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Abstract

This paper examines the dynamics of trade specialization in the MENA region and countries for the period 2000 and 2010. An econometric model, Wald test, and the Spearman's rank correlation are applied. By both, industry and country group classifications analysis, all countries in the MENA region have shown de-specialization with different speed, where Qatar has perfect of specialization and Tunisia has slowest one.

Keywords: *comparative advantage, dynamics of specialization, MENA, RSCA, econometric analysis, Wald test, Spearman's rank correlation.*

JEL: F14, F17.

1. Introduction

In economic development, export structure is one of the important aspects in international trade. Globalization, liberalization, economic integration, bilateral and multilateral agreement are the determinant of export structure for a country. Parallel with these, dynamics of comparative advantage and specialization become important issues (Widodo, 2009b; Wörz, 2005).

Many regional trade agreements (RTAs) and regional economic integration have been achieved since the beginning of multilateral trade system (Widodo, 2009). In Middle East and North Africa (MENA) region, the progress of RTAs is relatively dynamic and unnecessary overlapping (Dennis, 2006). Moreover, the underperformance of trade in MENA is about one third of their potency (Behar and Freund, 2011). The export of MENA countries is dominated by unsophisticated goods (Nasif, 2010). Export and import value dropped significantly in 2009 (Diop, Walkenhors, & Lopez-Calix, 2010). Not only volume, the concentration of export has declined over time (Gourdon, 2010).

Share to world export has declined from 8% in 1981 until 2.5% in 2002. It was affected by the collapse of oil price in the 1980's (Dennis, 2006).

Comparative advantage is one of the most important concepts for explaining the pattern of international trade (Widodo, 2010). This concept was firstly introduced by David Richardo (1817), Heckscher (1919) and Ohlin (1933) with some relaxing assumptions. Both Richardo and Heckser-Ohlin have the same hypothesis that a country will specialize in products with have comparative advantage. In contrast, Intra-industry trade (Grubel and Lloyd, 1975) represents international trade within industries rather than between industries. Such trade is more beneficial than inter-industry trade because it stimulates innovation and exploits economies of scale. In fact, the MENA region has low level of intra-industry trade (Behar and Freund, 2011).

This paper aims to analyze the dynamics of trade specialization in MENA region and countries with some classifications of industries, i.e. primary, natural resource intensive, unskilled labor intensive, technology intensive, and human capital intensive. The rest of this paper is organized as follows: sections 2 describe literature review, methodology is presented in section 3, section 4 represents result and discussion, and conclusion is presented in section 5.

2. Literature Review

In line with globalization, liberalization and integration process in the world, an interest issue emerging involves country-specific specialization and the dynamic shifts in patterns of comparative advantage (Widodo, 2009b).

Table 1 about here

Specialization is important to be studied because it can affect the speed of economic growth and welfare (Martincus and Estevadeordal, 2009). Moreover, specialization in the backward sector is consistent with an output growth rate equal to the global output (Lane, 1996). Several studies present evidences on the evolution of specialization indicators over periods of declining trade barriers that mostly concerns developed countries (Martincus and Estevadeordal, 2009). Furthermore, economic integration can improve efficiency and competitiveness as

a result of the development of a country's specialization (Widodo, 2009b). On the other hand, export diversification has a strong and positive impact on growth, through various channels (Rouis and Tabor, 2013).

McCorriston and Sheldon (1991), Noland (1993), Dollar and Wolff (1995), Dalumn *et al.* (1998), Laursen (1998), Wörz (2005), Fertő and Soós (2008), Benedictis *et al* (2009), Widodo (2009a), Widodo (2009b), Martincus and Estevadeordal (2009), among others, examine this issue. Some of them find specialization as a conclusion and some of them get de-specialization. Table 1 provides a summary of these researches.

Gourdon (2010) find that export concentration in MENA has declined over time that reflects some decrease in the concentration among sectors. On the other hand, MENA region has low level of intra-industry trade (Behar and Freund, 2011). In other word, it means low diversification or high specialization. Rouis and Tabor (2013) find that export diversification in MENA countries has been limited. Some countries in the region are underperforming other countries with similar income levels in discovering new exports. Moreover, all countries rely heavily on a few export commodities that are generally produced with low levels of skill and are unsophisticated. These results may be contradictive.

3. Methodology

3.1. Data

This study uses the data on exports published by the United Nations (UN), namely the United Nations Commodity Trade Statistics Database (UN Comtrade) i.e. 3-digit Standard International Trade Classification (SITC) Revision 2; and focuses on 237 groups of products (as classified under SITC groupings). There are still two groups of products (SITC), which are not included in this research due to the unavailability of data,4 i.e. SITC 675 (hoop and strip of iron or steel, hot-rolled or cold-rolled) and 911 (postal packages not classified according to kind). When discussing industries, the study concentrates on 234 groups of products (SITC—3-digit level) classified by factor intensities, and uses the classification of industries by the Empirical Trade Analysis (ETA). Based on the UN Conference

on Trade and Development (UNCTAD)/World Trade Organization (WTO) classification (SITC Rev. 3), ETA distinguishes the following six products or industries: (1) primary industries (83 SITC); (2) natural resource– intensive industries (21 SITC); (3) unskilled labor– intensive industries (26 SITC); (4) technology-intensive industries (62 SITC); (5) human capital–intensive industries (43 SITC); and (6) others (5 SITC).

In World Bank research (World Bank, 2007; Gourdon, 2010; Shui and Walkenhorst, 2010; Gatti, et.al., 2013), the members of MENA region consist of Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza, and Yemen, but this research was focused in 14 countries of MENA countries. Because of some reason, Djibouti, Iraq, Oman, West Bank and Gaza, and Yemen were removed for this research. Based on capital and labor abundance, the countries were divided in three groups (Shui and Walkenhorst, 2010), i.e. resource-rich and labor-importing (RRLI) countries (United Arab Emirates, Saudi Arabia, Qatar, Oman, Libya, Kuwait, and Bahrain), resource-rich and labor-abundant (RRLA) countries (Yemen, Syria, Iran, and Algeria), and resource-poor and labor-importing (RPLA) countries (Tunisia, Morocco, Lebanon, Jordan, and Egypt).

This analysis involved 14 countries (Egypt, Jordan, Lebanon, Morocco, Tunisia, Algeria, Irian, Syria, Yemen, Bahrain, Oman, Qatar, Saudi Arabia, and United Arab Emirates) in two periods of time (2000 and 2010). These years were preferred for minimization of incomplete data. For the same reason, some countries were excluded from this analysis. This section is divided in two sections which describe the comparative advantage and analysis of dynamics specialization. Data will be analyzed by region and country.

3.2. Revealed Symmetric Comparative Advantage

Formula

Revealed Symmetric Comparative Advantage (RSCA) Index (Laursen, 1998) is used to measure comparative advantage. The RSCA index was developed

by the Revealed Comparative Advantage (RCA) or Balassa index (Balassa 1965). The RCA and RSCA indexes are formulated as follows:

$$RCA_{ij} = (x_{ij} / x_{in}) / (x_{rj} / x_{m}) \text{.....(1)}$$

$$RSCA_{ij} = (RCA_{ij} - 1) / (RCA_{ij} + 1) \text{ ..... (2)}$$

where RCA_{ij} represents revealed comparative advantage of country *i* for group of products (SITC) *j* ; and x_{ij} denotes total exports of country *i* in group of products (SITC) *j* . Subscript *r* represents all countries except country *i* , and subscript *n* stands for all groups of products (SITC) except group of product *j*. To avoid double counting, the country and group of products under consideration is excluded from the measurement so that the bilateral exchange is more exactly represented (Vollrath, 1991; Wörz, 2005; Widodo, 2010).

The range of the RCA index values is from zero to infinity $\left(0 \leq RCA_{ij} \leq \infty\right)$. RCA_{ij} greater than one means that country has a comparative advantage in group of products *j* . On the other hand, RCA_{ij} less than one implies that country *i* has a comparative disadvantage in product *j* . Since the RCA_{ij} turns out to have values that cannot be compared on both sides of one, the index is made to be a symmetric index (Laursen, 1998) and is called the Revealed Symmetric Comparative Advantage. The $RSCA_{ij}$ index ranges from one to one or $\left(-1 \leq RSCA_{ij} \leq 1\right)$. $RSCA_{ij}$ greater than zero implies that country *i* has a comparative advantage in product *j* . In contrast, $RSCA_{ij}$ less than zero implies that country *i* has a comparative disadvantage in product *j* .

3.3. The Dynamics of Specialization

Econometric Model

An econometric model (3) is commonly used to examine the dynamics of comparative advantage (Laursen, 1998; Wörz, 2005; and Widodo, 2009):

$$RSCA_{ij,T} = \alpha + \beta RSCA_{ij,0} + \varepsilon_{ij} \text{.....(3)}$$

where RSCA $_{ij,T}$ and $RSCA_{ij,0}$ are the RSCA indexes of country *i* in product *j* for years *T* and 0, respectively. ε_{ij} denotes white noise error term. The coefficient β indicates whether the existing comparative advantage or specialization patterns have been reinforced or not during the years of observation. If β is not significantly different from one $(\beta = 1)$, there is no change in the overall degree of specialization. $\beta > 1$ indicates increased specialization of the respective country. Finally, $0 < \beta < 1$ indicates de-specialization; that is, a country has gained a comparative advantage in industries where it did not specialize and has lost competitiveness in those industries where it was initially heavily specialized (Wörz 2005). In the event of $\beta \leq 0$, no reliable conclusion can be drawn on purely statistical grounds; the specialization pattern is either random, or it has been reversed. This equation is conducted for regional or country analysis.

Different Dynamics in the Specialization across Industries and Countries

It might be believed that the dynamics in specialization across countries and across industries are different. To examine this issue in the MENA industry classification (based on Empirical Trade Analysis/ETA classification), dummy variables are added for industries (D_i^P) into equation (4):

$$RSCA_{ij,T} = \alpha + \beta RSCA_{ij,0} + + \sum_{i=1}^{4} \gamma_i \left(D_i^P RSCA_{ij,0}\right) + \omega_{ij} \ldots\ldots\ldots (4)$$

The econometric model (4) is applied for each country as denoted by *i*:

- D_1^P (1 = natural resource-intensive industries, 0 = otherwise),
- D_2^P (1 = unskilled labor-intensive industries, 0 = otherwise),
- D_3^P (1 = technology-intensive industries, 0 = otherwise),
- D_4^P (1 = human capital-intensive industries, 0 = otherwise),

the coefficient of α means primary industries.

To examine this issue in the MENA country groups (based on World Bank Classification above), dummy variables are added for countries (D_i^C) into equation (5):

$$RSCA_{ij,T} = \alpha + \beta RSCA_{ij,0} + + \sum_{i=1}^{2} \gamma_i \left(D_i^C RSCA_{ij,0}\right) + \omega_{ij} \ldots\ldots\ldots (5)$$

The econometric model (5) is applied for each country as denoted by *i*:

- D_1^C (1 = resource rich-labor abundance countries, 0 = Otherwise),
- D_2^C (1 = resource rich-labor importing countries, 0 = Otherwise),

the coefficient of α means resource poor-labor abundance countries.

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Since the data used in this paper are cross-sectional, it may be necessary to deal with the assumptions of the classical regression model. Conventional wisdom says that the problem of autocorrelation is a feature of time series data and heteroscedasticity is a feature of cross-sectional data (Gujarati 1995). Therefore, heteroscedasticity might be in our estimation. Wörz (2005) also finds that heteroscedasticity was initially a problem; therefore, the robust standard errors computed using the White/sandwich estimator of variance were employed.

The existence of autocorrelation also might be possible. When the form of heteroscedasticity is unknown, it might not be possible to get efficient estimates of the parameter using weighted least squares (WLS). The ordinary least squares (OLS) gives consistent parameter estimates in the presence of heteroscedasticity but the usual OLS standard errors will be incorrect and should not be used for the inference purposes. Hence, this paper applies Heteroscedasticity and Autocorrelation Consistent Covariance (HAC) when the usual OLS has violated the homoscedasticity or no-autocorrelation assumptions (Widodo, 2009b).

There are two possible approaches, i.e. Heteroscedasticity Consistent Covariance (White) and HAC Consistent Covariance (Newey–West). To determine which approach is suitable for a specific model, the following three stages are undertaken. First, the OLS is applied and then the residual tests on heteroscedasticity and autocorrelation are conducted. If the test shows that there are no autocorrelation and heteroscedasticity simultaneously, then the OLS is applied. Second, if only heteroscedasticity exists, the White Heteroscedasticity Consistent Covariance is used. Third, if the autocorrelation and heteroscedasticity exist, the HAC Consistent Covariance (Newey–West) is applied (Widodo, 2009).

Several Tests

The dynamic specializations across country groups as well as across industries can be examined by looking at the significance of the corresponding dummy variables. To deal with this matter, the Wald-test is conducted. Wald-test is conducted to test if there is any coefficient of specialization equal one and is coefficient of specialization same to another one.

Not only to examine the pattern of comparative advantage, Spearman's rank correlation is also applied to examine the shift of comparative advantage for ten years (Widodo, 2009). The positive value of Spearman's rank correlation (closer to 1) means the shift in comparative advantage is less dynamic. On the other hand, the negative value (closer to -1) means more dynamic.

4. Result and Discussion

4.1. Region Analysis

This session discusses regional analysis. Table 2 presents the estimation results of econometric model (3) for two years, 2000 and 2010. A positive value greater than zero is the coefficients of specialization. All of the value is smaller than one. All of Wald-test values are greater than critical value for $\alpha = 1\%$. It can be concluded that all of this value is not equal one (smaller than one) for all.

Table 2 about here

Both as a whole, by industry classification, and by country group classification of MENA region are found to show de-specialization in 2000-2010 period. For across industry, natural resource intensive industry is the natural resource intensive industry is the most affected field of de-specialization in MENA region. RPLA is the most field of de-specialization too for across country groups.

Table 3 about here

Table 3 and 4 show the result of Wald-test that examines that the coefficient of specialization same to another one. For across industries, all of coefficient of specialization are not different, except natural resource intensive-

unskilled labor intensive and natural resource intensive- technology intensive (Table 3). For across country groups, all of coefficient of specialization is different in input classification (Table 4).

Table 4 about here

Table 5 shows the result of Spearman's rank correlation. Both as a whole and some classifications, the value are positive and significant at $\alpha = 1$ %. It implies less dynamics of comparative advantage in MENA region for ten years.

Table 5 about here

From the above results can be concluded that most of classifications (both industry and country) tend to de-specialize in 2000-2010 periods. This result supports the previous results, i.e. Wörz (2005), Fertő and Soós (2008), Benedictis et al (2009), Widodo (2009a), and Widodo (2009b).

4.2. Country Analysis

This session discusses country analysis. Table 6 exhibits the estimation results of econometric model (3) for two years, 2000 and 2010 for ETA classification (not across). This analysis is equal to the Table 1's analysis. As a whole, based on the coefficient of specialization value, can be concluded that all of countries is found to have shown de-specialization except Syria. United Arab Emirates is the country with the most de-specialization value. Primary industry classification has the same conclusion. Saudi Arabia is the country which de-specialize the most.

For natural resource intensive industry classification, a half of MENA countries is found to have shown de-specialization, i.e. Jordan, Lebanon, Algeria, Yemen, Qatar, Saudi Arabia, and United Arab Emirates. The rest are no specialization change. United Arab Emirates is the country which de-specialize the most.

For unskilled labor intensive industry classification, a half of MENA countries are found to have shown de-specialization, i.e. Egypt, Lebanon, Tunisia, Bahrain, Oman, Qatar, and United Arab Emirates. Because of $\beta \leq 0$, the

coefficient of Algeria and Qatar cannot be concluded. The rest are no specialization change. Oman is the country which de-specialize the most.

For technology intensive industry classification, more than a half of MENA countries is found to have shown de-specialization, i.e. Jordan, Lebanon, Algeria, Yemen, Bahrain, Qatar, Saudi Arabia, and United Arab Emirates. The rest are no specialization change. United Arab Emirates is the country which de-specialize the most.

Table 6 about here

For human capital intensive industry classification, the most of MENA countries is found to have shown de-specialization. Only Syria has specialization pattern. Because of $\beta \leq 0$, the coefficient of Qatar cannot be concluded. The rest are no specialization change. Oman is the country which de-specialize the most.

Table 7 about here

Table 7 shows the shift of comparative advantage for ten years with ETA classificaTon. Generally, there are less dynamics of comparative advantage in MENA countries for ten years, except Qatar. For primary, natural resource intensive, and technoligy intensive industries, all of countries except Qatar have less dynamics of comparative advantage. For human capital intensive industries, all of countries except Yemen, Oman, and Qatar have less dynamic of comparative advantage. The last, for unskilled labor intensive industries, all of countries except Algeria, Yemen, Oman, Qatar and United Arab Emirates too. All of industries classification in Qatar have no less dynamics of comparative advantage.

From the above results shows that most of countries industry classifications tend to de-specialize in 2000-2010 periods. These results support the previous results, i.e. Wörz (2005), Fertő and Soós (2008), Benedictis et al (2009), Widodo (2009a), and Widodo (2009b).

5. Conclusion

RSCA as an econometric model, Wald test, and Spearman's rank correlation are used to analyze the comparative advantage in MENA, both region and country level. The analysis consists of two periods, i.e. 2000 and 2010 for minimization lack of data. Both as a whole, by industry classification, and by country group classification of MENA region are found to have shown de-specialization in 2000-2010 periods. For across industries, all of coefficients of specialization are not different, except natural resource intensive-unskilled labor intensive and natural resource intensive- technology intensive. For across country groups, all of coefficients of specialization are different in input classification. Both as a whole, by industry classification, and by country group classification of MENA region are found to have shown less dynamics of specialization in 2000-2010 periods.

Both as a whole and primary industry are found to have shown de-specialization in 2000-2010 period, except Syria. For natural resource intensive industry and unskilled labor intensive industry, a half of MENA countries are found to have shown de-specialization. For technology intensive and human capital intensive industry, more than a half of MENA countries are found to have shown de-specialization. Generally, there are less dynamics of comparative advantage in MENA countries for ten years, except Qatar. Rouis and Tabor (2013) find that all countries rely heavily on a few export commodities that are generally produced with low levels of skill and are unsophisticated. De-specialization in the pattern of trade specialization confirms increasing of intra-industry trande both in MENA region and countries.

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Table 1 Some Researches on Specialization and Convergence of Industrial Structure

Author, Year	Variable	Indicator	Analysis	Time	Country /Region	Data Source	Aggregate	Result
McCorriston and Sheldon (1991)	Export	Intra industry trade/Grubel and Lloyd Index	Specialization	1977 – 1986	United States (US) and European Community (EC)-9	OECD	3-digit SITC	The EC indicated a greater tendency towards intra-industry specialization in its geographical pattern of trade than the US.
Noland (1993)	Export	Regression	Specialization	1968 – 1984	Japan	USTR	Aggregate	Industrial policies have had an impact on Japan's trade specialization.
Dollar and Wolff (1995)	Export	Variation of export specialization (Balassa)	Concentration	1970 - 1986	9 countries	OECD	2-digit SITC	Increasing in 6, decreasing in 6 sectors.
Dalumn *et al.* (1998)	Exports	Standard deviation of export specialization (Balassa)	Specialization	1956 - 1992	20 countries	OECD	20 countries	Decreasing in 16 out of 20 countries.
	Exports	Standard deviation of export specialization (Balassa)	Concentration	1956 - 1992	20 countries	OECD	60 industries	Decreasing in 55 out of 60 industries.
Laursen (1998)	Export, R&D	beta	Concentration, specialization	1971 - 1991	19 countries	OECD	19 sectors	Stronger decreasing in exports than in patents.
Wörz (2005)	Export	Simple regressions beta	Specialization	1981 - 1997	6 regions	UNIDO	4 groups of industries	De-specialization
Fertő and	Export	Balassa Index	Specialization	1995 –	European	UNTCAD/WTO	3-digit	The extent of trade

Author, Year	Variable	Indicator	Analysis	Time	Country /Region	Data Source	Aggregate	Result
Soós (2008)				2002	Union - 15		SITC	specialization exhibits a declining trend.
Benedictis *et al* (2009)	Export	Generalized Additive Model (GAM) with country specific fixed effect	Specialization	1985 – 2001	39 countries	Global development network growth data	2 and 4-digit SITC	On average, countries do not specialize; on the contrary, they divers.
Widodo (2009a)	Export	Mean, standard of deviation, and skewness	Specialization	1976 - 2005	Japan, Korea, China, and ASEAN5 countries	UN-COMTRADE	3-digit SITC	The increases in comparative advantage have been mainly encouraged by de-specialization.
Widodo (2009b)	Export	Simple regressions beta and Spearman's rank correlation	Specialization	1985 - 2005	Japan, Korea, China, and ASEAN5 countries	UN-COMTRADE	3-digit SITC	De-specialization together with convergence in the pattern of trade specialization.
Martincus and Estevadeordal (2009)	Production	Panel data regression	Concentration	1985 – 1998	10 members of LAIA	UNIDO	3-digit ISIC	Reducing own most favored nation tariffs is associated with increasing manufacturing production specialization.

Table 2 The MENA Region's Coefficient of Specialization and Wald-test

Classification	Coefficient of Specialization	Wald-test
Total of MENA	0.74	438.32***
Industry Classification by ETA:		
1. Primary Product	0.73	301.86***
2. Natural Resource Intensive Product	0.71	129.49***
3. Unskilled Labor Intensive Product	0.77	78.67***
4. Technology Intensive Product	0.75	196.78***
5. Human Capital Intensive Product	0.75	136.31***
Country Classification by Endowment:		
1. Resource Poor and Labor Abundant Country	0.70	332.19***
2. Resource Rich and Labor Abundant Country	0.74	248.05***
3. Resource Rich and Labor Importing Country	0.77	187.34***

Source: UN-COMTRADE, author's calculation.
* significant at α=10%, ** significant at α=5%, *** significant at α=1%

Table 3 Wald-test of Coefficient of Specialization: across Industries

	Primary	Nat Res Intensive	Uns Lab Intensive	Tech Intensive	Hum Cap Intensive
Primary					
Nat Res Int	0.64				
Uns Lab Int	2.18	3.82*			
Tech Int	1.85	2.93*	0.28		
Hum Cap Int	0.98	2.11	0.37	0.02	

Source: UN-COMTRADE, author's calculation.
* significant at α=10%, ** significant at α=5%, *** significant at α=1%

Table 4 Wald-test of coefficient of specialization: across Country Groups

	RPLA	RRLA	RRLI
RPLA			
RRLA	5.02**		
RRLI	16.50***	3.67*	

Source: UN-COMTRADE, author's calculation.
* significant at α=10%, ** significant at α=5%, *** significant at α=1%

Table 5 Spearman's Rank Correlation across Period, 2000-2010

Classification	Spearman Rank Correlation
Total of MENA	0.68***
Industry Classification by ETA:	
1. Primary Product	0.74***
2. Natural Resource Intensive Product	0.64***
3. Unskilled Labor Intensive Product	0.77***
4. Technology Intensive Product	0.63***
5. Human Capital Intensive Product	0.57***
Country Classification by Endowment:	
1. Resource Poor and Labor Abundant Country	0.71***
2. Resource Rich and Labor Abundant Country	0.55***
3. Resource Rich and Labor Importing Country	0.60***

Source: UN-COMTRADE, author's calculation.
* significant at α=10%, ** significant at α=5%, *** significant at α=1%

Table 6 The MENA Country's Coefficient of Specialization and Wald-test

No	Countries	Primary		Nat Res Int		Uns Lab Int		Tech Int		Hum Cap Int		Total	
		Coeff.	W-test	Coeff.	W-test	Coeff.	W-test	Coeff.	W-test	Coeff.	W-test	Coeff.	W-test
1	Egypt	0.78	8.06***	0.76	1.67	0.80	3.87***	0.98	0.04	0.74	6.81**	0.81	17.8***
2	Jordan	0.76	13.98***	0.69	6.77**	0.70	2.09	0.79	5.62**	0.74	4.60**	0.73	38.49***
3	Lebanon	0.76	14.57***	0.63	4.80**	0.36	41.37***	0.63	11.92***	0.80	5.17**	0.70	51.56***
4	Morocco	0.86	4.44**	0.85	1.82	0.89	1.56	0.89	1.64	0.41	13.77***	0.83	20.36***
5	Tunisia	0.81	10.11***	0.89	1.88	0.77	11.66***	0.88	2.63	0.67	3.09*	0.83	21.26***
6	Algeria	0.84	13.13***	0.70	8.81***	-3.11	0.98	0.67	37.18***	0.11	264.1***	0.81	49.42***
7	Iran	0.86	3.41*	0.90	0.16	0.86	0.96	1.10	0.24	0.68	5.74**	0.88	4.89**
8	Syria	0.94	0.61	0.86	0.25	0.74	3.16*	1.05	0.01	2.08	23.15***	0.94	1.4
9	Yemen	0.75	5.82**	-0.02	4.91**	0.89	0.03	0.31	7.04**	0.92	0.12	0.84	6.20**
10	Bahrain	0.57	13.22***	0.94	0.11	0.40	29.56***	0.19	127.1***	1.03	0.02	0.45	97.83***
11	Oman	0.78	12.27***	0.89	0.29	0.05	49.41***	0.55	2.13	0.01	73.80***	0.61	44.27***
12	Qatar	0.54	31.49***	0.00	285***	0.00	860000***	0.19	195.3***	0.00	1963***	0.33	224.3***
13	Saudi Arabia	0.49	17.09***	0.77	4.29*	1.09	1.13	0.90	4.34**	0.84	2.06	0.74	25.90***
14	United Arab Emirates	0.58	52.89***	0.53	4.85**	0.40	22.07***	0.30	22.80***	0.62	11.62***	0.52	103.1***

Source: UN-COMTRADE, author's calculation.

* significant at α=10%, ** significant at α=5%, *** significant at α=1%

Table 7 Spearman's Rank Correlation across Period, 2000-2010

No	Countries	Primary	Nat Res Int	Uns Lab Int	Tech. Int	Hum Cap Int	Total
1	Egypt	0.77***	0.67***	0.80***	0.69***	0.81***	0.76***
2	Jordan	0.80***	0.80***	0.70***	0.70***	0.66***	0.75***
3	Lebanon	0.80***	0.83***	0.62***	0.57***	0.79***	0.75***
4	Morocco	0.87***	0.84***	0.88***	0.38***	0.39***	0.74***
5	Tunisia	0.81***	0.86***	0.92***	0.83***	0.43***	0.81***
6	Algeria	0.72***	0.69***	0.13	0.54***	0.44***	0.57***
7	Iran	0.78**	0.59**	0.43**	0.55***	0.72***	0.64***
8	Syria	0.80***	0.62***	0.74**	0.43***	0.66***	0.69***
9	Yemen	0.71***	0.62***	0.14	0.49***	-0.05	0.55***
10	Bahrain	0.59***	0.57***	0.69***	0.48***	0.47***	0.58***
13	Oman	0.78***	0.62***	0.20	0.51***	0.05	0.55***
14	Qatar	0.10	0.35	-0.23	0.02	0.03	0.05
15	Saudi Arabia	0.47***	0.70***	0.71***	0.56***	0.71***	0.60***
16	United Arab Emirates	0.75***	0.59	0.17	0.29**	0.65***	0.61***

Source: UN-COMTRADE, author's calculation.
* significant at α=10%, ** significant at α=5%, *** significant at α=1%