

# Trade Liberalization and Export Diversification in Selected MENA Countries<sup>#</sup>

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## Abstract

Export diversification has been an indispensable element in the discussion of the growth dynamics in developing countries since the 1950s, where the Prebisch-Singer thesis argued that concentration in the exports of primary products would lead to deteriorating terms of trade, income volatility and decreasing growth rates. Diversification of exports from fossil fuels and related products to other sectors has been a policy priority in the resource-rich MENA countries since the 1980s. This policy has been regarded as an integral part of wider economic policies in terms of liberalization of internal markets and external trade, and price and exchange rate reforms. This paper examines how trade liberalization affects export diversification in selected MENA countries by using a panel data analysis.

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## 1. Introduction

Export diversification has been an indispensable element in the discussion of the growth dynamics in developing countries since the 1950s, where the Prebisch-Singer thesis argued that concentration in the exports of primary products would lead to deteriorating terms of trade, income volatility and decreasing growth rates. Diversification of exports is expected to contribute to the output growth of developing countries through several channels, such as decreasing export instability by reducing the dependence on a limited number of commodities that are subject to fluctuations in prices and volumes, creating spillover effects and increasing productivity growth, making countries less vulnerable to sector-specific adverse shocks and making it easier to channel positive terms-of-trade shocks into growth. Export concentration is typically experienced as high dependence on the exports of natural resources, as in the case of gas and oil exporting countries of the MENA region. It is argued that this dependence would lead to a resource curse and Dutch disease by leading to a real appreciation of domestic currency that lowers the competitiveness of tradable sectors.

Diversification of exports from fossil fuels and related products to other sectors has been a policy priority in the resource-rich MENA countries since the 1980s. This policy has been regarded as an integral part of wider economic policies in terms of liberalization of internal markets and external trade, and price and exchange rate reforms. Trade liberalization in the region has accelerated in the last decade, when most MENA countries either have improved the extent of their bilateral trade relation (as in the case of Great Arab Free Trade Area-GAFTA, GCC customs union in 2003 and Agadir Agreement in 2004) or have been signing free trade agreements with the developed neighboring countries (Euro-Mediterranean Agreements of Algeria, Egypt, Israel, Jordan, Lebanon, Morocco and Tunisia with the European Union, free trade agreements of Jordan, Morocco and Oman with the US). One aspect of the discussion of whether trade liberalization via regional or preferential trade agreements would foster economic growth is the extent of export diversification in this process.

This paper discusses the patterns of export diversification in eight MENA countries; Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia and Tunisia, and the effect of trade liberalization in these countries on the diversification of their exported products. Following a

literature survey on export diversification and economic growth, descriptive statistics on the diversification of exports in the selected MENA countries are given, and then an econometric model is estimated in order to examine the effects of trade liberalization on export diversification in these countries.

## **2. Export diversification and economic growth**

The argument on the connection between export diversification and economic growth dates back to 1950, when Raul Prebisch and Hans Singer argued that the strong export concentration of developing countries on primary goods detains growth as well as the terms of trade and increases the income volatility (Prebisch, 1950; Singer, 1950). Furthermore, developing countries have to compete on the international market with many other countries that export primary goods. So if the prices increase in one country, they will not find buyers on the international market, as their products will easily be substituted by products of their competitors. This mechanism is mainly due to the low income elasticity of world demand for primary commodities; the demand for manufactured goods increases more rapidly than the demand for primary products, and in time the terms of trade for the exporters of primary commodities decline. The effect of lower skill and technology contents of production of primary goods and its marginal linkages with the other parts of the economy result in lower growth spillover. In this context, as Brainard and Cooper (1968) stated, “diversification” has become a commonplace goal of economic policy in less developed countries.

Another potential problem in concentration on the exports of certain products, especially of natural resources is that, a resource boom could divert resources away from the manufacturing sector and lead to an appreciation in the real exchange rate. This would lead to a decline in the competitiveness of traded products in international markets, which is known as the Dutch disease. Natural resource-abundant countries have also weaker incentives to industrialize, as they can earn the foreign exchange needed to finance their imports without industrializing. When industrialization takes place in those countries, they mostly specialize in physical capital-intensive products rather than knowledge intensive products, which will again have negative consequences on human capital development and wage inequality (Bonaglia and Fukasaku, 2003).

Still, natural resources should not only be regarded as a curse, as this wealth provides countries an opportunity to build new areas of competitive advantages of non traditional goods (Bonaglia and Fukasaku, 2003).

Another problem of specialization in a narrow group of exports is that export instability can occur in case there is a negative demand shock for those products. Export diversification stabilizes the export rates and makes the country less vulnerable to these shocks. The stability of diversification is then achieved at the expense of the benefits of effective resource allocation associated with specialization (Matthee and Naudé, 2008)

Ng (2006) analyses the relationship between the abundance of natural resources and growth, and finds evidence for a negative relation. This result implies that it is not the abundance of resources that detains growth, but the concentration of exports on primary goods. An example of resource rich countries in the OECD are Australia, Canada and the Scandinavian countries, which started as mainly primary good exporters, but could successfully diversify their exports (Hesse, 2008). Carrère et al. (2007, p.2) argue that, “evidence in favor of the Prebisch-Singer hypothesis only means that moving away from primary products is desirable; not that diversification is desirable per se”.

The connection between economic growth and export diversification regarding the developing countries has been broadly discussed in the recent theoretical and empirical literature. Al-Marhubi (2000) uses a cross country sample of 91 countries over the period of 1961-1988 for his cross sectional country growth regression, where various measures of export concentration were added to the basic growth equation. He confirms the existence of a relationship between growth and export diversity. Amin Gutiérrez de Piñeres and Ferrantino (1997) and Herzer and Nowak-Lehmann (2006) analyze the link between export diversification and economic growth in Chile, where both studies find evidence that Chile has benefited from diversifying its export products. Lederman and Maloney (2003) find a negative relationship between export concentration and GDP per capita growth in a cross-section and panel data regression. Similarly, De Ferranti et al. (2002) estimate that 1 percent increase in export concentration is associated with a 0.5 per cent decline in GDP per capita growth.

Hausmann and Rodrik (2003) and Hausmann et al. (2007) analyze the connection between benefits of export diversification and exports in general for economic growth by developing a theoretical framework and empirical estimations. Their approach differs from the others in the sense that they argue model economic growth is pushed by countries' diversification of their investments into new activities and not by comparative advantage as in the traditional literature. Hausmann et al. (2007) develop an indicator (EXPY), that describes that some traded goods (service products, manufactured goods) lead to higher productivity levels than others (primary goods). EXPY measures the productivity level associated with a country's export basket and gives evidence about the economic growth; as a country's productivity and growth depends on the goods, which are produced. Countries which produce high-productivity goods experience faster growth than countries with lower productivity goods.

Export diversification has different dimensions and can occur either horizontally or vertically. Horizontal diversification is simply an increase in the number of exported products and takes place within the same sector, where adding new products on existing export baskets within the same sector, helps to mitigate adverse economic risks (Herzer and Nowak-Lehmann, 2006; Samen, 2010). So export-oriented growth gains a bigger independency from certain sectors and a stabilization of the export earnings occurs (Al-Marhubi, 2000). "Horizontal export diversification may (also) generate positive externalities on the rest of the economy as export oriented sectors gain from dynamic learning activities due to contacts with foreign purchasers and exposure to international competition" (Herzer and Nowak-Lehmann, 2006, p.1825).

If there is a shift of exports from primary products to the secondary or tertiary sectors, vertical export diversity occurs. By this production shift, externalities on knowledge and new technologies are created. These externalities may benefit other economic activities, so that a horizontal diversification can be generated and improve the ability of industries to compete internationally (Al-Marhubi, 2000; Herzer and Nowak-Lehmann, 2006). Vertical export diversification also stabilizes the export earnings, as the prices of manufactured exports are less volatile than those of primary exports. Hausmann et al. (2007) conclude that the composition of a country's exports matters a lot, as countries that produce higher productivity goods have a greater export performance and benefit more from international trade. Hausmann and Rodrik (2003) also stress that the production and exports of a country depend on different determinants as well as on

coincidence. These determinants affecting the production of export goods will be discussed in the next section.

### **3. Determinants of export diversification**

There is a large literature on the determinants of export diversification, especially of developing countries. Using the “new trade theory” Krugman (1995) and Grossman and Helpman (1991) explained the horizontal and vertical intra-industry trade, especially concerning the attempts to secure infant industries of developing countries, with an analysis of the determinants of human capital and R&D expenditures on export diversification. In this context, knowledge-spillovers to developing countries through openness are of utmost importance and are explained through the externalities of “learning by doing” and especially of “learning by exporting” (Herzer, 2004).

One of the proposed determinants of export diversification is the level of development, usually captured by the country’s GDP per capita. Both supply-side (Aghion and Howitt, 1992) and demand-side growth theories (Fiorillo 2001) suggest that as GDP per capita grows, the pattern of preferences guiding consumption changes. The change in the elasticities of demand influences sectoral productivities, and thus the structural composition of the economy, where production and exports diversify from primary commodities to the products secondary or tertiary sectors. Acemoglu and Zilibotti (1997), emphasize limited diversification opportunities at lower levels of development because of the scarcity of capital and indivisibility of investment projects.

According to Imbs and Wacziarg (2003), the opportunities for risk diversification decline as income rises, and export diversification rises as GDP per capita increases. However, beyond a threshold income level the impetus to diversification declines; as high-income economies tend to be economically and institutionally more stable, the need for diversification reduces. In short, per capita income growth has a positive impact on export diversification for countries with low incomes, but at high GDP per capita levels, further growth in income would lead to greater export concentration.

Another potential determinant of export diversification is foreign direct investment. According to Gourdon (2010, p.22), FDI can lead to export diversification directly by entering the nontraditional export sector, or indirectly by increasing exports of traditional exports with the lowest share. On the other hand, if FDI is mainly directed to the exploitation of natural resources, export concentration on natural resources is likely to increase. The impact of FDI on export diversification has been examined in various studies; for example Ekholm et al. (2007) show that under certain circumstances, FDI enters the country solely for producing for export markets in third countries, thus the growth in exports would be towards new markets or on new industries, resulting in export diversification. Hausmann et al. (2007) stress that although FDI have a generally positive effect on export diversification, it has a higher impact on vertical diversification than on horizontal, which transfers more knowledge into the county but does not distract the focus of the economy of a country where natural resources are intensive.

Trade policy of the country is also considered as a determinant of export diversification. As stated in Melitz (2003), export activities carry a fixed cost, and under a protectionist trade regime, the export sector will be underdeveloped since only a limited number of firms will be able to afford the fixed costs of exporting, thus leading to an export concentration. Moreover, trade liberalization that leads to lower tariffs is expected to improve the access to foreign markets, which will eventually lead to export diversification as the country becomes capable of facing a more diverse demand from its partners.

#### **4. Trade liberalization in MENA countries**

Similar to other developing countries, MENA countries have gone through a trade liberalization process in the 1990s. Trade policy reforms in these countries have been mainly in the form of reduction of tariff rates, simplification of export and import procedures, elimination of export licensing requirements and reduction or suppression of import licensing. Algeria launched a trade reform package including broad trade liberalization measures in April 1994 and executed this reform in stages; tariff protection was reduced, import prohibitions were abolished, export prohibitions were eliminated, and by 1996, Algeria's trade system was free of quantitative restrictions (Nashashibi, 1998, p.58). Egypt adopted an economic stabilization program in 1990-

1991, including a significant reduction in MFN duties, removal of non-tariff barriers, reduction in domestic restrictions on pricing and distribution and elimination of export bans (WTO, 1999). Morocco was among early liberalizing countries in the region that followed policies through trade and investment liberalization after its economic stabilization program in 1983. Tunisia took measures to liberalize its trade with the structural adjustment program in 1986. Similar policies were adopted by Jordan in 1989, by Kuwait in the aftermath of its membership to the WTO in 1995, by Oman in 1996 and by Saudi Arabia after the mid-1980s.

Trade liberalization in the region has been a policy priority not only through structural adjustment programs, but also through regional and bilateral preferential trade agreements.

The most comprehensive trade agreement within the region is the Greater Arab Free Trade Agreement (GAFTA), which was declared within the Social and Economic Council of the Arab League as an executive program to activate the Trade Facilitation and Development Agreement that was signed in 1997 and has been in force since January 1998. GAFTA was founded by 17 countries of the region, Jordan, Iraq, Saudi Arabia, Kuwait, Yemen, Lebanon, Egypt, Bahrain, Libya, Oman, Qatar, Syria, Morocco, Sudan, Tunisia, the UAE and Palestine, with Algeria joining in 2005. GAFTA came into full force as of January 1, 2005, with full liberalization in trade of goods through the full exemption of customs duties and charges having equivalent effect between members of the GAFTA, except Sudan and Yemen being less developed countries. With GAFTA; all industrial and agricultural goods have begun to travel through the region duty free, but the agreement excluded services and investment (Abedini and Peridy, 2007).

Another preferential trade agreement in the region is Agadir Agreement, which was signed in 2004 between Egypt, Jordan, Morocco and Tunisia and came into force in March 2007. Agadir Agreement uses the European Union's rules of origin and takes some of its temporary exceptions from the liberalization schedules of the Association Agreements of the EU, which facilitates the member counties' trade with the EU. The Agreement also covers services liberalization following the commitments to the WTO (Brunel, 2008).

In 1981, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates created the Gulf Cooperation Council (GCC) with economic objectives such as implementing a free trade region with common tariffs on imported goods, strengthening the bargaining power with external



trading partners, harmonizing development plans and adopting a common oil policy and coordinating industrial policies. After a long period of little progress, the GCC countries formed a customs union in 2003 and a common market in 2008.

Trade liberalization has taken place not only within the region but also vis-à-vis developed countries. The most significant agreement among the countries in the region is Euro-Mediterranean Agreements of Algeria, Egypt, Israel, Jordan, Lebanon, Morocco and Tunisia with the European Union. The Euro- Mediterranean Free Trade Agreement is based on the Barcelona Process that was launched in 1995, aiming at political, economic and cultural rapprochement between the EU and the Mediterranean countries in the MENA region. In this context, the EU signed Association Agreements with Tunisia in 1998, Morocco in 2000, Jordan in 2002, Egypt in 2004, Algeria in 2005 and Lebanon in 2006. As the Barcelona Process included the EU associated countries, the mentioned MENA countries have signed (or negotiated) free trade agreements with Turkey and EFTA. The Association Agreements provided gradual elimination of trade barriers, included measures to facilitate trade, such as convergence of legislation on standards and conformity assessment, adoption of common rules for the rules of origin, and financial and technical assistance for the reforms in the Mediterranean countries, but liberalization in the agricultural sector has been limited (Brunel, 2008).

The countries in the MENA region have also signed free trade agreements with the US. The US-Jordan FTA was signed in 2000 and entered into force in 2001. The agreement included gradual liberalization in bilateral trade in goods and services, trade related issues of environment, labor, intellectual property rights protection, and rules of origin provisions.

With similar coverage, the US-Morocco FTA was signed in 2004 and entered into force in 2006, and the US-Oman FTA was signed in 2008 and began being implemented in 2009.

## **5. Export diversification in selected MENA countries**

Alongside the liberalization in trade policies, diversification of exports has become an economic policy priority in the MENA countries since the 1990s. Fluctuations in the oil prices and the vulnerability of the export revenues of oil-dependant MENA countries encouraged these

countries to diversify their export baskets. This section includes descriptive statistics on the pattern of export diversification in eight MENA countries; Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia and Tunisia. Trade data shows how exports of the selected countries have diversified or concentrated in time and among countries. From a data set that includes three-digit SITC Rev. 3 trade data compiled from UN COMTRADE database for the selected MENA countries for the period from 1991 to 2009, relevant variables for export diversification are shown.

The first indicator about export diversification in the region is the number of active lines of exported commodities. Among commodities at the three-digit SITC classification, all exported products having a positive value are taken into consideration.<sup>1</sup> As shown in Table-1, Algeria has the least number of commodities exported, whereas except for the last two years Saudi Arabia has the highest number of active lines. The change in the number of active lines may be an indicator of changing export patterns of the countries. In this sense, significant increases in the number of exported commodities are observed in almost all countries examined, except for Saudi Arabia and Tunisia. When the average numbers of active lines in the 1990s and the 2000s are compared, the highest rise is observed in Algeria (17%) and Jordan (12%).

Share of top four exported products in total commodity exports may be regarded as an indicator of concentration of exports on certain products. As seen in Table-2, in oil and natural gas abundant countries like Algeria, Kuwait, Oman and Saudi Arabia, only four products constitute about 90% of total exports. Certain amount of diversification from the top four items can be observed in Egypt, Jordan and Tunisia.

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<sup>1</sup> Only values less than \$1,000 excluded

Table 1: Number of active lines

	<b>Algeria</b>	<b>Egypt</b>	<b>Jordan</b>	<b>Kuwait</b>	<b>Morocco</b>	<b>Oman</b>	<b>S. Arabia</b>	<b>Tunisia</b>
<b>1991</b>	127	200	188	152	194	167	249	226
<b>1992</b>	153	207	191	180	197	173	252	223
<b>1993</b>	148	209	201	178	209	178	246	223
<b>1994</b>	136	225	221	191	222	167	249	231
<b>1995</b>	154	220	218	184	218	183	253	231
<b>1996</b>	178	219		187	215	203	248	230
<b>1997</b>	146	217	226	191	221	208		223
<b>1998</b>	169	215	176	185	231	207	251	228
<b>1999</b>	161	223	230	190	225	206	251	227
<b>2000</b>	182	225	234	156	221	216	251	229
<b>2001</b>	167	228	229	154	218	194	253	230
<b>2002</b>	174	229	226	157	230	215	256	234
<b>2003</b>	173	233	223	159	232	168	263	238
<b>2004</b>	178	237	233	163	232	200	263	238
<b>2005</b>	179	237	237		227	194	263	230
<b>2006</b>	175	236	230	237	227	196	260	233
<b>2007</b>	185	237	230	226	232	206	257	239
<b>2008</b>	187	251	237	235	238	212	106	232
<b>2009</b>	179		237		241	225	108	233

Source: Authors' calculation from UN COMTRADE data

Table 2: Share of top four products

	<b>Algeria</b>	<b>Egypt</b>	<b>Jordan</b>	<b>Kuwait</b>	<b>Morocco</b>	<b>Oman</b>	<b>S. Arabia</b>	<b>Tunisia</b>
<b>1991</b>	97.15	62.43	50.37	90.65	34.27	91.40	93.95	41.66
<b>1992</b>	95.28	57.33	45.73	95.88	32.38	91.95	88.74	45.15
<b>1993</b>	95.14	60.39	41.58	96.35	34.59	89.68	91.93	45.02
<b>1994</b>	95.64	55.31	44.19	95.79	35.41	87.42	93.50	44.63
<b>1995</b>	94.42	50.38	47.08	96.51	36.67	85.87	90.70	45.88
<b>1996</b>	91.94	57.04		96.53	36.35	87.06	91.65	48.70
<b>1997</b>	96.30	52.98	43.37	95.05	37.81	83.88		45.26
<b>1998</b>	96.22	40.18	52.47	89.20	38.60	77.53	88.07	45.62
<b>1999</b>	96.47	47.35	38.37	90.64	37.32	83.35	91.03	44.63
<b>2000</b>	97.21	52.02	27.35	96.57	36.69	87.44	93.82	45.88
<b>2001</b>	96.60	48.83	36.01	95.87	35.25	86.06	89.79	44.44
<b>2002</b>	96.10	48.22	39.66	95.28	33.98	83.96	91.16	43.56
<b>2003</b>	97.27	51.97	36.09	94.60	35.15	96.38	88.21	41.44
<b>2004</b>	97.36	50.65	30.17	95.73	34.11	88.79	89.59	39.76
<b>2005</b>	98.03	60.48	31.91		30.49	90.29	91.00	38.83
<b>2006</b>	97.90	65.65	30.76	96.28	32.74	89.14	89.95	36.74
<b>2007</b>	97.79	64.79	37.18	96.18	30.17	85.51	88.86	37.05
<b>2008</b>	97.56	43.88	40.73	95.58	40.50	86.57	91.48	36.61
<b>2009</b>	97.62		37.70		30.78	81.10	88.66	34.13

Source: Authors' calculation from UN COMTRADE data

Table-3 shows the share of services exports in total exports of the selected countries. In Algeria, Oman and Saudi Arabia, services cover a very low percentage of total exports, whereas the share of services in Egypt and Jordan is higher than many European countries (15% in Germany, 20% in Turkey, 22% in France, 33% in Spain). Though still low in share, Oman has shown a significant increase in services exports, from less than 1% in the early 1990s to 6.4% recently.

Table 3: Share of services in total exports

	<b>Algeria</b>	<b>Egypt</b>	<b>Jordan</b>	<b>Kuwait</b>	<b>Morocco</b>	<b>Oman</b>	<b>S. Arabia</b>	<b>Tunisia</b>
<b>1991</b>	3.22	64.75	54.42	47.67	27.40	1.24	5.81	27.60
<b>1992</b>	6.84	71.67	54.29	18.49	34.82	0.24	6.08	32.80
<b>1993</b>	6.14	71.77	55.62	10.56	35.68	0.24	7.18	34.91
<b>1994</b>	6.69	69.92	52.30	10.57	33.30	0.24	7.23	33.09
<b>1995</b>	7.88	71.38	49.14	9.65	31.53	0.22	6.62	31.43
<b>1996</b>	6.38	72.40	54.26	9.13	36.65	3.18	4.67	32.30
<b>1997</b>	5.40	70.59	52.42	11.08	34.58	3.40		31.98
<b>1998</b>	9.43	71.81	56.90	15.72	28.32	6.57	10.61	32.46
<b>1999</b>	7.82	73.06	48.31	11.40	29.34	5.41	9.58	33.53
<b>2000</b>	4.24	67.53	55.91	8.59	28.99	4.00	5.81	32.11
<b>2001</b>	4.64	68.46	39.33	9.33	36.06	5.20	6.86	30.58
<b>2002</b>	6.46	66.52	39.04	9.66	35.71	5.16	6.67	28.07
<b>2003</b>	5.99	64.25	36.20	13.22	38.43	5.10	5.77	26.79
<b>2004</b>	5.45	64.21	34.76	11.63	40.34	5.21	4.44	27.26
<b>2005</b>	5.17	57.90	35.29	9.62	42.00	4.78	5.94	27.71
<b>2006</b>	4.51	53.98	36.01	13.10	43.86	5.70	6.30	26.86
<b>2007</b>	4.51	55.33	38.37	13.96	45.44	6.20	6.37	24.46
<b>2008</b>	4.22	48.72	36.53	11.52	39.79	4.97	2.90	23.74
<b>2009</b>	6.24	50.43	41.68	16.70	47.28	6.41	4.78	28.45

Source: Authors' calculation from UN COMTRADE and WDI data

Table-4 shows the share of oil and natural gas in the selected countries' total commodity exports. The shares indicate that, except for Oman in the last decade, none of the oil-abundant countries of the region have managed to increase the share of their non-oil exports.

Table 4: Share of oil and natural gas in total commodity exports

	<b>Algeria</b>	<b>Egypt</b>	<b>Jordan</b>	<b>Kuwait</b>	<b>Morocco</b>	<b>Oman</b>	<b>S. Arabia</b>	<b>Tunisia</b>
<b>1991</b>	96.90	53.48	0.02	80.36	2.51	87.40	92.87	14.32
<b>1992</b>	96.04	43.45	0.09	94.53	3.15	83.74	87.01	15.10
<b>1993</b>	95.76	49.07	0.02	95.07	2.66	78.90	91.08	11.46
<b>1994</b>	96.15	38.17	0.10	93.87	2.08	76.48	90.07	9.48
<b>1995</b>	95.08	35.83	0.03	94.67	2.20	78.59	86.76	8.47
<b>1996</b>	92.80	46.25		95.22	1.63	80.42	88.57	10.51
<b>1997</b>	97.17	44.32	0.04	95.05	1.94	76.39		9.07
<b>1998</b>	97.01	28.53	0.07	89.13	1.46	68.05	84.27	6.44
<b>1999</b>	97.14	36.03	0.03	90.64	2.70	76.93	88.53	7.16
<b>2000</b>	98.08	40.93	0.04	93.29	3.66	82.49	91.45	12.09
<b>2001</b>	97.61	39.02	0.04	92.04	4.22	80.49	86.09	9.24
<b>2002</b>	96.84	32.55	0.01	91.20	3.64	77.25	88.05	9.34
<b>2003</b>	98.04	42.14	0.24	91.54	2.59	76.82	88.23	9.99
<b>2004</b>	98.14	41.69	1.13	93.03	4.49	81.56	87.85	9.58
<b>2005</b>	98.40	50.71	0.17		5.05	84.38	89.47	12.93
<b>2006</b>	98.05	55.10	0.83	94.89	3.76	82.95	89.16	12.98
<b>2007</b>	98.38	51.41	0.68	94.45	3.81	79.66	88.10	16.19
<b>2008</b>	98.14	43.13	0.12	94.60	4.19	77.46	89.52	17.31
<b>2009</b>	98.31		0.27		3.28	67.64	84.61	13.63

Source: Authors' calculation from UN COMTRADE data

Finally, Table-5 illustrates the Herfindahl-Hirschman Index (HHI) in selected MENA countries for the period 1991-2009. Albeit an imperfect indicator<sup>2</sup>, HHI is still the most commonly used statistic for measuring concentration, which sums the squared shares of each commodity in total exports. The index takes values from zero to one, the higher representing greater concentration. HHI in Table-5 is calculated using 3-digit SITC data for exports.

As expected, the highest HHI values are seen in the natural resource abundant countries like Algeria, Kuwait and Saudi Arabia. When the average HHI values for the 1990s and the 2000s are compared, exports have become more concentrated in Algeria and Saudi Arabia, whereas in all other countries the index values decreased. In other oil dependant countries, Kuwait and Oman, the rate of concentration declined significantly after the mid-1990s. Similarly, Jordan and Tunisia experienced a fall in their HHI values and managed to diversify their exports compared to the 1990s.

<sup>2</sup> As manufacturing data is available more disaggregated than export data on services, it is impossible to include services exports in the calculation of the HHI. Therefore HHI can be seen as an imperfect proxy for the level of export diversification in any given country (Hesse, 2008).

Table 5: Herfindahl-Hirschman Index

	Algeria	Egypt	Jordan	Kuwait	Morocco	Oman	S. Arabia	Tunisia
<b>1991</b>	0.3399	0.2264	0.1048	0.6510	0.0482	0.7090	0.6398	0.0629
<b>1992</b>	0.2988	0.1620	0.0869	0.8934	0.0459	0.6982	0.5586	0.0673
<b>1993</b>	0.3077	0.1951	0.0698	0.9013	0.0503	0.6195	0.5844	0.0663
<b>1994</b>	0.3136	0.0979	0.0683	0.8761	0.0509	0.5820	0.5806	0.0682
<b>1995</b>	0.3128	0.0860	0.0690	0.8909	0.0528	0.6093	0.5662	0.0698
<b>1996</b>	0.3156	0.1187		0.9008	0.0536	0.6397	0.5671	0.0760
<b>1997</b>	0.3002	0.1041	0.0695	0.3453	0.0548	0.5526	0.4977	0.0699
<b>1998</b>	0.3092	0.0756	0.0979	0.3123	0.0578	0.4299	0.5563	0.0723
<b>1999</b>	0.2997	0.0981	0.0563	0.3018	0.0559	0.5565	0.6541	0.0689
<b>2000</b>	0.3010	0.1291	0.0274	0.4326	0.0539	0.6490	0.5744	0.0467
<b>2001</b>	0.2900	0.1110	0.0444	0.4338	0.0518	0.4923	0.5930	0.0648
<b>2002</b>	0.3061	0.0896	0.0529	0.4002	0.0490	0.4589	0.5819	0.0629
<b>2003</b>	0.3293	0.1344	0.0459	0.4149	0.0506	0.5062	0.5558	0.0622
<b>2004</b>	0.3798	0.1306	0.0394	0.4364	0.0472	0.4814	0.5880	0.0593
<b>2005</b>	0.3823	0.1309	0.0411		0.0431	0.5171	0.5981	0.0543
<b>2006</b>	0.3969	0.1357	0.0392	0.4979	0.0447	0.4684	0.5944	0.0497
<b>2007</b>	0.3920	0.1267	0.0485	0.4693	0.0419	0.3696	0.6283	0.0513
<b>2008</b>	0.3720	0.0692	0.0580	0.5023	0.0598	0.3656	0.5563	0.0513
<b>2009</b>	0.3427		0.0478		0.0414	0.2892		0.0446

Source: Authors' calculation from UN COMTRADE data

## 6. Empirical Results

Theoretical discussions on dynamics of export diversification and recent efforts towards liberalizing the trade in the MENA region outlined in the previous sections permit us to draw several hypotheses to be tested. However, data limitation is the main obstacle to this task.<sup>3</sup> Eight countries in the MENA region are selected for the analyses. These countries are Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia and Tunisia. Despite the limited number of countries selected for the analyses, we think that, this sample is sufficient to represent the diversities in the MENA region in terms of degree of export diversification, income level, population and oil abundance. Each country in the sample presents a unique combination of these indicators: Egypt, Jordan, Morocco and Tunisia have relatively diversified exports; per capita income is high in Kuwait, Oman and Saudi Arabia; Jordan, Kuwait, Oman and Tunisia are less populated countries of the MENA region; Algeria, Kuwait, Oman and Saudi Arabia are oil-rich countries (Table-6).

<sup>3</sup> Data sources are UN COMTRADE for trade data and World Bank World Development Indicators for other data.

Table 6: Selected Macroeconomic and Social Indicators

	Algeria	Egypt	Jordan	Kuwait	Morocco	Oman	S. Arabia	Tunisia
<b>HHI</b>								
1992-2008 Average	0.33	0.12	0.06	0.56	0.05	0.53	0.58	0.06
Average Annual Growth Rate (1992-2008)	0.70	-2.62	0.40	1.36	1.82	-2.86	0.17	-0.32
<b>Oil Exports / GDP</b>								
1992-2008 Average	31.41	3.36	0.07	43.63	0.56	40.47	40.67	3.69
Average Annual Growth Rate (1992-2008)	5.27	6.59	170.82	21.76	10.61	2.39	6.95	7.12
<b>GDP (billion USD - constant)</b>								
1992-2008 Average	67.48	81.59	9.50	47.41	43.55	21.29	207.10	24.33
2006-2008 Average	114.94	109.01	15.29	99.26	62.64	37.84	332.33	32.23
<b>GDP per capita</b>								
1992-2008 Average (billion USD - constant)	2,176	1,272	1,916	19,354	1,520	8,804	9,853	2,548
Average Annual Growth Rate (1992-2008) - Constant Local Currency (a)	1.26	2.78	3.25	1.75	2.11	2.59	0.37	3.52
<b>Population</b> (million - 2008)	34.4	81.5	5.8	2.7	31.6	2.8	24.8	10.3

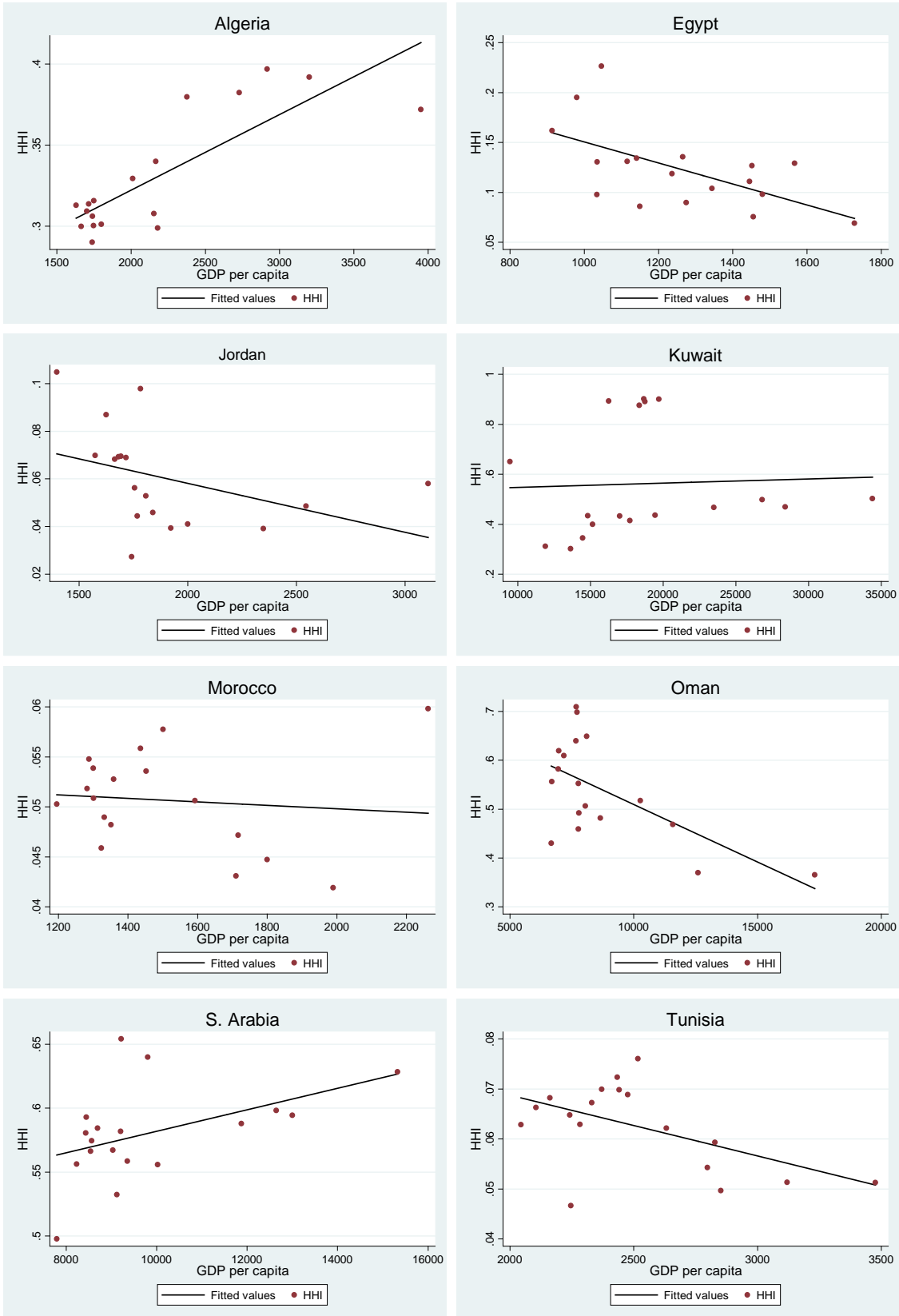
a) For Kuwait 1996-2007

Source: Authors' calculation from UN COMTRADE and WDI data

The first hypothesis considered is related with the interaction between export diversification and economic growth. Cross-country studies show that there is an inverse U shape relationship between these two variables (Bebczuk and Berrettoni, 2006; and Carrère, Strauss-Kahn and Cadot, 2007). In addition to per capita income as the indicator of the level of economic development, it is possible to consider the national GDP in order to see the effect of the size of the national economy on the export diversification. Nevertheless, first and second generation tests failed to reject presence of unit-root for level and first difference of GDP and GDP per capita. Consequently, we could not add these variables in the panel data models estimated.<sup>4</sup> Alternatively, ignoring the direction of causality, scatter plots given in Graph-1 may provide some information about the interaction between export diversification and GDP per capita. There is an inverse relationship between Herfindahl-Hirschman Index and GDP per capita in Egypt,

<sup>4</sup> Due to the significant variations in terms of degree of export diversification, income level, population and oil abundance among the countries selected for the analyses, it is not possible to ignore heterogeneity of the panel. Therefore, presence of unit-root is another restriction on the construction of the panel data models.

Graph 1: Relation between Export Diversification and GDP Per Capita





Jordan, Morocco and Tunisia, which shows that in the non oil producing countries increase in income level is associated with export diversification. In other words, these economies are on the increasing segment of the inverse U-shape curve.

Random effects estimation results for six panel data models are given in Table-7. Presence of unit-root is rejected for each variables used for the estimation. Dependent variable of the models is Herfindahl-Hirschman Index (HHI), where decrease in this index shows diversification in exports. Population growth rate (POPGR) and percentage share of nonoil commodity exports in total exports (COMM) are used as explanatory variables in all models estimated. Decrease in POPGR is considered as an indicator of social development. Positive and significant parameters estimated for this variable indicates that social development stimulates the export diversification. It is also possible to link population growth rate to per capita income: Population growth rate decreases as income level increases. Coefficients of correlation for these variables are given in Table-8. Combining with the evaluations of scatter plots, significant and negative coefficients calculated for Egypt, Jordan, Morocco and Tunisia indicate that these non oil producing countries provide weak support to the first hypothesis.

Increase in share of non-oil commodity exports in total exports (COMM) can be taken as the indicator of weakening of the country's dependence on natural resources and improvement in productive capacity. Considering economic growth and productive capacity nexus, COMM as an explanatory variable in the model serves to test the first hypothesis. It is expected that the rise in the share of nonoil commodity exports in total exports reduces the value of the Herfindahl-Hirschman Index. In all models, estimated coefficients of this variable is negative, as expected. However, only in the models where trade liberalization indicators are not used as explanatory variables, estimated coefficients are significant.

Table 7: PANEL Results - Random Effects - 1992-2008 (\*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	<b>0.358491 (a)</b> <b>4.56094</b>	0.1605 1.53635	<b>0.183494 (b)</b> <b>1.98795</b>	<b>0.442248 (a)</b> <b>3.92787</b>	<b>0.16398 (c)</b> <b>1.7818</b>	<b>0.180703 (b)</b> <b>1.98899</b>
POPGR	<b>0.022046 (a)</b> <b>4.61644</b>	<b>0.020192 (a)</b> <b>4.34789</b>	<b>0.020325 (a)</b> <b>4.37253</b>	<b>0.022461 (a)</b> <b>4.71945</b>	0.021034 (a) 4.5548	<b>0.021258 (a)</b> <b>4.55499</b>
COMM	<b>-0.00412 (a)</b> <b>-2.77634</b>	-0.00216 -1.2637	-0.00217 -1.3174	<b>-0.00414 (a)</b> <b>-2.80298</b>	-0.00196 -1.17912	-0.00225 -1.36167
OILGDP		0.002055 1.44264	<b>0.002645 (b)</b> <b>2.12106</b>	0.000748 0.70437	<b>0.003122 (b)</b> <b>2.33456</b>	<b>0.002616 (b)</b> <b>2.07762</b>
WTO		<b>-0.05815 (b)</b> <b>-2.0022</b>	<b>-0.05397 (c)</b> <b>-1.89665</b>		<b>-0.04862 (c)</b> <b>-1.71748</b>	<b>-0.04973 (c)</b> <b>-1.73837</b>
GCC		<b>0.32167 (b)</b> <b>2.21439</b>	<b>0.275435 (b)</b> <b>2.30973</b>		0.175858 1.203	<b>0.267935 (b)</b> <b>2.30523</b>
EU		<b>0.052679 (b)</b> <b>2.27216</b>	<b>0.049186 (b)</b> <b>2.15851</b>		<b>0.042679 (c)</b> <b>1.86596</b>	<b>0.045774 (b)</b> <b>1.99515</b>
GAFTA		<b>-0.04827 (b)</b> <b>-2.06288</b>	<b>-0.04745 (b)</b> <b>-2.02794</b>		<b>-0.04275 (c)</b> <b>-1.84099</b>	<b>-0.04278 (c)</b> <b>-1.82103</b>
OILRSVNCH		<b>-0.03286 (c)</b> <b>-1.66954</b>	<b>-0.03379 (c)</b> <b>-1.71563</b>			
POP		0.047911 0.83362				
INVS				-0.00393 -1.4085		
TARIFF				-0.00112 -0.86061		
OILSHARE					0.007757 1.04115	

\*) t statistics are given in the second line

a) Significant at 1 %

b) Significant at 5 %

c) Significant at 10 %

Table 8: Correlation between Population Growth Rate and GDP Per Capita

Algeria	Egypt	Jordan	Kuwait	Morocco	Oman	S. Arabia	Tunisia
-0.32	-0.76	-0.52	-0.25	-0.60	-0.29	-0.07	-0.67

Share of non-oil commodity exports in total exports (COMM) may also be used to test to what extent oil abundance affects export diversification. The second hypothesis that, is rich oil reserves hinder the development of new economic activities. Consequently, natural resource abundance can be seen as an obstacle to diversification of exports. Significant coefficients estimated for COMM support the second hypothesis. Ratio of oil and gas exports to GDP (OILGDP), change in national oil reserve (OILRSVNCH) and share of national reserve in world reserve (OILSHARE) are used as the explanatory variables to test the second hypothesis.<sup>5</sup> Coefficient of OILSHARE in Model-5 is insignificant. Positive and significant coefficients estimated for OILGDP in Model-3, 5 and 6 indicate that greater dependence on oil export revenues slow down the diversification of exports. Effects of the change in national oil reserves can also be considered in the context of the second hypothesis. As a non renewable resource, decrease in national reserve may stimulate emergence of new economic activities and creation of alternative earnings. Therefore, it is plausible to expect that the decrease in oil reserve yields a decline in the value of the Herfindahl-Hirschman Index. However, panel estimation of Model-2 and 3 give negative and significant coefficients for change in national oil reserve (OILRSVNCH). This result is an outcome of the heterogeneity of the panel in terms of oil reserve rather than a weakness of the hypothesis: OILRSVNCH is zero for non-oil producing countries which is higher than some negative values in oil rich countries. Considering that values of Herfindahl-Hirschman Index calculated for non-oil producing countries are relatively very small in the sample, lower values of OILRSVNCH associate with higher values of HHI (see Table-6).

In the previous sections, interaction between trade liberalization and export diversification is discussed, and considerable efforts of MENA countries towards liberalizing their trade regimes are presented. In the light of these discussions, it is worthy to test the effect of trade liberalization on export diversification as the third hypothesis. We may hypothesize that liberalization of trade regime enhances the export diversification efforts. A decline in the average tariff rates is a widely used but imperfect indicator of liberalization, as it shows only the reduction of the trade barriers of the country in question, but fails to give a particular idea about the removal of trade barriers against the country's export products. Parallel to this context, the model failed to estimate a significant coefficient for TARIFF. Alternatively, trade agreement dummies are employed to

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<sup>5</sup> Instead of share of oil exports in total exports OILGDP is used in order to eliminate multicollinearity with COMM.

control the effect of efforts of these countries to liberalize their trade regimes as discussed in section 4.<sup>6</sup> Dummies used in the models are WTO for World Trade Organization Membership, GCC for membership of Gulf Cooperation Council, EU for Association Agreements of the European Union and GAFTA for joining Greater Arab Free Trade Agreement. Except for one coefficient, GCC, in Model-5, all coefficients of the trade agreement dummies are significant. Negative coefficients for WTO indicate that liberal trade requirements of World Trade Organization stimulate the export diversification in these MENA countries. As a result of full liberalization target of Greater Arab Free Trade Agreement in trade of goods between member countries, coefficients of GAFTA are also negative, which show that both WTO and GAFTA serve similar trade diversification effects on the member countries. The coefficients of EU, on the other hand are positive. These results indicate that the Association Agreements with the European Union boost specialization rather than diversification in exports of these countries. Estimated coefficients of GCC are also positive. Since all members of Gulf Cooperation Council are oil-rich countries, this result is an outcome of the similarity in the export pattern of these countries rather than the Council's power to reshape the trade regimes of its members.

Finally, considering that larger economies have potentially diversified productive capacity through scale effect, we intended to include population as a control variable. However, due to presence of unit-root in the population data, we added a large country dummy (POP) in the Model-2. POP takes value one if the average population of the country is greater than 10 million during 1992-2008 period, and zero if not. The coefficient of POP is estimated as insignificant. This result indicates that the other determinants of export diversification covered in the panel models suppress the effect of scale.

## **7. Conclusion**

This paper aims to examine the main sources of export diversification in Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia and Tunisia. Especially the oil-abundant countries of the MENA region regarded the diversification of their exports to non-oil products as

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<sup>6</sup> Regional economic integration is seen as the violation of free trade due to multilateralism rather than bilateralism (Fernandez and Portes, 1998).

an economic policy priority in order to minimize the risks of sector-specific adverse shocks and fluctuations in the oil prices. This policy has been seen as an integral part of wider economic liberalization and trade openness policies of these countries since the 1990s. The countries of the region not only focused on multilateral trade liberalization through the removal of trade barriers by membership to the WTO, but also got involved in regional or bilateral free trade agreements.

The Herfindahl-Hirschman index results show that the countries that are not dependant on the exports of fossil fuels managed to increase the diversification of their exports when compared to the 1990s. When oil-rich countries of the region are considered, a duality is seen; while the exports have become more concentrated in Algeria and Saudi Arabia, the rate of concentration declined significantly in Kuwait and Oman.

Panel estimations have tested three hypotheses regarding export diversification in the selected MENA countries. First, the interaction between export diversification and economic growth is examined. Due to the existence of unit roots in the variables GDP and GDP per capita, population growth rate, share of non-oil commodity exports in total exports are taken as proxies to economic growth and the estimation results for these variables show an inverse relation between economic growth and export concentration. The second hypothesis is that, rich oil reserves hinder the development of new economic activities. In different models where the share of non-oil commodity exports in total exports, ratio of oil and gas exports to GDP, change in national oil reserves and share of national reserves in world reserves are used as explanatory variables, results supporting this hypothesis are found. Finally, the effect of trade liberalization on export diversification is tested. The results illustrate a dual effect of trade liberalization on diversification; on one hand, multilateral liberalization through WTO and the wide-based regional trade agreement GAFTA foster the efforts of these countries towards export diversification, where on the other hand Association Agreements with the EU and the membership to the GCC lead to specialization on the exportation of certain products rather than export diversification.

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