country's development strategies (Schwalje, 2012).

Besides the above authors, others have been mainly looking at the likely effects of cultural variables on economic changes and on the adoption of the components of the knowledge economy. The contributions of Hofstede (1980, 2001 and 2010) have been substantial in characterizing a variety of behaviors throughout series of countries. The likely relationships between the indices provided by the latter author are used to empirically test for the links between these indices and those of the knowledge economy.

Most of the existing economic literature focuses on the general economic conditions for business development and on the overall entrepreneurship in Arab countries. Only few contributions are found to be based on the characterization of doing business at the microeconomic level.

In practice, the creation of new enterprises goes through series of steps that relate to the different stages needed for launching a business. This can be crucial in case of largely fragmented set of authorizing agencies.

According to Doing Business (2010) when governments make registration easy, more entrepreneurs start businesses in the formal sector creating thus, more jobs and generating more revenue for the government. As Doing Business measures the ease of starting a business in an economy by recording all procedures that are officially required in practice by an entrepreneur to start up and formally operate an industrial or commercial business and the time and cost required to complete these procedures. It also records the paid-in minimum capital that companies must deposit before registration (or within 3 months). The ranking on the ease of starting a business is the simple average of the percentile rankings on the 4 component indicators: procedures, time, cost and paid-in minimum capital requirement.

Minniti and Lévesque (2008) discuss the recent developments in the economics of entrepreneurship. They emphasize the historical recognition of entrepreneurship in both microeconomics and macroeconomics. To the authors, the recent trends and the principles guiding entrepreneurship and entrepreneurial behavior provide fertile grounds for further development. Matthews, Dalglish and Tonelli (2012) clearly state that the theories of entrepreneurship are largely biased towards research related to western contexts. They add that the recent calls for research attention to entrepreneurship in developing countries are important signals of research shortages in these areas. Matthews, Dalglish & Tonelli (2012) emphasize that the theories of entrepreneurship are largely based on research in developed economies. The authors note that the existing

literature such as that of Acs and Virgill (2010) has drawn information across developing countries showing the existence of large deficits in business knowledge on entrepreneurship. It also indicates that entrepreneurship in developing countries may provide different characteristics to the common understandings as stated in Bloom, Aprajit Mahajan, McKenzie and Roberts (2010). Lingelbach, De la Viña and Asel (2005) consider also that entrepreneurship in emerging markets is different from the one practiced in more developed countries. The latter authors emphasize that the understanding of these distinctions is critical for market promotion in developing economies. These authors recognize that entrepreneurship in developing countries is the least studied significant economic and social phenomenon in the world today.

Among the contributions to locally based research, the work of Dalglish (2009) can be cited as a model. While focused on Mozambique, more applications could be expanded to cover other African countries. Dalglish (2007) has warned also from considering micro-enterprises as tools only for poverty alleviation in developing countries, without focusing on these entities as means for potential business development. The author insists also on the formalization of micro-enterprises and their move from a situation of survival to a more formal engine of business development as key processes for enterprise creation and development.

However, a new type of research has been pursued in both developed and developing economies to better understand the behavioral and cultural determinants of entrepreneurship. A large literature in development economics and entrepreneurship aims to understand the impediments to firm growth, especially for small and medium size enterprises. Financial constraints are often put forward as a central obstacle to firm

growth. The empirical literature has documented these constraints at the micro level as in Banerjee, Duflo, Glennerster, and Kinnan (2009), De Mel, McKenzie and Woodruff (2008). But the macroeconomic level is also concerned (King and Levine, 1993; Rajan and Zingales, 1998). There is also a growing body of literature on developing economies with the use of experiments and inputs from behavioral economics. Giné and Mansuri (2011) dealt with experiments about the constraints to entrepreneurship in rural Pakistan. They found that business training leads to increased business knowledge and practices.

Das and Bing-Sheng (1997) consider that an individual's conception of the flow of time in the future has a significant impact on entrepreneurial risk behavior. They propose that any entrepreneurial decision under risk necessarily involves temporal attributes. The first relates to the risk horizon. The second is concerned with the individual future orientation of the entrepreneur.

Within the framework of loss aversion, Dew, Sarasathy, Read and Wittbank (2009) look at how entrepreneurs decide what they can afford to lose; and what they are willing to lose in order to plunge into entrepreneurship. The authors discuss the implications of affordable loss for the economics of strategic entrepreneurship.

Bruhn, Karlan and Schoar (2010) discuss at more length the role of “managerial capital” that is different from human capital as a key component for enterprise development. They argue that managerial capital can directly affect the firm by improving the strategic and operational decisions, but it also has effects on the productivity of other factors such as physical capital and labor. Managerial capital helps for use the efficient use of all forms of factors.

Fairlie, Karlan and Zinman (2012) after referring to theories of market failures and targeting, motivate the promotion of entrepreneurship training programs throughout the world. Using data from the largest randomized control trial ever conducted on entrepreneurship training, they examine the validity of such motivations and find that training does not have strong effects (in either relative or absolute terms) on those most likely to face credit or human capital constraints. But, according to the authors, training does have a relatively strong short-run effect on business ownership.

Imran and Bakhtiar (2011) insist on entrepreneurial orientation as involving a business mindset and behavior. Their study aims at associating the factors related to innovativeness and risk-taking to entrepreneurship in small and medium enterprises (SMEs) in Pakistan. The results attained reveal direct positive, individual relationships of innovativeness, risk-taking, and entrepreneurial management with the financial performance of a firm. But risk taking behavior appears to be strongly related to performance.

Karlan, Knight and Udry (2012) show how financial and managerial constraints impede experimentation, and thus limit learning about the profitability of investments. Imperfect information but willingness to experiment, leads to short-run negative expected returns to investments, with only some outliers succeeding. The authors find in an experiment that entrepreneurs invest randomized grants of cash, and adopt advice from randomized grants of consulting services. They also find that both lead to lower profits on average. In the long run, they revert back to their prior scale of operations. In a meta-analysis, results from 19 other experiments find mixed support for this approach.

Bruhn, Karlan and Schoar (2012) test whether managerial human capital has a first order effect on the performance and growth of small enterprises in emerging markets. In a randomized control trial in Mexico, they assign randomly 150 out of 432 small and medium size enterprises to receive subsidized consulting services, while the remaining 267 enterprises served as a control group that did not receive any subsidized training. Results show that the consulting services had a large impact on the performance of the enterprises in the treatment group. Monthly sales went up by about 80 percent; similarly, profits and productivity increased by 120 percent compared to the control group.

Duflo and Karlan (2012) believe that economic development efforts are best served by testing and refining assumptions about what works, because despite the hopes and best intentions of smart people, not all interventions are operational. Finding different results in different contexts encourages the authors to look deeper into specific contexts and into the interventions themselves to determine which factors matter. Several differences that could explain the strikingly differences in results for Ghana and for Mexico are discussed.

Duflo and Karlan (2012) find within the context of poverty alleviation, interesting results that could apply to enterprise creation in longer terms. They consider questions related to financial education trainings for children in a developing country (Ghana). The outcomes are such that they can help initiate a culture of saving and good financial decision-making.

In another paper, Karlan and Valdivia (2006) address another issue related to credit constraints with entrepreneurs assumed to manage their business optimally. They find that the employed poor rarely have any formal training in business skills. Using a

randomized control trial, the authors measure the marginal impact of adding business training to a Peruvian group lending program for female micro-entrepreneurs. They find little or no evidence of changes in key outcomes such as business revenue, profits or employment. But, business knowledge improvements and client retention rates increased for the microfinance institution.

Bruhn, Karlan and Schoar (2010) have explored the importance of input factors such as capital and labor in the production function of firms and countries. At the micro level empirical studies such as De Mel, McKenzie and Woodruff (2008), Banerjee et al. (2009) have estimated the impact of access to finance for capital constrained micro-enterprises. At the macro level papers by King and Levine (1993), Rajan and Zingales (1998) besides others suggest the importance of financial systems for economic growth.

But, a new promising line of research has been developed with the contributions of Hofstede (1980, 2001 and 2010). This refers to the cultural values such that those developed by Hofstede.

II. The Theoretical Framework

The theoretical framework adopted in this paper considers that entrepreneurship is a major characteristics that is mainly affected by cultural and business environmental contexts and that entrepreneurship could be mainly tackled from the perspective of behavioral economics. The theoretical grounds for this approach are introduced under the above literature review.

According to Hofstede (1980, 2002 and 2010), the values that distinguished countries from each other could be grouped statistically into six clusters that are: Power Distance (PDI), Individualism versus Collectivism (IDV), Masculinity versus Femininity (MAS),

Uncertainty Avoidance (UAI), Long Term Orientation (LTO) and Indulgence versus Restraint (IND). These cultural variables are respectively introduced based on the definitions given by the above author.

Power Distance (PDI) measures the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally.

Individualism (IDV): Individualism is the one side versus its opposite, collectivism, that is the degree to which individuals are integrated into groups.

Masculinity (MAS): Masculinity versus femininity refers to the distribution of roles between the genders.

Uncertainty Avoidance (UAV): Uncertainty avoidance deals with a society's tolerance for uncertainty and ambiguity.

Long-Term Orientation (LTO) is the fifth dimension considered by Hofstede (2010) which was added after the original four ones to capture any difference in thinking.

These dimensions are considered in this paper as representing the main cultural values that are considered for explaining access to knowledge and promotion of entrepreneurship.

Indulgence versus Restraint (IVR) is the sixth dimension. The indulgence defines a society that allows free pleasures related to enjoying life and having fun. On the other hand, "restraint" defines a society that prevents any kind of gratification of free human pleasures and regulates them by social norms to repress these pleasures.

This simplified framework is the one that supports the empirical investigations pursued in the coming section.

III. Empirical Analysis

The empirical investigations and results pursued here relate to the links between Hofstede's cultural values and knowledge and human development variables in a first stage. In the second stage the relationships between the above cultural dimensions and entrepreneurship is assessed.

1. Hofstede Indices and Knowledge Economy

This empirical part of the study looks at the positioning of Arab countries in relation to Hofstede dimensions and attempts to investigate the links between these dimensions and knowledge and human development variables.

The values that are shown for Arab countries and are introduced in the following table 1 based on those appearing on Hofstede (2010) website. The values are relatively high for PDI, lower for IDV and higher for MAS and UAI. These say that in comparison with other countries, the recognition of inequality, the dominance of males and the avoidance of risk are major features in most of Arab countries.

Table 1: Values attained by Arab countries in Geert Hofstede dimensions

Country	PDI	IDV	MAS	UAI	LTO
UAE	90	25	50	80	
Kuwait	90	25	40	80	
Egypt	70	25	45	80	
Iraq	95	30	70	85	30
Lebanon	75	40	65	50	
Morocco	70	25	53	68	
Saudi Arabia	95	25	60	80	
Arab world	80	38	52	68	

The following section attempts to show how the above variables are related to the knowledge economy as represented by KEI and to the human development index (HDI).

This second part is devoted to testing for any link between Hofstede's cultural dimensions, knowledge (KEI) and Human Development (HDI) indices. As shown in the following table 2, only IDV and UAI appear to be related to KEI.

Table 2: Regressions of KEI on four Hofstede's indices (all countries)

	PDI	IDV	MAS	UAI	R^2
KEI	-0.184 (-1.734)	0.628 (5.958)	-0.085 (-1.034)	0.191 (2.341)	.546
HDI	-0.151 (-1.245)	0.540 (4.477)	-0.029 (-0.309)	0.239 (2.562)	.405

These same variables appear also to be driving HDI. But when taking all the countries, PDI appears to have a negative effect on KEI only. This leads to testing if higher PDI countries are similar or different from low PDI, knowing that Arab countries are in the first category. This is confirmed by the Chow test that is computed after having the required regressions. This says that PDI has a negative effect for low PDI countries and a positive effect for high PDI economies. The outcomes are introduced in the following tables 3 to 7.

Table 3: Regression Results: High and Low PDI countries combined

	Cst	PDI	IDV	MAS	UAI	R^2
KEI	4.115 (3.517)	-0.020 (-1.734)	-0.063 (5.958)	-0.011 (-1.034)	0.019 (2.341)	.546
HDI	0.597 (7.261)	-0.001 (-1.245)	0.003 (4.477)	0.000 (-0.309)	0.001 (2.562)	.405

Table 4: Regression Results: High PDI countries

	Cst	PDI	IDV	MAS	UAI	R^2
KEI	-1.568 (-0.658)	0.033 (1.276)	0.069 (3.248)	-0.002 (-0.094)	0.029 (1.961)	.362
HDI	0.201 (1.154)	0.003 (1.356)	0.003 (2.116)	0.001 (0.424)	0.002 (2.163)	.288

Table 5: Regression Results: Low PDI countries

	Cst	PDI	IDV	MAS	UAI	R^2
KEI	5.150	-.048	.056	-.016	.034	.639

	(4.449)	(-2.970)	(5.601)	(-1.702)	(3.363)	
HDI	.680 (8.395)	-.003 (-2.776)	.003 (4.206)	-.001 (-1.020)	.002 (3.380)	.530

Table 6: Chow test to compare high PDI and Low PDI countries

KEI	**SSR**	**k**	**N**	**S1+S2**	**Sc-(S1+S2)**	**N1+N2-2k**	**Den**	**Num**	**F**
Comb.	189.539	5	77	142.535	47.004	65	2.1928	9.4008	4.287 (**)
high PDI countries	95.543	5	37						
Low PDI countries	46.992	5	38						

Countries with low and high PDI (power distance) are different from each other as shown trough the above tables and mainly with the level of the Chow test (table 7).

Table 7: Combining tables and Chow Test

HDI	**SSR**	**k**	**N**	**S1+S2**	**Sc-(S1+S2)**	**N1+N2-2k**	**Den**	**Num**	**F**
Comb.	0.935	5	77	0.74	0.195	65	0.0114	0.039	3.426 (**)
high PDI countries	0.51	5	37						
Low PDI countries	0.23	5	38						

Fstat (5,65) =2.36 for 0.05
Fstat (5,65) = betw. 3.34 and 3.29 for 0.01

As we need to compare Arab countries to Eastern European economies and even with limited number of observations, a Chow test is computed for these groups of countries. The regression results for both KEI and HDI show positive and statistically significant effects for PDI and IDV with negative effects for MAS and UAI at the level of the combined sample.

Table 8: Regression Results (Arab and Eastern European countries combined)

	Cst	PDI	IDV	MAS	UAI	R^2
KEI	-2.856 (-.967)	.102 (2.968)	.164 (4.644)	-.084 (-2.914)	-.002 (-.094)	.680
HDI	.262 (1.676)	.007 (3.811)	.009 (4.776)	-.005 (-3.451)	-.001 (-.668)	.676

But, at the level of Arab countries only the effect of PDI is observed. No affect appears for the group of Eastern European countries.

Table 9: Arab countries

	Cst	PDI	IDV	MAS	UAI	R^2
KEI	-9.507 (-1.365)	.089 (2.247)	.097 (1.310)	.014 (.203)	.054 (1.077)	.807
HDI	-.170 (-.358)	.008 (2.927)	.009 (1.738)	-.001 (-.324)	.001 (.352)	.835

Table 10: Eastern European countries

	Cst	PDI	IDV	MAS	UAI	R^2
KEI	4.067 (.928)	.072 (1.497)	.106 (1.967)	-.068 (-1.846)	-.040 (-1.544)	.628
HDI	.580 (1.986)	.004 (1.328)	.006 (1.538)	-.004 (-1.477)	-.002 (-.993)	.429

The Chow test shows that the two groups of countries show statistically similar patterns with regard to Hofstede variables in relation to HDI and KEI. Consequently, there are similarities with regard to the links between human development and knowledge economy variables and the cultural dimensions as suggested by Hofstede (tables 11 and 12).

Table 11: Chow test to compare Arab and Eastern European countries for KEI

KEI	**SSR**	**k**	**N**	**S1+S2**	**Sc-(S1+S2)**	**N1+N2-2k**	**Den**	**Num**	**F**
Comb.	11.087	5	15	4.997	6.09	5	0.9994	1.218	1.219
Arab economies	1.626	5	6						
Eastern European	3.371	5	9						

Table 12: Chow test to compare Arab and Eastern European countries for HDI

HDI	**SSR**	**k**	**N**	**S1+S2**	**Sc-(S1+S2)**	**N1+N2-2k**	**Den**	**Num**	**F**
Comb.	0.031	5	15	0.023	0.008	5	0.0046	0.0016	0.348
Arab economies	0.008	5	6						

Eastern European	0.015	5	9						

Fstat (5,5) = 5.05 for 0.05

Other authors more engaged in behavioral economics, appear to be providing further microeconomic frameworks for experimenting with attitudes towards different parameters including those related to knowledge economy. These contributions appear also to be promising for Arab countries. Further research is consequently needed in the area of behavioral economics for these countries.

2. Hofstede Indices and Enterprise Creation

Two levels of analysis are pursued here. The first one uses the data from the database of doing business (World Bank,) to characterize the business environment of both Arab and EEE countries and most of these first results are from Driouchi and Malki (2011). The second type of analysis is based on the World Bank data that provide the number of enterprises created in each country and Hofstede's cultural dimensions.

2.1. Analyzing the process of enterprise creation

The results of the analysis are introduced in tables 13 to 17 with the variables used for both Arab and EEE economies shown in table 13.

Table 13: Comparing means of variables between Arab and EEE countries

Variables	***Arab Countries***			***EEE Countries***			***t- stat***
	Mean	SD	Observations	Mean	SD	Observations	
ST	30.10	24.821	136	28.89	19.172	109	0.4304
SP	9.38	2.888	136	8.74	3.309	109	1.5911
ECT	642.10	136.280	134	450.39	164.117	108	9.7327
ECP	44.48	5.713	134	34.76	6.339	108	12.3881
RPP	5.78	2.992	122	6.51	1.953	97	-2.1745
RPT	39.80	36.188	122	98.37	149.456	97	-3.7727

Variable Definitions: SC: the cost of starting a business. (% of income per capita).**Etp:** Enforcing contracts time per procedure. **Stp:** Time needed to start a business per procedure pertaining to the business. **RpovT:** Registering property procedures per unit of time. **RIRR:**

Resolving Insolvency- the Recovery rate (cent recovered per dollar loaned). **PIESSI:** Index assessing the ease of shareholder suits. (0-10). **GCPBC:** % of adults getting credits- public bureau coverage. **GCPRC:** % of adults getting credits: public registry coverage. **GCDI:** Index informing on depth of credit. (0-6).

The means and standard deviations of the variables are introduced in table 2. While the required time (ST) and the number of procedures (SP) exhibit no statistically significant differences between Arab and EEE countries, the time of enforcing contracts as well as the related procedures appear to be higher in Arab countries. The time and procedures for registering property show lower levels in Arab countries. But the costs of starting a business are overall larger in the Arab countries as shown in tables 14 and 15.

Table 14: Descriptive statistics of the variables included in the regression

Variables	**Arab Countries**		**EEE Countries**		**Total**	
	Mean	**Std**	**Mean**	**Std**	**Mean**	**Std**
SC	1.2160	0.6771	0.79901	0.4245	1.0291	0.6130
ETP	1.6550	0.19347	1.6560	0.2045	1.6555	0.1981
STP	1.3821	0.27834	1.4616	0.2995	1.4178	0.2902
RIRR	1.2245	0.5595	1.3502	0.4173	1.2808	0.5038
PIESSI	0.430	0.2615	0.5778	0.3125	0.496	0.2943
GCPBC	0.328	0.4760	0.5738	0.6931	0.442	0.5922
GCPRC	0.211	0.5377	0.4702	0.6526	0.325	0.6046
GCDI	0.351	0.2391	0.4682	0.2683	0.406	0.2576
RpovT	0.5933	0.25502	0.6108	0.2580	0.6011	0.2560

Table 4 shows that the Arab countries exhibit the highest costs for starting a business as shown by through the corresponding t-statistics given in the last column of this table.

Table 15: Comparisons of means of variables between Arab and EEE countries

Variables	**Arab Countries**			**EEE Countries**			**t -**Stat
	Mean	SD	N° Observations	Mean	SD	N° Observations	
SC	1.2160	0.6771	144	0.79901	0.4245	117	6.0669
ETP	1.6550	0.19347	144	1.6560	0.2045	117	-0.0402
STP	1.3821	0.27834	144	1.4616	0.2995	117	-2.2009
RIRR	1.2245	0.5595	144	1.3502	0.4173	117	-2.0771
PIESSI	0.430	0.2615	144	0.5778	0.3125	117	-4.0842
GCPBC	0.328	0.4760	144	0.5738	0.6931	117	-3.2616
GCPRC	0.211	0.5377	144	0.4702	0.6526	117	-3.4490

GCDI	0.351	0.2391	143	0.4682	0.2683	117	3.6786
RpovT	0.5933	0.25502	143	0.6108	0.2580	117	-0.5469

The outcomes of the regressions for the sets of Arab, EEE and total countries (Arab + EEE) show elasticities that are statistically significant for most of the explanatory variables introduced. Another statistical result relates to the statistically significant differences between the three models (Arab, EEE and all) using the Chow-F test that is around 20.52. This means that each regression can be interpreted separately as it exhibits coefficients that are different for the same variable. According to the results, the regression of the Arab countries shows coefficients that are higher than those of the EEE.

The cost of starting a business or creating an enterprise in the Arab countries appears to be more sensitive to ETP (2.592) (number of procedures to enforce business contracts). This same explanatory variable shows the highest level of response over all the countries (2.301) but the level of response of this same variable is not statistically significant for EEE economies (0.433).

Table 16: Outcomes of the regressions of starting business costs

Independent Variables	Arab Countries	EEE Countries	Total
Constant	-3.155 (-10.014)	-0.108 (-0.334)	-2.399 (-8.619)
ETP	2.592 (10.539)	0.433 (*) (1.818)	2.301 (11.545)
TP	0.589 (4.660)	0.280 (2.547)	0.389 (3.980)
RIRR	-0.599 (-7.796)	0.394 (3.471)	-0.510 (-7.376)
PIESSI	-0.468 (-3.235)	-0.349 (-2.954)	-0.338 (-3.039)
GCPBC	-0.585 (-7.183)	0.052 (nss) (1.014)	-0.285 (-5.155)
GCPRC	-0.293 (-4.571)	-.215 (-3.643)	-0.245 (-4.677)
GCDI	0.577 (2.749)	-0.477 (-2.677)	0.096 (nss) (0.577)
RpovT	0.429 (3.408)	-0.410 (-2.985)	0.100 (0.896)
R Square	0.791	0.561	.584

Fstat	62.981	17.124	43.908
VIF	Less than 4	Less than 4	Less than 3
Chow Test	20.52238		

The t-stat is between parentheses under each estimated coefficient

2.2. Relationships between Hofstede indices and enterprise creation

In addition to the above results, direct new regressions are performed. When regressing directly the number of enterprises created on the cultural values, the following outcomes are attained.

Table 17: Regression of Non Transformed Variables

Year	Intercept	Individualism	uncertainty avoidance	R^2	Observations
2004	-44576.846	490.078	455.325	0.684	9
	(-3.018)	(3.444)	(2.942)		
2005	-36422.440	466.548	352.931	0.696	9
	(-2.771)	(3.684)	(2.562)		
2006	-31061.899	508.384	264.853	0.511	9
	(-1.454)	(2.471)	(1.183)		
2007	-39789.149	660.755	330.706	0.456	9
	(-1.278)	(2.203)	(1.013)		
2008	-45360.553	732.694	384.617	0.496	9
	(-1.431)	(2.400)	(1.158)		
2009	-43207.216	764.927	333.484	0.563	9
	(-1.462)	(2.686)	(1.077)		
2010	-22513.520	409.737	192.952	0.551	7
	(-1.309)	(2.212)	(1.082)		
2011	-25246.583	450.758	220.434	0.496	7
	(-1.196)	(1.982)	(1.007)		
2012	-4249.231	373.396	-7.994	0.388	5
	(-0.109)	(0.926)	(-0.020)		

The t-stat is between parentheses under each estimated coefficient

Table 18: Regressions on logarithmic transformation of variables

Year	Intercept	Individualism	uncertainty avoidance	R^2	Observations
2004	-33.517	5.819	15.107	0.749	9
	(-3.831)	(3.516)	(4.039)		
2005	-26.581	5.065	12.022	0.678	9
	(-3.096)	(3.118)	(3.275)		
2006	-20.813	4.382	9.502	0.558	9

	(-2.271)	(2.528)	(2.426)		
2007	-19.517	4.267	8.945	0.579	9
	(-2.318)	(2.680)	(2.486)		
2008	-18.296	4.132	8.439	0.626	9
	(-2.501)	(2.986)	(2.698)		
2009	-16.760	4.274	7.480	0.645	9
	(-2.408)	(3.246)	(2.514)		
2010	-9.682	2.840	4.821	0.414	7
	(-1.146)	(1.590)	(1.355)		
2011	-10.199	2.783	5.159	0.341	7
	(-1.021)	(1.318)	(1.227)		
2012	4.011	1.246	-1.138	0.253	5
	(0.338)	(0.526)	(-0.224)		

The t-stat is between parentheses under each estimated coefficient

The outcomes of the regressions show that both “individualism” and “uncertainty avoidance” both affect the number of enterprises created in the Arab countries considered. This is clearly stated with the results of 2004 and 2005. Only the variable “individualism” appears to be having an impact on the number of enterprises for years 2006, 2007, 2008, 2009 and 2010. No statistically significant effect is shown for 2011 and 2012 mainly because of the limited number of observations. This implies that at least two Hofstede Cultural Values play a role in shaping entrepreneurship as majored by the number of enterprises created.

When looking at the logarithmic regressions it appears that the elasticities of changes in the entrepreneurship respectively in relation to individualism and to uncertainty avoidance are very high and larger than one for both years 2004 and 2005. This implies that a 1% increase (or decrease) in “individualism” leads to 5% increase (or decrease). The same remark applies to the elasticity of changes in “individualism” over the period of 2006 to 2009.

The likely implications of these outcomes are that any economic policy that promotes the individuals and their attitudes is likely to be also promoting entrepreneurship through the enhancement of newly created enterprises.

Table 19: The Regression for the EEE countries:

Year	Intercept	Individualism	Uncertainty Avoidance	R^2	Observations
2004	-65189.497	56.328	1093.829	0.261	10
	(-0.992)	(0.122)	(1.492)		
2005	-33578.385	-102.095	748.689	0.180	11
	(-0.592)	(-0.233)	(1.197)		
2006	-30014.519	-98.437	712.843	0.165	11
	(-0.527)	(-0.224)	(1.136)		
2007	-30651.498	11.866	657.108	0.113	12
	(-0.500)	(0.026)	(1.007)		
2008	-39867.037	98.833	758.258	0.119	12
	(-0.615)	(0.216)	(1.091)		
2009	-35546.905	223.523	566.953	0.180	12
	(-0.914)	(0.813)	(1.359)		
2010	-52043.802	456.973	685.878	0.332	10
	(-1.247)	(1.626)	(1.524)		
2011	-64543.423	547.137	839.394	0.307	10
	(-1.206)	(1.518)	(1.455)		
2012	-38976.955	256.657	685.878	0.162	11
	(-0.801)	(0.781)	(1.221)		

The t-stat is between brackets

The above table presents a summary of the regression coefficients and their respective t-stat, the coefficient of determination (R^2) and the number of observations for the EEE countries between years 2004 and 2012. The table presents t-stat values for "Individualism" and "Uncertainty Avoidance" that are not statistically significant for these years. This shows that entrepreneurship in the EEE countries is not related to these two cultural dimensions of Hofstede unlike the Arab countries.

IV. Discussion

As cultural variables do have effects on both access to knowledge and promotion of entrepreneurship in Arab countries, imply that economic policies need to further ease the business environment to accelerate further promotion of knowledge and private enterprise creation. The "doing-business" framework developed by the World-Bank appears to be a model of collaboration of the World Bank with countries for monitoring and assessing the progress on these dimensions. But, further reforms in Arab countries might also need to focus on cultural reforms devoted to promoting individual initiatives on knowledge creation and diffusion but also on enterprise creation. This spirit could be spread all over those that contribute to the chain of production, diffusion and use of knowledge to include those that generate enterprises. The business climate has certainly global and local cultural features that would accelerate the use of knowledge to better create new opportunities and new enterprises. Such features could be emphasized at all levels of education but mainly in higher education with focus on business curricula and training. Such training programs need also to use inputs from local research focusing on behavioral and cultural matters. Models from other countries are necessary but not sufficient for sustaining both regular and continuing education programs aiming at strengthening entrepreneurship and access to knowledge.

Conclusion

The indices and the "Doing Business Data" have had a promising role in characterizing both the business environment and the creation of enterprises in Arab countries with comparisons with EEE economies. The attained descriptive and regression results confirm that Arab countries need to attain highest level of business performance at

both the environment and enterprise creation levels. EEE countries appear globally to have highest performances but Arab countries such as those of the Gulf are ensuring promising conditions for the development of enterprises. But these performances need to be sustained. The global economic and political conditions may inhibit the efforts that have been undertaken so far. But, cultural factors seem to be driving entrepreneurship in the Arab economies. Knowledge appears also related to cultural values. These results appear to be specific to Arab countries as they are not revealed from the data on the Eastern and Central European Countries.

The descriptions and analyzes pursued in this article show that even with the existence of highly performing enterprises in Arab economies, the creation of new enterprises suffers from series of constraints as shown in different publications and reports including those that are dealing with doing business. This means that the youngest generations and the skilled labor issued from the education system do not benefit from new business opportunities in most Arab countries. Does this trend explain the high unemployment rates that prevail in North African, Jordan and Yemen?. Furthermore, the results attained in the present article show the prevalence of economic and social imperfections with regard to the adoption of knowledge economy and thus limit access to new development opportunities. Different explanations are provided and converge to indicate that the political economy of the Arab countries needs to shift towards a more knowledge economy approach with further economic and trade openness. The Eastern economies have appeared to be creating more incentives for new enterprise creation with a better business environment where knowledge is seen as engine for growth and development.

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