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Driouchi, Ahmed

ieaps, Al Akhawayn University, Ifrane, Morocco

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# **Hofstede Index and Knowledge Economy Imperfections in Arab Countries**

By:

Ahmed Driouchi,

Institute of Economic Analysis & Prospective Studies (IEAPS), Al Akhawayn University, Ifrane, Morocco

## **Abstract:**

This paper looks at the imperfections in the knowledge economy in Arab countries. It uses series of data including the *Hofstede index* to show how these imperfections are translated into the measures of knowledge and development. The outputs from Arab countries are also compared to those from the Eastern European Economies. The outcomes do clearly indicate the existence of a gap between Arab and Eastern European Economies and underline that more efforts need to be devoted to the reduction of imperfections in Arab economies.

**Keywords:** *Imperfections, Knowledge, Hofstede index, Political economy.*

## **Introduction**

In relation to the different indicators of knowledge economy, some Arab countries appear to be exhibiting higher values while others are still having modest performances. Furthermore, different reports have been discussing series of initiatives devoted to the promotion of different dimensions of knowledge economy in variety of Arab countries. But, almost all of these countries have been recently exhibiting economic performances

that are not consistent with the expansion of knowledge components. They all show high levels of unemployment including for skilled labor and they all show limited creation of new enterprises.

This paper is devoted to showing that there are imperfections in these economies that prevent the attainment of the performances expected. These imperfections are also related to the way the knowledge economy is introduced, monitored and governed.

Different authors have been looking at these imperfections. Some authors emphasize the social and economical 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.

This variety of approaches is first reviewed before introducing series of quantitative means to show the extent of imperfections of the knowledge economy in Arab countries and the likely directions of social and cultural changes that are required.

The present paper is composed of two main sections. The first one looks at the variety of approaches related to the extent and magnitude of imperfections. The second section focuses on empirical investigations that relate to series of social measures including those suggested by Hofstede with their relationships to knowledge and human development indices.

## **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. But, the Arab region has the lowest records in new business establishments. Growth theory highlights the importance of entrepreneurship. In the Solow model (1956) growth comes from new and larger plants (economies of scale), while in the Romer model (1990), it comes from new and growing firms (knowledge spillovers). The above author uses series of publications such as that of Acs, Braunerhjelm, Audretsch and Carlsson (2009) who show how knowledge spillovers following research and development spending create opportunities for entrepreneurs. Other authors cited include those that focus on new firms as an indicator of entrepreneurship and of higher economic growth and productivity (Hause and Du Rietz, 1984; Black and Strahan, 2002; Djankov, La Porta, de Silanes and Shleifer, 2002; Klapper, Laeven, and Rajan, 2006). The development of new enterprises lead also to higher employment (Birch, 1979) and Birch (1987), more technological innovations (Acs & Audretsch, 1990), and higher levels of education (Dias & McDermott, 2006).

According to ILO (2011), the youth unemployment rate for males and females in this region was 22 and 39 percent respectively, while the average world figure was 13 percent. These unemployed could be a source of economic growth in the case of more

business friendly policies for the private sector. The following table compares the rate of firms' entry density in the Arab region with other regions. It shows that Arab countries have the lowest rate of entry of new firms in the world (table 1).

*Table 1: Comparing businesses between Arab and other economies*

Average 2004 -2009	MENA	EAP	LA	SSA	OECD	World
New business density (new registrations per 1,000 people ages 15-64)	0.66	1.35	2.28	1.13	5.03	3.25
GDP per capita (constant 2000 US\$)	1836	1590	4481	592	28206	5827
Domestic credit to private sector (% of GDP)	32.33	101.20	32.81	62.41	160.33	133.04
Cost of business start-up procedures (% of GNI per capita)	67.35	47.47	53.99	195.63	6.88	74.39
Procedures to register property (number)	6.98	5.29	6.88	6.58	5.04	6.11
Procedures to enforce a contract (number)	42.40	37.28	39.08	39.37	31.83	37.97
Oil rents (% of GDP)	25.43	2.77	5.87	11.72	0.57	2.57
Lack of Corruption	-0.18	-0.02	0.10	-0.63	1.41	-0.02
Regulatory Quality	-0.22	-0.10	0.11	-0.74	1.36	-0.003

*Note:* EAP (East Asia & Pacific), LA (Latin America and the Caribbean), SSA (Sub-Saharan Africa).  
*Source:* WDI (2012).

According to the above author, the literature on the resource curse shows that natural resource curse may reduce economic growth and thus investments and employment as in Frankel (2010) besides Van der Ploeg (2011). Some authors relate the curse to the Dutch disease where high oil prices increase the effective exchange rate leading to appreciation of the domestic currency. This increases the price of non-oil exports (Corden and Neary, 1982; Corden, 1984; van Wijenbergen, 1984; Torvik, 2001). Others relate the problem to the neglect of human capital. When countries invest less in education leading to lower economic growth in the long run, natural resources become a curse (Gylfason, 2001).

Other authors relate that to the nature and quality of institutions (Robinson, Torvik & Verdier, 2006). Others focus on the rent seeking behavior and the attractiveness of the natural resource sectors (Torvik, 2002).

The examination by Farzanegan (2012) of resource rents in relation with entrepreneurship activities shows that point source resources (such as oil and coal) have a statistically negative effect on entrepreneurship.

Achy (2012) relates unemployment and job vulnerability to the economics of the rents that are prevailing in the Arab economies. The author considers that the few jobs created are precarious and related to low productivity sectors. To adjust their unemployment rates with the world average, 20 million jobs are needed while keeping the current rate constant requires 13 million jobs. This necessitates a constant economic growth of at least 5 percent while the 20 million jobs required for adjusting unemployment rates need an annual growth rate of 8 percent. This cannot be achieved under the on-going development model. This model is mainly based on the economics of rents, subsidies, fiscal favors and lack of transparency. It needs to be changed to a new model to be merit based and without excessive rents.

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 (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.

At the higher education level, low levels of professorial titles and lack of tenure systems fail to incentivize professors to engage in academia full time (Choueiri, 2008). Additionally, the use of Arabic, English, and French in education and training systems has consequences at several levels including cultural identity; research productivity and

locally produced knowledge; and in terms of facilitating ambitious scholars to seek higher qualifications outside the region.

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).

In many countries in the Arab world, firms have anecdotally expressed a concern faced by employees with skill deficiencies that limit performance. This has been often labeled as a “skills gap.” Giving the regional human capital challenges described thus far, it would be reasonable to hypothesize that skills gaps are likely widespread in many countries in the Arab region in the private sector.

The data from the Arab CEO survey suggests that Arab countries, particularly Gulf countries, are amongst the top of the ranking in terms of facing the highest prevalence of skills gaps globally.

Also the Arab human capital investments meant to support knowledge-based development over the last decade have been marginally successful. The burden of making up for inadequate pre-employment skills formation shifts attention from the formal



education system as provider of knowledge and skills towards the role of firm training in eliminating skills gaps.

In addition, the number of employers providing formal training to permanent employees is comparatively low: Algeria (29%), Egypt (12%), Jordan (24%), Lebanon (68%), Mauritania (24%), Morocco (20%), Oman (20%), Syria (21%), and Palestine (27%)

In this perspective, Arab countries are pressured to reinforce their education and training systems in order to create lifelong learning and employment opportunities. A number of Arab countries have already launched strategies and action plans in this regard especially when facing several education and training persistent challenges.

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 explanations, the nature of the central power in relation to market forces has also been described as imposing constraints on economic and social reforms in Arab countries. In a paper by Dabrowski (2012) and for the period 1950s to 1970s, the author claims that the so-called Arab socialism has some analogies to the model of previous communist countries. The author considers that some Arab countries had imitated the Soviet experience of central planning, especially with respect to

investment processes driven by political considerations and import-substitution industrialization strategies. The evidence is given by oil-producing countries, such as Algeria, Libya and Iraq which had the capacity to pursue such policies. Some other countries that had regional conflicts, allocated a large share of their public expenditure to military and security programs. But, the author considers that by the early 1980s (Egypt) and 1990s (Algeria and Tunisia), there has been a start to switch from administrative dirigisme in the economic sphere, usually with the active engagement of the International Monetary Fund (IMF) and the World Bank. This process is driven by external factors like the fall of oil prices in the mid-1980s, the collapse of the Soviet bloc, economic reforms in China, India, and other developing countries and domestic policy needs (combating macroeconomic instability and the desire to avoid political unrest). In 2000s, Libya and Syria for example that are the most closed countries, started to pursue more flexible economic policies with limited market reforms.

As the Arab and Soviet-type economies are not similar, the experience of the post-communist transition of 1990s may not be also identical for Arab countries. Even though there are some similarities in some economic problems, the solutions cannot be found following the same paths. But, sources of market failures but also of government failures as they have been related to the existence of commons and anti-commons are causes that could constrain development and impose high transactions as in Aoki (1998), in Bergstrom (2010), in Buchanan and Yoon (2000), in Canavese (2004) but also in Coelho, Filipe and Ferreira (2009). Other authors such as Cantrell, Hettel, Barry and Hamilton (2004), Depoorter and Vanneste (2004), Hardin (1968), Heller (1998), Kelly and Michelman (1980), Nash (2001) besides Ostrom (1990), Ostrom and Schlager

(1992), Parisi, Depoorter and Schulz (2003) and Parisi, Depoorter and Schulz (2005); with Velho (2004) address the imperfections related to different forms of ownership of natural resources.

Imperfect markets or social imperfections are important directions that show how Arab countries try to reduce or eliminate direct and indirect subsidies from domestic food and energy products to reduce excessive budget deficits (which threaten the macroeconomic stability). These market distortions are directly related to trade and domestic production. The food and energy subsidies under these economic, social and political conditions become consequently hard to change in face of the on-going interests expressed by different social groups. Transition to new regimes of supporting food and energy appears to be hard to implement because of major imperfections in the economies.

This is also the case for external economic relations. The economies of Arab countries must undoubtedly become more open among themselves and with the wider world. But there was a lot of progress made in this sphere in the last 15 years. Most of the Arab countries are now members of the WTO. They concluded free trade agreements among themselves, with the European Union, and some of them also are with the United States.

There are also some differences in the privatization policies since there is less to privatize in Arab countries compared to the post-communist countries in the early 1990s. The first reason is that nationalization in Arab countries never went as far as it did in the Soviet bloc countries. Secondly, a large part of public ownership included the oil and gas industries' assets, which will not be part of privatization for political reasons. Thirdly,

there are a lot of Arab countries that already started privatizing several years ago. Furthermore, they must now avoid the revolutionary temptation to reconsider some of the past privatization deals considered unfair by the wild public. Finally, there will be some differences in privatization methods. Arab countries have working capital markets and enjoy access to international financial markets. Hence, they can privatize for money, to strategic investors or through Initial Public Offerings (IPOs).

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. A case study about the Management Information System (MIS) component of knowledge is also introduced to show that there are imperfections in the adoption of the knowledge economy in Arab countries.

## **II. Empirical Analysis: 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.

### **1. A descriptive Analysis**

According to Hofstede (1980, 2002 and 2010), the values that distinguished countries from each other could be grouped statistically into five clusters that are: Power Distance (PDI), Individualism versus Collectivism (IDV), Masculinity versus Femininity (MAS), Uncertainty Avoidance (UAI) and Long Term Orientation (LTO). These cultural variables are respectively introduced based on the definitions given by the above author.

**Power Distance (PDI):** This measures the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. This represents inequality (more versus less), but defined from below, not from above. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders.

**Individualism (IDV):** Individualism is the one side versus its opposite, collectivism, that is the degree to which individuals are integrated into groups. On the individualist side we find societies in which the ties between individuals are loose: everyone is expected to look after him/herself and his/her immediate family. On the collectivist side, we find societies in which people from birth onwards are integrated into strong, cohesive in-groups, often extended families (with uncles, aunts and grandparents) which continue protecting them in exchange for unquestioning loyalty.

**Masculinity (MAS):** Masculinity versus femininity refers to the distribution of roles between the genders which is another fundamental issue for any society to which a range of solutions are found. Related studies have revealed that (a) women's values differ less among societies than men's values; (b) men's values from one country to another contain a dimension from very assertive and competitive and maximally different from women's

values on the one side, to modest and caring and similar to women's values on the other. The assertive pole has been called 'masculine' and the modest, caring pole 'feminine'.

Uncertainty Avoidance (UAV): Uncertainty avoidance deals with a society's tolerance for uncertainty and ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, and different from usual. Uncertainty avoiding cultures try to minimize the possibility of such situations by strict laws and rules, safety and security measures.

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

The values that are shown for Arab countries and are introduced in the following table 7 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 2: 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).

## 2. Regression Analysis

This 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 3, only IDV and UAI appear to be related to KEI.

*Table 3: Regressions of KEI on four Hofstede's indices (all countries)*

	PDI	IDV	MAS	UAI	R <sup>2</sup>
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 4 to 8.

*Table 4: Regression Results: High and Low PDI countries combined*

	Cst	PDI	IDV	MAS	UAI	R <sup>2</sup>
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 5: Regression Results: High PDI countries

	Cst	PDI	IDV	MAS	UAI	R <sup>2</sup>
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 6: Regression Results: Low PDI countries

	Cst	PDI	IDV	MAS	UAI	R <sup>2</sup>
KEI	5.150 (4.449)	-.048 (-2.970)	.056 (5.601)	-.016 (-1.702)	.034 (3.363)	.639
HDI	.680 (8.395)	-.003 (-2.776)	.003 (4.206)	-.001 (-1.020)	.002 (3.380)	.530

Table 7: 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
<b>Comb.</b>	189.539	5	77	142.535	47.004	65	2.1928	9.400 8	4.28 7 (**)
<b>high PDI countries</b>	95.543	5	37						
<b>Low PDI countries</b>	46.992	5	38						

Countries with low and high PDI (power distance) are different from each other as shown through the above tables and mainly with the level of the Chow test (table 13).

Table 8: Combining tables and Chow Test

HDI	SSR	k	N	S1+S2	Sc- (S1+S2)	N1+N2- 2k	Den	Num	F
<b>Comb.</b>	0.935	5	77	0.74	0.195	65	0.0114	0.039	3.42 6 (**)
<b>high PDI countries</b>	0.51	5	37						
<b>Low PDI countries</b>	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 9: Regression Results (Arab and Eastern European countries combined)*

	Cst	PDI	IDV	MAS	UAI	R <sup>2</sup>
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 10: Arab countries*

	Cst	PDI	IDV	MAS	UAI	R <sup>2</sup>
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 11: Eastern European countries*

	Cst	PDI	IDV	MAS	UAI	R <sup>2</sup>
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 12 and 13).

Table 12: 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
<b>Comb.</b>	11.087	5	15	4.997	6.09	5	0.9994	1.218	1.219
<b>Arab economies</b>	1.626	5	6						
<b>Eastern European</b>	3.371	5	9						

Table 13: 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
<b>Comb.</b>	0.031	5	15	0.023	0.008	5	0.0046	0.0016	0.348
<b>Arab economies</b>	0.008	5	6						
<b>Eastern European</b>	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.

## Conclusion

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 paper 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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