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Research Article

Product Life Cycle and Innovativeness: The Case of MENA

Uğur Aytun[1], Yılmaz Kılıçaslan[2]

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Abstract

One discussion in the literature of economics is the interaction between product life cycle and technological advancement. Firms may enjoy high profits and pay higher wages to the workers due to higher prices by introduction of new products in early stages and product developments in later stages. The aim of this study, by assuming that life cycle stage of a product represents its level of technology intensity, is to measure the innovative capabilities of selected benchmark and MENA countries by developing a maturity index, and then to see how MENA countries adapt themselves to relative maturity changes of products at the global level. Empirical findings using COMTRADE bilateral trade data for the period 1996-2013 showed that most of MENA countries' –especially Algeria and Turkey- adaptation performance fall in high- and low-tech industries. Moreover, adaptation pattern of MENA countries except for Egypt shows a decreasing trend in the highest growing products in the World trade. The performances of benchmark countries such as USA, South Korea, and Germany in terms of maturity adaptation were found to be increasing. We found that adaptation performance of MENA countries showed improvements in medium high- and medium low-tech industries mostly due to chemical and plastic industries in the last quarter. All these findings imply to call for policies that give incentive to create young products in high-tech and most demanded industries and to rejuvenate those already exist.

Keywords: product life cycle, manufacturing industry, innovation, MENA.

JEL Codes: F44; O12; O14; O30

[1] Department of Economics, Ahi Evran University, Kirsehir, Turkey. uguraytun@ahievran.edu.tr
[2] Department of Economics, Anadolu University, Eskisehir, Turkey. ykilicaslan@anadolu.edu.tr

1. Introduction

Technological change with the introduction of ICT (Information and Communication Technologies) and removal of trade barriers over the past 35 years has led to substantial structural changes in both production and trade of developing and developed countries. Some late developing or developed countries, such as South Korea, Japan, and to a certain degree, China, started the transformation by establishing assembling industry. This, then, followed by creation of their own brands in young and technology intensive industries like automobile and electronics. However, some other countries, especially those in Africa and Middle East, specialized in the industries mostly based on resource and low technology insensitive industries. This paper addresses the question whether technological efforts and adaptation to product developments may contribute to the trade performance of countries.

Since Vernon (1966)'s seminal work on product life cycle, it is well known that all products have evolutionary process in global trade like human being. The process includes introduction, growth, mature, and decline in trade. Innovative activities vary across in these stages of product life cycle. For example, in early stages of the cycle, the activities are more intense and thus young products provide substantial gains to those who make these products because they are price-maker. Therefore, a country specializing on these products will develop its competitiveness, the degree to which a country can produce tradable goods while raising the income level of its citizens (OECD, 1992, p. 237). In the later stages, those focusing more on process innovation and investing in capital equipment may also keep their position in the market.

Based on the close relation between innovative efforts and life cycle of the product, in this paper, we aim to construct an innovativeness index by calculating maturity levels of manufactured products. This analysis allows us to see which products have upward or downward maturity trends at national and global scale. Moreover, this analysis sheds light on how countries adapt the innovativeness of their products relative to the global market for different technology intensive industries based on OECD (2011, pp. 5) manufacturing industry classification and for most-demanded products.

We estimate quadratic econometric models to calculate maturity index for each product for MENA countries and selected benchmark countries by using COMTRADE bilateral trade data for the period 1996-2013.

The paper is organized as fallows: In section 2, we discuss the underlying theoretical and empirical studies on the link between innovation and product life cycle. We introduce how we calculate the innovativeness index following Audretsch et al. (2012)'s methodology in section 3. Section 4 presents some empirical evidence for selected products, MENA and some industrialized countries. Finally, section 5 concludes and derives sector-level policy implications for MENA countries.

2. Product life cycle and innovation

The concept of "product life cycle" was first introduced by Jones in 1957. He explains the effect of "new products" on sales growth as follows (Gardner, 1986, pp. 5):

> *"There are compelling forces behind this drive for new products. There is life cycle that is characteristic of many -if not most- products. Since all products are 'new' at their outset, we can call it the basic life cycle for new products."*

Life cycle of a product has five stages: introduction, growth, maturity, saturation, and decline. Levitt (1965) extended this approach that degree of newness and complexity of any product

determines the length and slope of development stage. Producers, on the other hand, may delay later stages (maturity and decline) through product improvements and keep their products alive. Tallis and Crawford (1978, pp. 131) stated that only if innovative modifications are made, it is possible to claim that product reaches to the death stage. One can argue that there is an interrelation between life cycle of the product and innovative efforts. On the one hand, life cycle of the product determines the kind and magnitude of the innovative efforts, innovative efforts of entrepreneurs may affect the life cycle of the product on the other. For example, according to Abernathy and Utterback (1978, pp. 42-45), in the early stages, radical innovations are most likely to occur, thanks to science-based universities or entrepreneurially oriented financial institutions. As the industry matures, firms focus more on "formal" research and development investments that may include the process innovation and product differentiation through functional improvements. In fact, technological efforts are affected by the supply and demand conditions of the market. Stadler (1991, pp. 303), thereby, has modified this approach by emphasizing that in the search period for a new product, R&D expenditures have fastest basic innovation rate in the "pre-innovation" market structure which is a type market between monopoly and perfect competition. As product matures over life cycle, R&D efforts decreases because of limited technological opportunities. Klepper (1996, pp. 562-563) has also modelled the product life cycle model by examining entry and exit rates of firms and concluded that when industry is on the introduction stage, the entry precedes the exit and thus product innovation is to be high. This fallows with diminishing of the number of firms and product innovation rate. Finally, Audretsch (1987, pp. 302-304) empirically showed that innovation rate and labor skills affect positively the likelihood of being in the stage of "growth" and negatively "declining" or "mature" stage in U.S industries. The impact of capital-output ratio compared to innovation rate and labor skills has opposite effects on these stages.

Differently from the literature mentioned above, Vernon (1966, pp. 200) argued that the probability of creating new products is higher in developed countries because of high income and unit labor cost. The production location of new products would then shift to the developing countries due to low labor cost and not to lose the market. This argument based actually on Leontief's paradoxical findings about the trade patterns of US industries were found to be consistent with empirical evidence by several studies (Keesing, 1967; Gruber et al., 1967; Baldwin, 1971; Hirsch and Bijaoui, 1985; Lee and Stone, 1994). Keesing (1967, pp. 40-45) analyzed correlation coefficients between the international competitiveness and various variables such as R&D expenditures, capital and labor skill requirement, and economies of scale and found strong evidence that R&D activity is highly correlated with trade performance. Moreover, he confirmed that R&D is associated with scale and skill requirements and concluded that comparative advantages of US industries are primarily explained by the newly created products.

Gruber et al. (1967, pp. 23-30) also examined the link between the competitiveness of US exports and R&D expenditures assumed to be the proxy for the new product orientation. They found that there is a strong relation between the World share of US exports and R&D expenditures in the industries having higher share of total US exports. However, they reached insignificant results when Germany and United Kingdom were used as denominator. This result was attributed to the similarity of export profiles of these countries. They found significant and positive coefficients in another exercise in which they normalized US exports with French and non-Europe exports whose innovational habits different from US.

Baldwin (1971, pp. 141-143) concluded that trained labor mostly engaging in research and development activities give temporary advantage based on technological opportunities in their industry level cross-section regression model where dependent variables were net US exports

across trade partners (Canada, Japan, and Europe) and the World.

Hirsch and Bijaoui (1985, pp. 247-248) used trade, R&D and size data of Israeli innovative firms in a regression analysis for period 1975-1981. They accepted the product life cycle hypothesis that the higher R&D intensity is associated with higher propensity to export. However, in their analysis, they didn't find a significant relation between firm size and export propensity. They explained this finding with the fact that every rational firm must reach certain domestic sales volume to make R&D profitable.

Lee and Stonae (1994, pp. 759-762) distinguished the product R&D from process R&D expenditures and used them as regressors in export model for two-digit eleven US manufacturing sectors for 1974-1978. Their panel data model findings controlling the fixed and time effects showed that both kind of technological efforts equally affect the export performance of industries.

According to Krugman (1979, pp. 265-266)'s simple general equilibrium model to formalize the life cycle theory, new industries systematically born in North and obtain quasi rents due to the monopoly power. These industries would then disappear because of cost competition with developing South. Finally, transfer of technology to South ends up this cycle.

Grosman and Helpman (1989, pp. 28-29) incorporated life cycle theory into endogenous growth theory. In their model, length of the life cycle, innovation and technology transfer are endogenously determined. As Krugman (1979) found, they concluded that if south accelerates the imitation rate of new products by widening resource base and developing learning activities, monopoly period of North would shorten. This will push the North to increase the innovation rate to keep living standards high by expanding the size and product development.

The two models above did not consider whether distinct effects take place between skilled and unskilled labor as the cycle evolves. By using similar modeling, Audretsch and Sanders (2007, pp. 2) found that entrepreneurs and skilled labor undoubtedly benefit from the new opportunities in the North.

3. Data and methodology

In this study, we use the United Nations' COMTRADE (2014) bilateral trade database. Harmonized System (HS) is so highly disaggregated (6 digit, 4954 sectors including manufacturing and agriculture for period 1996 to 2012) commodity classification that makes possible to analyze on almost single product level.

We used the approach developed by Audretsch et al. (2012) to measure the maturity level of products at global and national level. Before showing the new index, we introduce traditional life cycle models based on Audretsch (1987), Audretsch and Feldman (1996) and Sanders et al. (2007). These models generally regress the total sales against quadratic time trend. If sales variable is replaced by global export value of the commodity, then the equation to be estimated may be written as follows (Audretsch et al., 2012, pp. 5-6):

$$\ln(\exp_{it}) = \beta_0 + \beta_1 t + \beta_2 t^2 + \beta_3 \ln(exp_t) + \epsilon_{it} \quad (1)$$

In equation (1), exp represents the global export value and subscripts i and t denote product and time, respectively. For the right hand, t and t^2 are used to determine the stage of product life cycle. exp_t is added to model to control for the global business cycle. Finally, ϵ_{it} is the usual error term. After taking the derivative of equation (1) with respect to time, we can obtain the maturity index (M_{it}) of product i for a given year (Sanders et al., 2007, pp. 10-11):

$$M_{it} = \frac{\partial(\ln(\exp_{it}))}{\partial t} = \beta_1 + 2\beta_2 t \quad (2)$$

According to equation (2), higher M_{it} value means less maturity of product i, or vice versa. Superiority of the index value calculated above is to be a time varying variable. Moreover, this index shows the rejuvenated products via technological developments or product differentiation.

We take this approach one step further in order to construct a maturity index for each tradable product of country j (M_{ijt}):

$$\ln(\exp_{ijt}) = \gamma_0 + \gamma_1 t + \gamma_2 t^2 + \gamma_3 \ln(exp_{jt}) + \varepsilon_{ijt} \quad (3)$$

$$M_{ijt} = \frac{\partial(\ln(\exp_{ijt}))}{\partial t} = \gamma_1 + 2\gamma_2 t \quad (4)$$

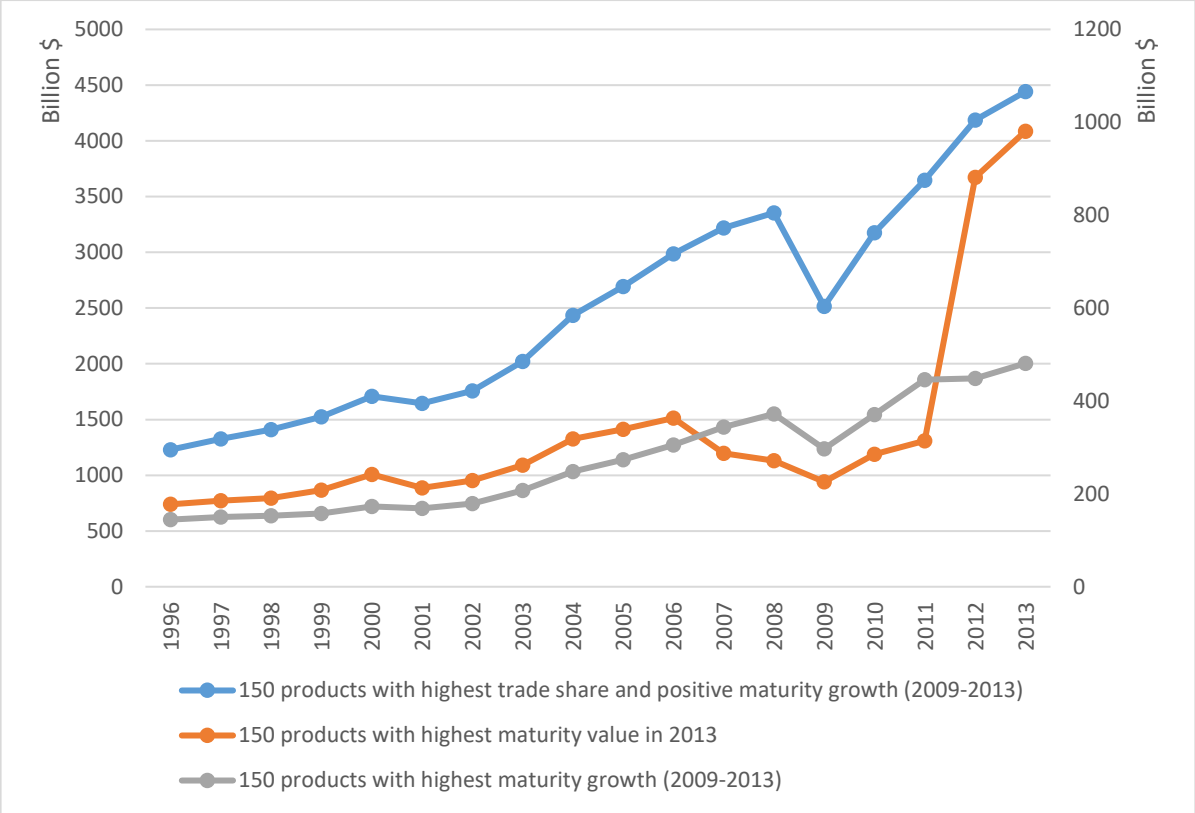
where $\exp_{ijt}$ is export value of product i for country j at time t. exp_{it} in equation (3) controls for export fluctuations in country j, differently from (1) and (2).

By using equation (2) and (4) we can find world's and country j's maturity index value in period t, respectively. Dividing relative changes of these values each other proportionally and then taking weighted average for each technology category and for 150 high-share products, we can also see the adaptation degree of country in question to world market in terms of maturity change.

4. Empirical Findings

In order to examine the countries' innovativeness performance, we first selected 150 products as the best performers. These products were chosen with respect to both trade performance and maturity level. Specifically, we chose the products not only whose maturity is positive but also World trade shares are the highest in the last 5 years. The 150 youngest products based on 2013 maturity score and percentage maturity score change between 2009 and 2013, respectively, are presented in Table 1-2 in appendix. These products have little weight in world trade and more than half of them significantly consist of low-tech and/or medium-low tech products according to OECD (2011, pp. 5) classification. This finding is also consistent with Audretsch et al. (2012, pp. 7). They explain this finding with the fact that resource boom in 1990s led to considerable increase in trade volume and thus they seem to be rejuvenated. It is also questionable that moving toward an industry with low demand-low technological intensity spurs the development of a country. To overcome these problems, we decided to leave these products out and to consider those having high trade shares and positive maturity growth for the period 2009-2013. In Table 3 in appendix, we ranked the 150 products with highest five-year average trade share in global market based on maturity growth rate. As expected, more than two-thirds of these products have turned out to be medium high- and high-tech products. Note that 15 out of first 30 youngest products are medium high-tech and subject of value chains (Taymaz et al., 2011). This suggests that traditional sectors like automobile may be in the foreground in global market. We present global trade values of three different groups of 150 selected products in Figure 1. we aggregated global trade values of products of each table above and compare their trends. Figure 1 depicts that "150 products with highest maturity value" (right axis) has steepest trend in last five years. The trend of "Total trade of 150 products with highest share and positive maturity growth" (left axis) is similar. "150 products with fastest maturity growth" (right axis) constitutes a relatively small share of World trade. In this study, we chose and examine "150 products with highest share and positive maturity growth".

Figure 1: Total trade of 150 products with the highest share and positive maturity growth (left axis), 150 products with highest maturity value (right axis), 150 products with fastest maturity growth (right axis), 1996-2013



Source: Authors' calculations based on COMTRADE (2015) database.

4.1. Twenty youngest products in the highest trade share group

In the sections, we compare the MENA and benchmark countries' maturity performance trend with global market for 20 individual youngest products selected (Figure 1-20 in Appendix-B).

Overall implication of these figures is that US, Germany and South Korea sharply diverge from global market tendency in five products. The figures show that the maturity patterns of 8 products diverged from the World pattern in China. In other industries, despite of lags or leads, their maturity index patterns are pro-cyclical.

For MENA region, the first thing we must state that all MENA countries except for Turkey could not continuously managed to export all 20 youngest products over the period. Secondly, for last five or six years, these countries showed more divergent pattern than benchmark countries (US, Germany, South Korea, and China). In half of the number of products, on average, they formed scissor-shape with global curve. Among this group, Jordan is the best performer, having four out of seventeen of scissor-shapes. Jordan is followed by Algeria (4/9) and Oman (4/10). The worst performers among MENA countries are Saudi Arabia (9/15), Yemen (3/5), Turkey (13/20), and Egypt (10/15). In sum, MENA countries were not successful in adapting their product development to global trends.

4.2.Technological categories and 150 highest share products

In this section, we compare each skill and technological intensity and 150 most demanded products, by taking weighted average with total export shares. Our weighted average results are tabulated in the Table 1-5. To see the structural changes in countries and avoid business

cycles such as 2001 and 2008, we split our sample into four periods, and then proportioned the relative maturity changes of countries to world. Furthermore, to see changes in the productive structures of countries not based on natural resources, we implemented the procedure again by excluding them in medium-high and medium-low tech industries since chemical (except pharmaceutical industry) and plastic industry is closely related with the petroleum industry.

Table 1 shows the results of the benchmark countries' high-tech industry analysis, which include aircraft, pharmaceuticals, office and computing machinery, radio, TV and communications equipment, medical precision and optimal instruments. Our results illustrate that adaptation values of China, Germany and US increased at the end of the period compared the beginning. South Korea, on the other hand, fade away its performance in this period. Among MENA countries, adaptation value of Algeria, Jordan, Kuwait, Morocco, Oman, Qatar, Tunisia, Turkey and Yemen decreased in the same period.

In the medium-high tech industries (electrical machinery, motor vehicles, chemicals excluding pharmaceuticals, railroad equipment and machinery equipment), China is the only country increasing the maturity adaptation. We found that South Korea's results are highly sensitive to the presence of chemical sector in the analysis (Table 2). Value of US decreased but it jumped in 2005-2008 period because of the extraordinary maturity adaptation performance in carbon and graphite electrodes (HS-854519). For MENA countries, the maturity adaptation in Egypt, Kuwait, Lebanon, Qatar, Tunisia, and Yemen diminished. We found that the maturity adaptation decreases in Algeria, Jordan, Morocco, and Saudi Arabia when chemical sector is excluded. Moreover, even though chemical industry in Algeria, Bahrain, Egypt and Saudi Arabia has important weight in total export basket, they could not adaptively manage product development process since their maturity adaptation values including all products are less than the excluding chemical sector for at least three periods. To a lesser extent, we observed similar findings for Germany and US but their total export share of chemical industry is smaller than the MENA. Therefore, this situation does not affect their competitiveness so much.

When we compare the results of for all products with the one excluding rubber and plastic industry for each period, China's maturity adaptation performance in medium-low tech industries showed an improving performance in the model for all products (see Table 3). While adaptation performance of Germany and US is developing in both groups, performance of South Korea turned out to be good in industries based on non-plastic such as building of ships and boats, non-metallic mineral products and basic and fabricated metals. Within MENA group, Egypt, Morocco, Qatar and Saudi Arabia enhanced their adaptation for both product groups over time. Bahrain, Kuwait and Turkey are the countries improving their maturity adaptation in all products.

Findings of low-tech industries, which consist of textile, food and beverage, garment and tobacco, paper and recycling industries, presented in Table 4. The findings show that China, South Korea and US has become more adaptive in low tech industries at end of the period. Although Germany had very high adaptation value, it was not as high as at the beginning. This finding may imply that although these countries –except China- moved production chains to less developed countries, they keep product development stages at home. Adaptation level of the most of MENA countries sharply fell in last period. Substantial developments in benchmark countries leads to the products MENA countries exports get older. Even though most of MENA countries have negative values at extraordinary levels in last period, other countries have declining performance over time as well. Only Egypt in this group showed improvement.

Table 1: Weighted average results of high-tech products

Country	1996-2000	2001-2004	2005-2008	2009-2013
	all	all	all	all
Algeria	-0.31	21.28	2.28	-3.33
Arab Emirates			-6.59	
Bahrain		-5.06	1.77	-2.68
China	-0.04	1.02	10.40	3.53
Egypt	0.30	-29.60	5.33	8.10
Germany	-1.49	-16.38	1.17	2.64
Iran		0.10		
Jordan		-1.65	0.61	-1.75
Kuwait		43.98		0.49
Lebanon		-3.28	-13.55	-2.55
Morocco	1.85	0.38	-5.88	1.66
Oman	4.89	-2.32	0.65	0.90
Palestine				-10.79
Qatar		-2.89	0.30	-9.57
Saudi Arabia	1.34	-12.60	-0.45	5.71
South Korea	10.02	1.26	-7.02	-0.38
Syria		0.35	1.69	
Tunisia	0.30	-0.51	-7.23	-0.78
Turkey	2.67	2.18	-3.83	-16.10
US	0.52	-1.93	-0.45	7.45
Yemen			5.75	1.67

Source: Authors' calculations based on COMTRADE (2014)

Table 2: Weighted average results of medium high-tech products

Country	1996-2000		2001-2004		2005-2008		2009-2013	
	all	e.c.i*	all	e.c.i*	all	e.c.i*	all	e.c.i*
Algeria	-0.48	0.24	-1.41	0.48	-1.05	1.57	8.40	-3.81
Arab Emirates					-17.21	-21.13		
Bahrain			0.04	0.19	0.45	1.19	0.30	1.87
China	1.35	0.92	-2.63	-3.39	1.90	2.04	9.91	11.11
Egypt	0.08	3.69	0.62	2.89	1.02	0.40	-2.10	-1.09
Germany	4.29	6.72	1.34	1.87	-3.22	-2.70	1.21	1.41
Iran			-0.82	3.46				
Jordan			-1.49	1.03	-1.37	-4.81	2.74	0.06
Kuwait			4.20	1.67			0.11	0.55
Lebanon			2.56	5.35	-0.54	-1.13	-2.62	-2.80
Morocco	-1.03	0.32	1.03	0.29	-0.70	-1.14	176.66	-0.40
Oman	-155.2	-181.45	0.43	1.26	-0.37	-1.02	0.35	2.21
Palestine							-7.75	1.22
Qatar			6.17	0.90	68.14	-3.00	-0.51	-1.19
Saudi Arabia	-4.50	0.06	-48.05	-17.03	0.11	3.08	2.14	-0.42
South Korea	1.58	0.15	-3.97	0.51	0.59	0.44	-0.19	-6.74
Syria			-1.53	-5.96	-1.99	-4.40		
Tunisia	23.87	-4.61	5.21	8.21	3.16	3.00	-7.70	-9.04
Turkey	0.51	-0.53	-695.08	-780.68	1.39	1.86	-1.45	1.36
US	5.69	6.59	3.67	3.70	1886.50	2610.90	2.54	1.18
Yemen					3.03	2.19	1.02	-0.25

Source: Authors' calculations based on COMTRADE (2014)
* Excluding chemical industry.

Table 3: Weighted average results of medium low-tech products

Country	1996-2000		2001-2004		2005-2008		2009-2013	
	all	exc.	all	exc.	all	exc.	all	exc.
Algeria	1.28	1.22	38.16	38.32	2.10	2.49	-0.47	-0.49
Arab Emirates					-3.32	-2.91		
Bahrain			-9.64	0.55	1.82	1.61	-1.90	-2.43
China	-0.81	-2.29	0.59	-0.57	5.96	6.09	6.41	-11.36
Egypt	-2.20	-2.84	-1.46	-2.20	7.72	6.47	0.16	0.42
Germany	-5.00	-6.01	2.03	0.15	4.45	5.19	-1.97	2.01
Iran			-13.78	0.09				
Jordan			0.10	-3.57	0.23	0.92	-4.58	-6.06
Kuwait			-36.85	2.91			-0.57	-0.63
Lebanon			-5.27	-5.59	4.02	4.86	-6.27	-11.56
Morocco	2.34	5.07	17.86	21.85	-3.60	-4.91	7.12	9.13
Oman	1.16	1.72	-0.62	-0.08	-0.68	-0.36	-26.23	-38.89
Palestine							3.92	4.03
Qatar			0.92	0.14	-0.21	-0.21	9.36	9.32
Saudi Arabia	-2.14	-1.87	-14.88	-10.10	2.27	2.66	-1.12	0.16
South Korea	1.49	-0.25	-0.97	-2.52	19.01	20.88	-20.41	0.28
Syria			3.08	-0.03	-6.25	-5.29		
Tunisia	0.07	1.26	-292.04	4.55	1.35	1.00	-0.56	-1.03
Turkey	-0.80	-0.83	2.17	2.89	-1.37	-2.07	0.90	-4.28
US	-8.13	-17.13	0.59	1.21	24.89	34.63	2.22	-1.92
Yemen					265.65	428.51	-3.88	-4.85

Source: Authors' calculations based on COMTRADE (2014)
* excluding rubber & plastic industry

Table 4: Weighted average results of low-tech products

Country	1996-2000	2001-2004	2005-2008	2009-2013
	all	all	all	all
Algeria	2.23	-0.02	6.88	-125.30
Arab Emirates			-2.39	
Bahrain		0.30	-3.18	-4.11
China	0.91	4.96	6.06	6.46
Egypt	2.28	-45.01	0.69	44.85
Germany	1814.19	5.88	8.43	754.77
Iran		0.71		
Jordan		0.59	0.29	-55.52
Kuwait		44.01		-189.40
Lebanon		23.57	-2.54	-894.74
Morocco	2.76	-3.22	1.23	-656.87
Oman	-2.81	3.64	0.08	-381.61
Palestine				-51.43
Qatar		2.11	4.44	-5.54
Saudi Arabia	1.24	12.10	2.51	-109.68
South Korea	1.58	2.19	-2.17	65.38
Syria		-3.32	-401.12	
Tunisia	-3.28	55.38	15.66	-298.96
Turkey	14.75	6.69	2.36	-11.01
US	-0.13	23.93	1.39	2.17
Yemen			-5.63	-1.54

Source: Authors' calculations based on COMTRADE (2014)

Finally, we present the 150 products in terms of last five-year average world trade share and with positive maturity growth in Table 5. First of all, the results of benchmark countries did not differ so much in both analyses, implying that their specialization is weighted on non-chemical and non-plastic industries. Secondly, with the similar findings of Germany above, their adaptation increased over time. The results of the performance of MENA countries are sensitive to inclusion of plastic and chemical industries. Inclusion of these two industries into the model inflated dramatically the results in Jordan, Lebanon, Oman, and Saudi Arabia. Lastly, in most of the countries in the group –except Egypt and Oman- maturity adaptation felt dramatically, compared to first period.

Table 5: Weighted average results of 150 products with highest share and positive maturity growth

Country	1996-2000		2001-2004		2005-2008		2009-2013	
	all	exc. chemical & plastic	all	exc. chemical & plastic	all	exc. chemical & plastic	all	exc. chemical & plastic
Algeria	-1.22	-2.03	0.56	0.01	-1.74	-2.39	-4.20	-387.95
Arab Emirates					-20.44	-22.23		
Bahrain			0.81	0.25	9.67	9.32	0.79	0.77
China	0.41	0.26	2.82	2.77	7.71	7.68	7.68	6.49
Egypt	-2.00	-3.65	2.28	0.42	4.20	3.72	44.77	73.01
Germany	344.30	346.88	-0.29	0.92	0.95	1.07	119.75	120.77
Iran			-7.56	1.77				
Jordan			2.64	2.07	-5.53	-5.21	-256.22	-363.44
Kuwait			-1.19	2.78			-4.98	-17.88
Lebanon			-20.03	-13.53	-5.15	-4.83	-768.61	-848.62
Morocco	0.65	0.86	0.37	-0.13	-1.22	-1.20	-571.86	-575.29
Oman	-235.80	-181.93	5.44	5.35	-0.73	-1.21	-22.33	-141.81
Palestine							-40.21	-66.01
Qatar			8.07	7.57	68.31	1.74	-0.18	-6.48
Saudi Arabia	-6.30	0.99	-58.30	-33.33	0.73	5.53	-2.83	-45.53
South Korea	2.17	0.32	1.65	1.03	5.80	6.03	4.51	4.97
Syria			1.38	-4.64	-10.60	-1.65		
Tunisia	-1.81	-1.56	-56.80	5.42	4.38	4.38	-399.09	-414.62
Turkey	1.14	0.95	2.57	2.83	2.22	1.63	-16.05	-17.40
US	1.15	0.50	-0.18	0.96	7.21	9.12	2.11	1.90
Yemen					7.02	8.97	-3.40	-2.72

Source: Authors' calculations based on COMTRADE (2014) database

5. Conclusion

In this paper, we form a maturity index representing product innovativeness at national and global scale by assuming the existence of significant interrelation between product life cycle and innovative efforts to see the extent to which leading exporting and MENA countries devote their efforts with the direction of global trends. We found that while all benchmark countries improved their adaptation to innovativeness over time in the highest trade share and low-tech products, only China, Germany and US in this group had this performance in high-tech and medium-low tech industries, according to weighted average relative maturity change findings. Our results imply that China and, to a lesser extent, US are the best performers in

medium-high-tech products. When the rubber industry is excluded in medium-low tech, China's adaptation fell, and the others rose.

In MENA group, only Bahrain, Egypt, Lebanon and Saudi Arabia have developed product rejuvenation in high tech industries. Especially, Egypt is among the best performers –including benchmark countries- in last period, not only in high tech, but also in low-tech and highest trade share products. The products of Turkey and Algeria in these categories have fallen even further behind the global market.

In medium-high tech industries, the number of countries that adaptation performance diminished increases when chemical industries are excluded. In most of the periods Algeria, Bahrain, Egypt and Saudi Arabia's chemical industries lowered the weighted averaged adaptation, albeit they specialize in these industries. We obtained the same results for Morocco, Oman and Saudi Arabia, when rubber and plastic products in medium-low tech industries are included.

From this perspective we suggest that MENA countries should diversify their innovative efforts towards high technology intensive and demanded products at the first place and harmonize petroleum derivative products' developments to enjoy high price advantages and able to pay high wages to their workers. Further research on this issue should be on the extension of the analysis by adding other countries and investigating the effect of maturity on productivity which is said to be key source of economic growth and higher living standards.

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APPENDIX A

Table 1 Selected 150 products with highest maturity value in 2013

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity value (2013)
Low-tech	610792	0.00001	3.70
High-tech	851782	0.00323	3.03
Low-tech	482311	0.00011	2.96
High-tech	852110	0.00138	2.30
Medium low-tech	721149	0.00002	2.23
Medium low-tech	721540	0.00004	2.13
Medium high-tech	282420	0.00000	2.04
High-tech	901020	0.00045	1.98
Low-tech	482319	0.00001	1.92
Medium high-tech	320643	0.00000	1.89
High-tech	846921	0.00000	1.64
Medium low-tech	401091	0.00007	1.51
Medium low-tech	721339	0.00003	1.43
Medium high-tech	283020	0.00000	1.09
High-tech	901110	0.00014	0.94
Medium high-tech	310270	0.00000	0.81
High-tech	293610	0.00000	0.80
Low-tech	551433	0.00000	0.73
High-tech	910819	0.00001	0.72
Low-tech	551529	0.00002	0.67
Low-tech	441139	0.00000	0.65
High-tech	852090	0.00000	0.59
Low-tech	950310	0.00000	0.59
Low-tech	430213	0.00000	0.59
Medium high-tech	282620	0.00000	0.58
Medium low-tech	700410	0.00001	0.58
Medium high-tech	854451	0.00001	0.55
Medium low-tech	720390	0.00003	0.53
High-tech	900912	0.00000	0.52
Medium high-tech	845690	0.00004	0.52
Low-tech	441229	0.00000	0.51
Low-tech	520613	0.00000	0.51
Low-tech	520514	0.00004	0.49
Low-tech	620819	0.00001	0.49
Low-tech	430220	0.00000	0.49
Medium low-tech	392072	0.00000	0.48
Low-tech	551431	0.00000	0.48
Low-tech	540620	0.00000	0.47
High-tech	854219	0.02121	0.47
High-tech	300331	0.00001	0.46
Medium low-tech	700330	0.00001	0.43
Low-tech	621310	0.00000	0.43
High-tech	847192	0.00333	0.42
High-tech	854012	0.00000	0.42

Table 1 (cont.) Selected 150 products with highest maturity value in 2013

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity value (2013)
Medium high-tech	845610	0.00035	0.41
Low-tech	520631	0.00000	0.40
Low-tech	521221	0.00000	0.39
Medium high-tech	854310	0.00001	0.39
Medium high-tech	280540	0.00001	0.39
Medium high-tech	291819	0.00006	0.38
High-tech	910820	0.00002	0.38
High-tech	900640	0.00001	0.38
Low-tech	610321	0.00000	0.38
Medium high-tech	291523	0.00000	0.36
Medium high-tech	930310	0.00000	0.35
Medium low-tech	721020	0.00002	0.35
High-tech	911019	0.00000	0.34
Medium high-tech	293410	0.00013	0.34
Medium low-tech	400591	0.00019	0.33
Low-tech	710399	0.00016	0.33
Medium high-tech	282734	0.00000	0.33
Medium low-tech	721129	0.00007	0.32
Low-tech	540342	0.00000	0.32
Low-tech	521112	0.00000	0.32
Low-tech	950330	0.00000	0.32
High-tech	900792	0.00001	0.30
High-tech	847340	0.00026	0.30
Low-tech	551120	0.00001	0.30
High-tech	910899	0.00000	0.30
Low-tech	950320	0.00000	0.30
High-tech	293910	0.00005	0.30
High-tech	293319	0.00009	0.29
Low-tech	540610	0.00001	0.29
High-tech	852210	0.00000	0.29
Medium high-tech	844400	0.00009	0.29
Low-tech	630641	0.00000	0.28
Low-tech	580133	0.00001	0.28
Medium low-tech	810192	0.00000	0.28
Low-tech	950341	0.00000	0.28
Medium low-tech	722870	0.00006	0.28
Medium high-tech	293379	0.00032	0.28
Medium high-tech	283326	0.00000	0.27
Medium high-tech	291469	0.00002	0.27
Low-tech	570252	0.00000	0.27
Low-tech	520512	0.00021	0.27
Low-tech	610453	0.00004	0.26
Low-tech	551634	0.00000	0.26
Low-tech	551322	0.00000	0.25
Low-tech	610290	0.00001	0.25
High-tech	852820	0.00002	0.25

Table 1 (cont.) Selected 150 products with highest maturity value in 2013

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity value (2013)
Low-tech	610459	0.00002	0.25
Medium high-tech	330125	0.00002	0.25
Medium high-tech	152010	0.00003	0.24
Low-tech	610333	0.00002	0.24
Low-tech	530620	0.00001	0.24
Medium high-tech	280120	0.00008	0.24
Medium low-tech	681591	0.00002	0.24
Medium high-tech	840611	0.00001	0.24
Low-tech	950349	0.00000	0.24
Low-tech	520611	0.00001	0.24
Low-tech	621430	0.00007	0.24
Low-tech	620640	0.00033	0.24
Medium high-tech	291430	0.00002	0.24
Low-tech	510910	0.00001	0.24
Low-tech	710229	0.00003	0.23
Low-tech	510510	0.00000	0.23
Medium low-tech	720291	0.00002	0.23
Medium high-tech	843352	0.00001	0.22
Low-tech	580430	0.00000	0.22
Low-tech	550969	0.00002	0.22
Medium high-tech	710420	0.00001	0.22
Low-tech	710490	0.00004	0.22
Low-tech	520622	0.00001	0.21
Low-tech	530710	0.00002	0.21
Low-tech	520535	0.00000	0.21
Low-tech	551614	0.00001	0.21
High-tech	300339	0.00004	0.21
Low-tech	520922	0.00001	0.21
Low-tech	610439	0.00002	0.21
Low-tech	610469	0.00005	0.21
Medium high-tech	310229	0.00002	0.20
Low-tech	570251	0.00000	0.20
High-tech	847290	0.00043	0.20
Medium high-tech	842832	0.00003	0.20
Medium high-tech	290243	0.00104	0.20
Low-tech	610433	0.00004	0.20
Low-tech	540824	0.00000	0.20
High-tech	900311	0.00012	0.20
Low-tech	710391	0.00018	0.20
High-tech	910212	0.00009	0.20
Medium high-tech	330114	0.00000	0.20
Medium high-tech	870130	0.00008	0.20
Medium high-tech	290314	0.00000	0.20
High-tech	847191	0.00371	0.20
Medium high-tech	291812	0.00002	0.20
High-tech	293430	0.00001	0.20

Table 1 (cont.) Selected 150 products with highest maturity value in 2013

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity value (2013)
Low-tech	630293	0.00002	0.20
High-tech	910811	0.00008	0.20
Low-tech	520621	0.00000	0.20
Low-tech	521119	0.00001	0.20
Low-tech	580429	0.00002	0.20
Low-tech	530610	0.00002	0.20
High-tech	902710	0.00026	0.19
Medium high-tech	350290	0.00006	0.19
Low-tech	610463	0.00020	0.19
Low-tech	521129	0.00000	0.19
High-tech	900699	0.00004	0.19
Low-tech	510810	0.00001	0.19
Low-tech	650400	0.00002	0.18
High-tech	293721	0.00003	0.18
	Total	**0.03997**	

Source: Authors' calculation based on COMTRADE (2015) database

Table 2 Selected 150 products with highest maturity growth rate (2009-2013)

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate 2009-2013)
Medium high-tech	854380	0.00185	4000.16
High-tech	910812	0.00000	2240.70
Medium low-tech	392119	0.00020	1184.08
High-tech	902990	0.00010	220.12
Medium high-tech	731511	0.00011	191.60
Low-tech	530810	0.00000	172.83
Medium high-tech	850131	0.00048	171.05
Medium low-tech	401695	0.00002	158.31
High-tech	901490	0.00012	146.02
Low-tech	430211	0.00010	130.49
High-tech	911019	0.00000	121.11
Medium low-tech	701820	0.00001	110.82
Low-tech	630222	0.00006	106.72
Medium high-tech	850519	0.00012	76.51
Medium high-tech	284011	0.00001	71.47
Low-tech	551120	0.00001	68.45
Medium high-tech	841360	0.00041	59.09
Low-tech	600192	0.00007	56.70
Medium high-tech	870893	0.00058	53.22
Medium low-tech	401290	0.00009	48.92
Low-tech	591140	0.00002	47.84
Medium high-tech	841459	0.00064	47.54
High-tech	910899	0.00000	47.11
Medium high-tech	290361	0.00002	42.85
High-tech	902730	0.00024	42.72
Medium high-tech	845380	0.00001	41.16
High-tech	902219	0.00015	38.97
Medium low-tech	720390	0.00003	38.75
Medium high-tech	291890	0.00013	36.83
Medium low-tech	401693	0.00079	34.93
Medium high-tech	290517	0.00003	34.09
Medium high-tech	391220	0.00003	33.29
Low-tech	630140	0.00014	33.26
Low-tech	540262	0.00002	33.26
Medium high-tech	381210	0.00005	32.83
Medium high-tech	842320	0.00001	32.49
High-tech	911490	0.00013	31.77
Medium high-tech	390469	0.00012	30.02
Medium high-tech	321519	0.00045	29.74
Medium high-tech	848390	0.00073	29.26
High-tech	294140	0.00001	29.18
High-tech	901841	0.00004	28.88
Medium high-tech	282510	0.00002	28.78
High-tech	293625	0.00001	27.64
High-tech	900580	0.00003	27.55
Medium high-tech	540231	0.00007	27.53

Table 2 (cont.) Selected 150 products with highest maturity growth rate (2009-2013)

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate (2009-2013)
Low-tech	650590	0.00031	26.34
Medium high-tech	854430	0.00206	26.20
Low-tech	520611	0.00001	25.98
Low-tech	540772	0.00013	24.68
Medium low-tech	392190	0.00089	23.71
Low-tech	610459	0.00002	23.69
Medium low-tech	401699	0.00077	23.27
Low-tech	610899	0.00000	22.34
Medium high-tech	844820	0.00003	22.08
Low-tech	590320	0.00025	21.78
Medium high-tech	280540	0.00001	21.70
Low-tech	710391	0.00018	21.07
Medium high-tech	848190	0.00112	21.00
High-tech	910819	0.00001	20.97
Low-tech	610332	0.00002	20.12
Medium low-tech	391690	0.00013	20.07
Medium high-tech	841939	0.00014	19.73
Medium high-tech	842860	0.00002	18.56
Medium high-tech	841490	0.00110	18.30
Low-tech	590390	0.00023	18.30
Low-tech	620520	0.00087	17.98
Medium high-tech	848071	0.00067	17.86
Medium low-tech	391740	0.00035	17.70
High-tech	901410	0.00003	17.27
Low-tech	621210	0.00065	17.12
Low-tech	420291	0.00017	16.92
Medium high-tech	291221	0.00001	16.83
Low-tech	520631	0.00000	16.56
Medium low-tech	722920	0.00004	16.54
Medium low-tech	590610	0.00004	16.37
Medium low-tech	391610	0.00002	15.98
Medium low-tech	741532	0.00003	15.73
High-tech	903120	0.00009	15.56
Medium high-tech	842832	0.00003	14.92
Medium high-tech	290920	0.00000	14.83
Medium high-tech	291531	0.00009	14.70
Medium high-tech	310229	0.00002	14.60
Medium high-tech	843031	0.00009	14.17
Medium high-tech	848240	0.00009	14.09
Low-tech	481320	0.00006	13.76
Medium low-tech	680100	0.00008	13.46
Medium high-tech	843340	0.00008	13.42
Low-tech	600230	0.00037	13.38
Medium high-tech	310260	0.00003	13.30
Medium high-tech	710420	0.00001	13.17
Medium low-tech	761100	0.00001	12.92

Table 2 (cont.) Selected 150 products with highest maturity growth rate (2009-2013)

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate (2009-2013)
High-tech	901790	0.00002	12.80
Medium low-tech	700910	0.00021	12.76
Medium low-tech	680423	0.00001	12.71
High-tech	300340	0.00001	12.64
High-tech	880520	0.00008	12.59
Medium high-tech	842290	0.00041	12.44
Low-tech	950800	0.00007	12.43
Medium high-tech	842430	0.00020	12.15
Low-tech	580133	0.00001	12.14
High-tech	291821	0.00001	11.90
Medium low-tech	392113	0.00024	11.75
Medium low-tech	681120	0.00004	11.69
Medium high-tech	282759	0.00002	11.59
Low-tech	620640	0.00033	11.56
Medium high-tech	853921	0.00019	11.33
Low-tech	521119	0.00001	11.20
Low-tech	940490	0.00057	11.01
Medium low-tech	820711	0.00004	10.92
Low-tech	551634	0.00000	10.85
Medium high-tech	290129	0.00019	10.80
Medium high-tech	380991	0.00018	10.79
Medium high-tech	290122	0.00059	10.70
Medium low-tech	701339	0.00012	10.46
Low-tech	531090	0.00000	10.33
Low-tech	520613	0.00000	10.27
Medium high-tech	843880	0.00015	10.25
Low-tech	610453	0.00004	10.18
Low-tech	420211	0.00007	10.04
Low-tech	540791	0.00001	9.95
Medium low-tech	820420	0.00007	9.84
Low-tech	620331	0.00012	9.81
Medium high-tech	390220	0.00006	9.76
Medium high-tech	292142	0.00003	9.67
Medium high-tech	390210	0.00185	9.59
High-tech	854129	0.00098	9.58
Medium low-tech	400821	0.00014	9.50
Low-tech	520513	0.00004	9.48
Low-tech	611219	0.00000	9.45
High-tech	293321	0.00001	9.42
High-tech	300331	0.00001	9.20
Medium high-tech	732183	0.00009	9.14
Low-tech	620343	0.00039	9.08
High-tech	910119	0.00004	9.04
Low-tech	551614	0.00001	8.97
Medium low-tech	401120	0.00160	8.96
Medium high-tech	291430	0.00002	8.89

Table 2 (cont.) Selected 150 products with highest maturity growth rate (2009-2013)

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate (2009-2013)
Medium low-tech	731520	0.00002	8.88
Medium high-tech	860691	0.00003	8.86
Medium low-tech	890200	0.00005	8.86
Low-tech	650200	0.00000	8.80
Low-tech	650100	0.00000	8.66
Medium low-tech	400940	0.00004	8.56
Medium high-tech	848490	0.00013	8.31
Medium high-tech	390120	0.00188	8.25
Medium high-tech	291620	0.00004	8.20
Low-tech	410520	0.00009	8.13
Medium low-tech	401010	0.00009	8.13
Low-tech	560290	0.00002	8.07
	Total	**0.03128**	

Source: Authors' calculation based on COMTRADE (2015) database

Table 3 Selected 150 products with highest share and positive maturity growth

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate (2009-2013)
Medium high-tech	854380	0.00185	4000.16
Medium high-tech	870893	0.00058	53.22
Medium high-tech	841459	0.00064	47.54
Medium low-tech	401693	0.00079	34.93
Medium high-tech	848390	0.00073	29.26
Medium high-tech	854430	0.00206	26.20
Medium low-tech	392190	0.00089	23.71
Medium low-tech	401699	0.00077	23.27
Medium high-tech	848190	0.00112	21.00
Medium high-tech	841490	0.00110	18.30
Low-tech	620520	0.00087	17.98
Medium high-tech	848071	0.00067	17.86
Low-tech	621210	0.00065	17.12
Low-tech	940490	0.00057	11.01
Medium high-tech	290122	0.00059	10.70
Medium high-tech	390210	0.00185	9.59
High-tech	854129	0.00098	9.58
Medium low-tech	401120	0.00160	8.96
Medium high-tech	390120	0.00188	8.25
Medium low-tech	392321	0.00068	7.59
High-tech	847193	0.00614	7.08
High-tech	903289	0.00162	6.51
Medium low-tech	392310	0.00070	6.50
High-tech	851830	0.00058	6.45
Medium high-tech	390799	0.00053	5.78
High-tech	851782	0.00323	5.51
High-tech	852520	0.01360	5.41
Medium high-tech	330210	0.00092	4.92
Medium high-tech	290531	0.00098	4.73
Medium high-tech	320610	0.00065	4.65
High-tech	910211	0.00070	4.60
Medium high-tech	290243	0.00104	4.54
High-tech	852110	0.00138	4.48
High-tech	854219	0.02121	4.42
Medium high-tech	390690	0.00093	4.41
Medium high-tech	290919	0.00054	4.39
Medium high-tech	940540	0.00079	4.29
Medium high-tech	940510	0.00079	4.22
Medium high-tech	851220	0.00084	4.13
Medium high-tech	390720	0.00077	4.08
High-tech	903180	0.00127	4.03
High-tech	847191	0.00371	3.97
High-tech	853400	0.00323	3.67
Medium high-tech	870321	0.00098	3.59
High-tech	847192	0.00333	3.25
Medium high-tech	841391	0.00111	3.16

Table 3 (cont.) Selected 150 products with highest share and positive maturity growth

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate (2009-2013)
Medium high-tech	870829	0.00428	3.06
Medium high-tech	290250	0.00105	2.90
Medium high-tech	841430	0.00091	2.87
High-tech	901390	0.00062	2.85
Low-tech	940190	0.00177	2.80
Medium high-tech	390760	0.00088	2.79
Medium high-tech	845710	0.00068	2.75
Medium high-tech	850110	0.00090	2.71
Medium high-tech	390230	0.00088	2.56
Medium high-tech	840734	0.00226	2.48
Medium high-tech	390110	0.00192	2.31
Medium high-tech	390810	0.00081	2.29
Medium low-tech	392010	0.00093	2.22
Medium high-tech	390190	0.00100	2.12
High-tech	854110	0.00077	2.08
Medium high-tech	870431	0.00180	2.04
Medium low-tech	392690	0.00351	2.03
Medium high-tech	850450	0.00072	1.99
Medium high-tech	853690	0.00261	1.97
High-tech	852721	0.00063	1.93
Medium high-tech	281410	0.00065	1.91
Medium high-tech	870323	0.01658	1.90
Low-tech	611030	0.00142	1.87
High-tech	901839	0.00142	1.82
Medium high-tech	870870	0.00112	1.81
Medium high-tech	842890	0.00061	1.78
High-tech	841112	0.00175	1.75
Medium high-tech	841330	0.00086	1.74
Medium high-tech	848120	0.00058	1.71
Medium high-tech	290511	0.00066	1.71
High-tech	851740	0.00071	1.68
Low-tech	940320	0.00081	1.67
Medium high-tech	870190	0.00137	1.64
Medium high-tech	853710	0.00256	1.61
Medium high-tech	390740	0.00078	1.61
Medium low-tech	731815	0.00117	1.56
Medium high-tech	290121	0.00053	1.49
High-tech	853224	0.00083	1.48
High-tech	880240	0.00642	1.46
Low-tech	410431	0.00069	1.45
Medium high-tech	840991	0.00222	1.43
Medium high-tech	848210	0.00094	1.42
Medium high-tech	870899	0.00629	1.42
Medium high-tech	841590	0.00099	1.41
Medium high-tech	840820	0.00210	1.41

Table 3 (cont.) Selected 150 products with highest share and positive maturity growth

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate (2009-2013)
Low-tech	610990	0.00067	1.38
Medium high-tech	870410	0.00070	1.35
Medium high-tech	870332	0.00876	1.27
Low-tech	710239	0.00534	1.24
Medium high-tech	870120	0.00155	1.20
Medium high-tech	870324	0.00824	1.17
Medium low-tech	761690	0.00086	1.16
Medium high-tech	870421	0.00310	1.13
Medium high-tech	842951	0.00075	1.13
Low-tech	620462	0.00155	1.07
Medium low-tech	391990	0.00084	1.06
Medium high-tech	870422	0.00126	1.05
High-tech	910221	0.00053	1.04
High-tech	854290	0.00222	1.04
Medium high-tech	841810	0.00083	1.01
Medium high-tech	842952	0.00137	0.99
Low-tech	560300	0.00087	0.97
Medium low-tech	690890	0.00073	0.93
Medium high-tech	840999	0.00227	0.90
Low-tech	940350	0.00062	0.90
High-tech	847330	0.00962	0.89
Low-tech	940161	0.00097	0.84
Medium high-tech	870423	0.00099	0.80
Medium high-tech	870333	0.00229	0.80
Medium low-tech	721049	0.00151	0.79
Medium low-tech	720923	0.00058	0.78
High-tech	300439	0.00148	0.76
Medium high-tech	841510	0.00079	0.75
Low-tech	420221	0.00062	0.75
Low-tech	420292	0.00102	0.70
Low-tech	640391	0.00094	0.64
Medium high-tech	853890	0.00201	0.64
Low-tech	620342	0.00170	0.61
Medium high-tech	870840	0.00366	0.61
Medium high-tech	840890	0.00086	0.61
Medium high-tech	843149	0.00180	0.59
Medium high-tech	853120	0.00071	0.59
Medium low-tech	720824	0.00142	0.59
Low-tech	640419	0.00076	0.55
Medium high-tech	390410	0.00077	0.51
High-tech	902780	0.00076	0.35
Low-tech	940360	0.00161	0.32
Medium low-tech	721331	0.00069	0.30
High-tech	901380	0.00476	0.29
Medium high-tech	293339	0.00093	0.28
Medium low-tech	392410	0.00059	0.28

Table 3 (cont.) Selected 150 products with highest share and positive maturity growth

Tech. Classification	Product code	Average trade share (2009-2013)	Maturity growth rate (2009-2013)
Medium low-tech	720712	0.00101	0.27
Medium high-tech	870331	0.00142	0.26
Medium high-tech	380820	0.00057	0.26
High-tech	293799	0.00062	0.25
High-tech	293359	0.00119	0.21
Low-tech	480100	0.00065	0.19
High-tech	851710	0.00061	0.19
Low-tech	481011	0.00093	0.17
Medium low-tech	720823	0.00063	0.09
Medium high-tech	380830	0.00076	0.07
High-tech	300431	0.00068	0.02
Low-tech	481840	0.00091	0.00
Low-tech	640399	0.00214	0.00
	Total	**0.27445**	

Source: Authors' calculation based on COMTRADE (2015) database

APPENDIX B

Figure 1: Maturity index values of electrical machines and apparatus, nes (854380) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Jordan	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	0.031	0.522		0.039		0.129			0.402	0.322	-0.232	0.314	0.047	-0.124
1997	0.018	-1.011		0.039	-2.692	0.079		-0.233	0.488		-0.291	-0.011	0.339	-0.060
1998	-0.009			0.038	-1.720	0.050		-0.246	0.429	-0.304	-0.288	0.214	0.452	0.003
1999	-0.033	0.113		0.030	-0.768	0.031	0.072	-0.170	0.384	-0.131	-0.080	0.700	0.503	0.098
2000	-0.067	-0.075		0.043	0.291	0.013	-0.160	0.065	0.339	0.119	0.031	1.175	0.593	0.159
2001	-0.066	-0.333		0.037	1.036	0.006	-0.287	0.110	0.310	0.425	0.211	1.399	0.471	0.186
2002	-0.076	-0.483		0.039	1.524	0.011	-0.411	0.244	0.487	-0.455	0.191	1.443	0.417	0.158
2003	-0.109	-0.849		0.064	2.039	0.008	-0.555	0.308	0.494	-0.022	0.086	1.162	0.399	0.095
2004	-0.136	-0.961		0.105	3.235	0.005	-0.632	0.369	0.429	0.349	-0.019	0.843	0.375	0.035
2005	-0.144		1.171	0.152	3.774	0.017	-0.733	0.610	0.366	0.610	-0.155	0.441	0.268	-0.033
2006	-0.140	-1.147		0.172		0.023	-0.751	0.712	0.383	0.570	-0.277	0.185	0.288	-0.081
2007	-0.127	-0.908		0.197		0.008	-0.680	0.619	0.293	0.586	-0.499	-0.034	0.281	-0.143
2008	-0.068	-0.560	-0.100	0.207	2.300	0.009	-0.588	0.496	0.003	0.697	-0.428	-0.356	0.255	-0.157
2009	0.000		0.335	0.187	0.211	0.008	-0.477	0.287	-0.487		-0.226	-0.906	0.175	-0.085
2010	0.045	-0.165	0.515	0.173	-1.149	0.015	-0.452	0.153	-0.829	0.151	-0.079	-0.603	0.141	-0.013
2011	0.105	0.487	1.696	0.130	-2.332	0.031	-0.445	0.030	-0.836	0.035	0.166	0.137	0.097	0.083
2012	0.153		1.865	0.045		0.049	-0.458	-0.191	-0.701	-0.142	0.588	0.833	0.065	0.176
2013	0.172	1.594	2.385	-0.068	-4.004	0.083	-0.393	-0.294	-0.635	-0.066	0.904	1.676	-0.054	0.217

Source: Authors' calculation based on COMTRADE (2015) database

Figure 2: Maturity index values of clutches and parts thereof for motor vehicles (870893) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	-0.013	1.468		-0.022		0.007				0.368	-0.113	-0.084	-0.074	0.280	0.005
1997	-0.014	1.524		0.022		0.021	1.892		-0.125	0.264		-0.066	-0.031	0.321	0.052
1998	0.000	1.386		0.104		0.016	2.006		0.044	0.308	1.333	-0.039	-0.090	0.318	0.089
1999	0.018	1.097		0.143		0.014	1.892	1.302	0.122	0.366	0.802	-0.019	-0.133	0.352	0.092
2000	0.036	0.756	-0.265	0.176		0.014	1.448	1.114	-0.050	0.384	0.261	0.005	-0.006	0.427	0.104
2001	0.044	0.242	-0.187	0.178		0.009	1.156		-0.123	0.341	-0.509	0.017	0.034	0.358	0.092
2002	0.042	-0.117	-0.166	0.192	-0.432	-0.006	0.937		-0.265	0.304	0.166	0.027	0.050	0.289	0.078
2003	0.037	-0.202	-0.116	0.204	-0.071	-0.007	0.757	0.680	-0.374	0.241	-0.125	0.040	0.049	0.244	0.062
2004	0.032	-0.400	-0.098	0.205		-0.001	0.615	0.638	-0.458	0.178	-0.303	0.052	0.046	0.207	0.043
2005	0.023	-0.599	-0.198	0.169		0.003	0.499	0.935	-0.584	0.103	-0.555	0.055	-0.019	0.148	0.012
2006	0.012	-0.597	-0.295	0.086		0.016	0.341	0.990	-0.713	-0.014	-0.452	0.056	0.028	0.131	-0.010
2007	0.000	-0.457	-0.231	0.039		0.030			-0.555	-0.112	-0.525	0.055	0.057	0.111	-0.025
2008	-0.005	-0.176	-0.307	0.017	1.061	0.041		0.944	-0.405	-0.107		0.051	0.082	0.072	-0.051
2009	0.001	0.480	-0.541	0.003	1.124	0.044		0.858	-0.080	-0.053		0.049	0.051	-0.006	-0.041
2010	0.014	0.696	-0.602	-0.013	0.986	0.053	-0.378	0.596	0.186	-0.103	0.692	0.049	0.070	-0.018	-0.038
2011	0.028		-0.735	-0.027	0.908	0.043	-0.849	0.263	0.529	-0.110	0.724	0.044	0.121	-0.048	-0.035
2012	0.047		-0.860	-0.018	0.788	0.027		0.145	0.809	-0.133	0.842	0.037	0.282	-0.070	-0.023
2013	0.066		-1.026	0.011	0.374	0.019		0.167	0.961	-0.212	0.540	0.064	0.776	-0.074	-0.011

Source: Authors' calculation based on COMTRADE (2015) database

Figure 3: Maturity index values of electric fans, motor>125 watts (841459) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	0.026	0.672		-0.055	0.340	0.030				1.027	-0.690	-0.094		-0.236	-0.103
1997	0.021	1.365		0.056	0.556	-0.002	-0.594	1.343	-0.047	0.940		-0.531		-0.219	-0.074
1998	0.014	2.102		0.144	0.433	-0.026	-0.480	1.199	-0.147	0.544	-0.411	-0.404		-0.196	-0.060
1999	0.007	1.180		0.254	0.302	-0.056	-0.272	0.780	-0.325	0.984	-0.298	-0.137		-0.136	-0.043
2000	0.002		2.418	0.319	0.186	-0.074	0.066	0.158	-0.343	1.205	-0.083	0.088		-0.009	-0.011
2001	-0.006	0.434	1.488	0.243	0.260	-0.063	0.207	-0.105	-0.297	1.157	0.089	0.238		0.053	0.008
2002	-0.011	0.171	0.722	0.236	0.253	-0.059	0.400	-0.293	-0.275	1.081	0.617	0.293		0.113	0.019
2003	-0.015	0.072		0.279	0.258	-0.068	0.501	-0.343	-0.278	1.000	0.456	0.364	0.231	0.151	0.001
2004	-0.017	-0.079	-0.021	0.316	0.044	-0.072	0.523	-0.361	-0.268	0.978	0.360	0.408		0.149	-0.013
2005	-0.017	-0.245	0.082	0.291	-0.145	-0.059	0.445	-0.271	-0.246	0.968	0.193	0.457	-0.137	0.097	-0.022
2006	-0.014	-0.299	0.235	0.295	-0.216	-0.052	0.292	-0.194	-0.261	1.064	0.012	0.352	-0.111	0.097	-0.025
2007	-0.008	0.074	0.410	0.364	-0.277	-0.048		-0.048	-0.242	0.409	-0.155	0.217	-0.103	0.028	-0.032
2008	-0.004	0.098	0.678	0.263	-0.133	-0.029		0.118	-0.146	0.012		0.140	0.009	-0.101	-0.038
2009	0.001	0.186	0.944	0.155	-0.183	-0.001		0.338	-0.036	0.080		0.073	0.275	-0.344	0.014
2010	0.008	0.208	1.125	0.089	-0.231	0.012	-1.263	0.110	0.006	0.062	-0.122	0.044	0.681	-0.355	0.046
2011	0.016	0.151	1.160	-0.009	-0.310	0.029	-1.602	-0.057	0.050	0.108	-0.096	-0.018		-0.307	0.092
2012	0.026	0.301	1.351	-0.130	-0.450	0.030		-0.212	0.061	0.057	-0.110	-0.002		-0.177	0.123
2013	0.035	0.321	1.764	-0.246	-0.677	0.035		-0.163	0.077	0.059	0.009	0.038		0.012	0.130

Source: Authors' calculation based on COMTRADE (2015) database

Figure 4: Maturity index values of gaskets, washers and other seals of vulcanised rubber (401693) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey
1996	0.044	0.438		-0.053	0.590	-0.040				0.576		0.469	-0.032	-0.235	0.118
1997	0.039	0.600		-0.059	0.548	-0.028	1.469	1.072	0.323	0.171			0.042	-0.368	0.245
1998	0.033	0.706		-0.026	0.132	-0.017	1.347	0.810	0.542	-0.066		0.044	0.127	-0.446	0.221
1999	0.030	0.637		0.010	-0.306	-0.006	1.095	0.238	0.640	-0.010		-0.162	0.171	-0.361	0.156
2000	0.031	0.490	-1.605	0.031	-0.362	0.014	0.757	-0.228	0.528	0.166		-0.275	0.192	-0.157	0.138
2001	0.026	0.304	-1.118	0.032	-0.150	0.020	0.435	-0.599	0.459	0.296		-0.393	0.221	-0.035	0.076
2002	0.008	0.046	-0.583	0.038	0.033	0.013	0.227	-1.000	0.392	0.394	1.789	-0.458	0.172	0.062	0.020
2003	-0.003	-0.160	-0.091	0.050	0.198	0.009	0.096	-1.270	0.341	0.612	1.168	-0.115	0.119	0.185	0.016
2004	-0.008	-0.357	0.269	0.057	0.384	0.010	0.023	-1.379	0.291	0.898	0.628	0.129	0.067	0.256	0.028
2005	-0.011	-0.487	0.595	0.073	0.799	0.005	-0.078	-1.260	-0.016	1.252	-0.304	0.426	-0.026	0.429	-0.005
2006	-0.010	-0.515	0.631	0.048	1.141	0.004	-0.117	-1.083	-0.074	1.416	-0.917	0.510	-0.081	0.487	0.044
2007	-0.008	-0.436	0.519	0.013	1.421	0.007		-0.886	-0.128	1.330	-1.152	0.693	-0.119	0.454	0.068
2008	-0.008	-0.291	0.359	-0.009	1.486	0.014		-0.685	-0.216	1.118	-1.120		-0.129	0.362	0.064
2009	-0.001	-0.067	-0.072	-0.003	1.215	0.018		-0.403	-0.305	0.843	-0.528		-0.100	0.135	0.033
2010	0.018	0.316	-0.467	0.005	0.957	0.033	0.007	0.239	-0.439	0.634	-0.759	1.027	-0.045	-0.020	0.025
2011	0.030	0.592	-0.776	0.011	0.797	0.040	-0.049	0.571	-0.586	0.112	-0.383	0.924	0.039	-0.201	-0.016
2012	0.039	0.923	-0.908	0.030	0.838	0.040		0.776	-0.608	-0.659	0.048	0.704	0.201	-0.361	-0.073
2013	0.048	0.857	-0.730	0.048	0.496	0.051		0.950	-0.602	-1.219	1.003	0.040	0.429	-0.676	-0.116

Source: Authors' calculation based on COMTRADE (2015) database

Figure 5: Maturity index values of parts of power transmission etc equipment (848390) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	-0.035			0.238		-0.119				-0.715	-0.437	0.479	-1.053	0.098	-0.099
1997	-0.043			0.252		-0.096	0.018	-0.256	-0.117	-0.534		0.433	-0.078	0.295	-0.095
1998	-0.035	1.828		0.215	-2.196	-0.071	-0.130		0.544	-0.901	0.370	0.377	0.638	0.328	-0.075
1999	-0.019			0.171	-0.243	-0.043	0.031	-0.501	1.130	-0.240	0.379	0.302	1.006	0.405	-0.048
2000	0.000	0.450	1.286	0.149	0.879	-0.011	0.614	-1.009	1.947	0.242	0.403	0.208	1.375	0.430	0.000
2001	0.008	-0.075	1.274	0.111		0.000	0.515	-1.171	2.585	0.565	0.479	0.124	1.504	0.362	0.028
2002	0.010	-0.495	0.974	0.065	2.370	0.009	0.064	-1.236	2.785	0.986	0.092	0.091	1.596	0.278	0.049
2003	0.012	-0.539		0.041		0.019	-0.418	-1.093	2.846	1.437	0.008	0.117	1.649	0.230	0.049
2004	0.013	-0.632	0.883	0.038	3.793	0.027	-0.770	-0.837	2.907	1.711	0.077	0.142	1.701	0.203	0.048
2005	0.015	-0.633		0.022	3.250	0.025	-0.832	-0.527	2.252	1.949	0.095	0.187	1.228	0.101	0.048
2006	0.012	-0.699		0.066	2.235	0.021	-1.178	-0.324	1.946	2.318	-0.141	0.229	0.959	0.099	0.040
2007	0.006			0.109	1.848	0.021		-0.001	1.706	1.612	0.044	0.285	0.727	0.101	0.023
2008	0.003	-0.614	0.055	0.150	1.014	0.022		0.307	1.416	0.829		0.326	0.406	0.033	-0.004
2009	0.001	-0.351	0.367	0.136	0.520	0.010		0.586	1.010	0.146		0.318	-0.145	-0.015	0.024
2010	0.009		0.584	0.156	0.079	0.005	-1.882	0.596	0.794	-0.202	1.467	0.305	-0.474	0.018	0.031
2011	0.018	-1.060	0.314	0.164	-0.532	-0.002	-3.345	0.469	0.407	-0.515	1.701	0.247	-0.746	0.020	0.049
2012	0.028	-1.030	0.284	0.139	-0.695	-0.008		0.205	-0.319	-0.527	1.802	0.182	-0.993	0.008	0.055
2013	0.030	-0.365	0.863	0.088	-0.686	-0.006		0.277	-0.623	-0.448	1.080	0.117	-0.693	-0.014	0.045

Source: Authors' calculation based on COMTRADE (2015) database

Figure 6: Maturity index values of ignition/other wiring sets for vehicles/aircraft/ship (854430) at national and global level, 1996-2013

Year	World	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	0.059		0.102		0.014				-2.047		3.462	0.400	1.778	0.969	-0.099
1997	0.040		0.109		0.038	0.153		0.445	-1.795			0.436	0.887	0.407	-0.114
1998	0.030		0.112		0.042	-0.120		-0.789				0.552	0.056	-0.059	-0.105
1999	0.024		0.095		0.063	0.039	-2.875	-1.466	0.212	1.382	0.885	0.646	-0.210	-0.209	-0.077
2000	0.026		0.076	-1.257	0.095	0.635			-0.080		0.315	0.697	-0.321	-0.214	-0.030
2001	0.021		0.050	-1.320	0.093	0.856		-2.244	-0.384		-0.745	0.743	-0.381	-0.312	-0.007
2002	0.001		0.040	-1.222	0.062	0.610		-2.324	-0.826	-0.658	-1.104	0.672	-0.341	-0.130	-0.016
2003	-0.012	2.949	0.053	-1.060	0.017	0.362		-2.437	-1.220	-0.526	-3.750	0.575	-0.359	0.083	-0.037
2004	-0.017	2.730	0.059		-0.013	0.119	0.261	-2.623	-1.479	-0.362	-2.450	0.486	-0.432	0.214	-0.053
2005	-0.018	2.204	0.050		-0.054	-0.133	0.530		-1.979	0.276	-1.151	0.340	-0.110	0.555	-0.068
2006	-0.012		0.055		-0.068	0.166	0.627	-0.986	-2.958	0.525	1.393	0.195	0.015	0.735	-0.078
2007	-0.008		0.008	1.221	-0.083			-0.817	-3.200		3.900	0.062	0.039	0.594	-0.100
2008	-0.011	0.761	-0.037		-0.073		1.199	-0.568	-1.583	1.170		-0.018	0.093	0.381	-0.124
2009	-0.004		-0.048	0.684	-0.070		-0.329	-0.140	0.913	0.621		-0.054	0.163	0.162	-0.079
2010	0.026	-0.901	-0.059	0.048	-0.015	5.260	-0.569	-0.046	1.061			-0.067	0.081	-0.072	-0.034
2011	0.051	-0.901	-0.083	-0.310	0.047	8.342	-0.438	0.227	1.080	-1.494		-0.061	0.065	-0.301	0.015
2012	0.074	-0.562	-0.098	-0.604	0.091		-0.685	0.499	0.915	-1.316		-0.044	0.075	-0.427	0.058
2013	0.099	-0.148	-0.109	0.001	0.148		-0.946	0.004	0.854	-1.216		0.017	0.014	-0.511	0.089

Source: Authors' calculation based on COMTRADE (2015) database

Figure 7: Maturity index values of ignition/other wiring sets for vehicles/aircraft/ship (854430) at national and global level, 1996-2013

Year	World	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	-0.010		-0.059	0.959	0.093				-0.138		0.244	0.084	0.297	0.231	-0.026
1997	-0.009		-0.105	1.080	0.094	0.224	0.906	0.780	0.057			0.140	0.424	0.118	-0.017
1998	0.000		-0.169	0.451	0.075	0.160	0.608	0.178	-0.032		0.109	0.172	0.368	0.032	-0.006
1999	0.010		-0.222	-0.127	0.059	0.023	0.313	-0.165	-0.175		0.032	0.171	0.335	0.007	0.005
2000	0.021		-0.210	-0.403	0.053	-0.086	-0.079	-0.199	-0.213	0.038	-0.083	0.141	0.306	0.007	0.012
2001	0.027		-0.072	-0.589	0.037	-0.150	-0.239	-0.220	-0.170		-0.035	0.128	0.291	0.066	0.015
2002	0.027	-0.717	-0.036	-0.690	0.015	0.010	-0.323	-0.169	-0.076	0.934	-0.141	0.100	0.288	0.109	0.010
2003	0.025	0.184	-0.092	-0.757	-0.006	0.209	-0.362	-0.123	-0.099	1.223	-0.331	0.077	0.313	0.126	0.006
2004	0.023	0.878	-0.136	-0.769	-0.018	0.437	-0.383	-0.077	-0.154	1.260	-0.426	0.060	0.340	0.121	0.005
2005	0.018		-0.136	-0.786	-0.028	0.597	-0.248	0.268	-0.248	1.224	-0.542	0.031	0.334	0.160	0.007
2006	0.011	1.113	-0.243	-0.567	-0.021	0.455	-0.121	0.345	-0.203	1.006	-0.644	0.012	0.356	0.152	0.008
2007	0.004	1.025	-0.170	-0.544	-0.023		0.063	0.321	-0.169	0.761	-0.739	0.009	0.337	0.128	0.010
2008	-0.002	0.609	-0.036	-0.717	-0.021		0.294	0.261	-0.246	0.254	-0.743	0.015	0.304	0.115	0.020
2009	-0.001	0.785	0.082	-0.944	-0.015		0.650	0.120	-0.603	-0.621	-0.477	0.016	0.244	0.113	0.041
2010	0.003	0.693	0.150	-1.159	0.010	-2.200	0.795	0.032	-0.728	-0.997	-0.234	0.016	0.223	0.085	0.061
2011	0.008	0.723	0.264	-1.050	0.033	-4.081	0.930	-0.064	-0.651	-1.259	0.010	0.012	0.176	0.070	0.074
2012	0.014	0.734	0.375	-1.032	0.046		1.102	-0.155	-0.529	-1.479	0.238	0.002	0.104	0.080	0.079
2013	0.026	0.436	0.411	-0.931	0.060		1.214	-0.239	-0.138	-1.311	0.443	-0.014	0.046	0.079	0.077

Source: Authors' calculation based on COMTRADE (2015) database

Figure 8: Maturity index values of articles of vulcanised rubber nes (401699) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey
1996	0.023	0.528		0.065	0.838	0.025				-0.228		0.594	0.042	-0.393	0.209
1997	0.014	0.935		0.001	0.668	-0.008	1.968	0.666	-0.113	-0.253			0.079	-0.125	0.230
1998	0.011	0.600		-0.021	0.056	-0.027	1.415	0.637	-0.071	-0.067		0.122	0.099	0.110	0.138
1999	0.011	0.520		-0.042	-0.184	-0.033	1.134	0.386	-0.023	-0.006		-0.042	0.098	0.447	0.102
2000	0.014	0.459	1.800	-0.043	-0.348	-0.019	0.900	0.004	0.033	0.141		-0.130	0.100	0.675	0.093
2001	0.013	0.371		-0.026	-0.499	-0.014	0.728	-0.209	0.087	0.285		-0.151	0.093	0.782	0.107
2002	0.001	0.269	1.078	-0.007	-0.571	-0.028	0.555	-0.317	0.143	0.401	-0.154	-0.662	0.049	0.840	0.085
2003	-0.008	0.280		0.002	-0.621	-0.037	0.425	-0.310	0.166	0.414	-0.034	-0.337	0.022	0.819	0.063
2004	-0.013	0.108	0.442	0.006	-0.639	-0.039	0.277	-0.365	0.185	0.401	0.096	-0.217	0.008	0.755	0.048
2005	-0.016	-0.081	0.096	0.038	-0.544	-0.025	0.190	-0.345	0.166	0.404	0.228	-0.130	-0.013	0.553	0.041
2006	-0.016	-0.148	-0.229	0.011	-0.330	-0.015	0.256	-0.267	0.168	0.369	0.216	-0.058	-0.009	0.424	0.073
2007	-0.014	-0.299	-0.301	-0.002	-0.393	-0.002		-0.190	0.158	0.468	0.071	0.067	-0.004	0.282	0.075
2008	-0.010	-0.369	-0.095	0.003	-0.539	0.012		-0.149	0.118	0.595	-0.245		-0.006	0.094	0.071
2009	-0.003	-0.196	0.216	0.028	-0.564	0.024		-0.129	0.067	0.411	-0.877		0.009	-0.182	0.070
2010	0.017	-0.307	0.382	0.044	-0.506	0.047	1.372	-0.168	0.038	0.492	-1.142	-0.684	0.051	-0.238	0.069
2011	0.033	-0.361	0.691	0.073	-0.152	0.059	2.316	-0.180	0.038	0.615	-0.890	-0.770	0.085	-0.245	0.057
2012	0.048	0.053	1.125	0.125	-0.502	0.059		0.036	0.033	0.666	-0.496	-0.916	0.116	-0.227	0.031
2013	0.064	0.321	1.604	0.237	-0.457	0.060		0.079	-0.005	0.546	-0.213	-1.004	0.135	-0.120	0.000

Source: Authors' calculation based on COMTRADE (2015) database

Figure 9: Maturity index values of parts of taps, cocks, valves or similar appliances (848190) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia
1996	0.024	0.222		0.371		-0.029				-0.227	1.077	-0.339	0.132	-0.759
1997	0.020	-0.205		0.416	-0.483	-0.030	1.044	0.055	-0.617	0.341	1.033		0.161	-0.647
1998	0.025	-0.617		0.425	-0.101	-0.033	0.924		0.146	0.360		-0.027	0.187	-0.429
1999	0.037	-0.492		0.409	0.131	-0.028	0.894	-0.027	0.855	0.819		-0.002	0.198	-0.271
2000	0.049	-0.302		0.367	0.421	-0.014	0.478	-0.005	1.139	0.976		-0.047	0.197	0.108
2001	0.048			0.274	0.418	-0.001	0.261	0.040	1.231	0.832	-0.298	-0.017	0.179	0.383
2002	0.046	0.085		0.184	0.447	0.010	0.153	0.032	1.203	0.736	0.506	-0.177	0.154	0.631
2003	0.046	0.226	1.637	0.124	0.460	0.022	0.077	0.114	1.154	0.706	1.074	-0.144	0.122	0.718
2004	0.044	0.270		0.083	0.424	0.034	-0.003	0.190	1.134	0.658	1.703	-0.016	0.091	0.673
2005	0.038	0.365	1.566	-0.003	0.372	0.048	-0.120	0.304	0.673	0.486		0.007	0.040	0.575
2006	0.033	0.400		0.028	0.291	0.056	-0.048	0.383	0.558	0.371	2.943	0.006	0.005	0.463
2007	0.022	0.248		0.008	0.314	0.054		0.389	0.443	-0.162	3.085	-0.034	-0.030	0.346
2008	0.009	0.103	1.274	-0.038	0.398	0.049		0.418	0.274	-0.217	3.105		-0.061	0.267
2009	-0.002	0.073	1.194	-0.079	0.408	0.041		0.427	0.058	0.463	2.713		-0.086	0.002
2010	0.000	0.023	0.827	-0.072	0.222	0.027	0.851	0.338	-0.005	0.342	1.726	0.045	-0.090	-0.041
2011	0.003	-0.039	0.891	-0.072	0.197	0.007	1.702	0.089	-0.084	0.314	1.439	0.061	-0.083	0.051
2012	0.014	0.028	1.740	-0.086	0.178	-0.020		-0.160	-0.340	0.392	1.067	0.002	-0.066	0.267
2013	0.035	0.033	3.010	-0.105	-0.099	-0.043		-0.566	-0.580	0.396	1.022	0.030	-0.033	0.451

Source: Authors' calculation based on COMTRADE (2015) database

Figure 10: Maturity level of parts of vacuum pumps, compressors, fans, blowers, hoods (841490) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia
1996	-0.020	1.875		0.041	0.717	-0.168				2.002	0.302	0.703	0.610	-0.375
1997	-0.010	0.727		0.120	0.755	-0.123	0.201	0.543	2.119	0.453	0.433		0.572	0.025
1998	0.002	-0.223		0.166	0.236	-0.069	0.203		0.971	-0.130	0.738	0.337	0.446	0.123
1999	0.017	-0.818		0.189		-0.027	-0.007	0.237	0.095	-0.416	0.584	0.396	0.327	-0.021
2000	0.032	-0.912	-0.129	0.214	0.347	0.011	-0.287	-0.113	-0.587	-0.510	0.402	0.483	0.253	-0.345
2001	0.032	-0.889	-0.182	0.172	0.316	0.047	-0.270	-0.310	-1.120	-0.484	0.274	0.515	0.168	-0.618
2002	0.034	-0.563	-0.237	0.145	0.314	0.083	-0.168	-0.485	-1.162	-0.455	0.055	0.240	0.092	-0.749
2003	0.034	-0.279	-0.113	0.138	0.384	0.094	-0.064	-0.550	-1.208	-0.319	-0.244	0.396	0.045	-0.819
2004	0.035	-0.128	-0.013	0.140	0.535	0.093	-0.112	-0.581	-1.202	-0.225	-0.604	0.372	0.020	-0.860
2005	0.028	0.199	0.244	0.096	0.613	0.072	0.056	-0.578	-0.308	0.042	-0.763	0.438	0.025	-0.897
2006	0.021	0.418	0.334	0.098	0.812	0.044	0.230	-0.490	-0.082	0.193	-0.846	0.555	0.069	-0.914
2007	0.012	0.439	0.479	0.100	0.679	0.032		-0.392	-0.068	0.227	-0.856	0.699	0.111	-0.716
2008	0.002	0.139	0.426	0.091	0.511	0.034		-0.247	-0.020	-0.003	-0.856		0.117	-0.439
2009	-0.001	-0.103	0.165	0.066	0.467	0.021		-0.085	-0.003	-0.426	-0.660		0.107	0.158
2010	0.001	-0.390	0.085	0.075	0.218	-0.005	0.970	0.086	-0.155	-0.457	-0.194	0.135	0.135	0.146
2011	0.002	-0.459	-0.141	0.073	-0.170	-0.008	2.146	0.222	-0.225	-0.655	-0.042	0.092	0.152	0.074
2012	0.005	-0.418	-0.223	0.056	-0.519	-0.004		0.420	-0.259	-0.673	0.210	0.129	0.132	-0.051
2013	0.014		-0.102	0.020	-0.471	-0.010		0.623	-0.086	-0.475	0.050	0.261	0.116	-0.495

Source: Authors' calculation based on COMTRADE (2015) database

Figure 11: Maturity level of mens, boys shirts, of cotton (620520) at national and global level, 1996-2013

Year	World	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey
1996	-0.060		-0.013	0.075	-0.035				-0.036		-0.030	-0.171	-0.067	-0.263
1997	-0.063		-0.040	0.055	-0.072	0.122	1.497	-0.588	-0.008			-0.186	-0.066	-0.162
1998	-0.062		-0.054	-0.058	-0.073	-0.112		-0.246	-0.048		1.126	-0.147	-0.077	-0.133
1999	-0.052		-0.068	-0.130	-0.054	-0.958	2.418	-0.044	-0.024		1.189	-0.085	-0.099	-0.111
2000	-0.041	-1.606	-0.087	-0.126	-0.017	-1.569	1.793	0.190	-0.008	-0.311	1.053	-0.063	-0.098	-0.069
2001	-0.032	-1.902	-0.099	-0.111	0.003	-1.417		0.374	-0.005	-0.360	0.775	-0.017	-0.094	-0.015
2002	-0.022	-1.925	-0.065	-0.085	0.030	-1.077	0.879	0.431	-0.012	-0.226	1.464	-0.113	-0.083	-0.030
2003	-0.021	-1.623	-0.033	-0.041	0.049	-0.582	0.243	0.440	-0.039	0.072	1.642	-0.227	-0.088	-0.063
2004	-0.018	-1.229	-0.005	0.013	0.060	-0.111	-0.145	0.429	-0.064	0.014	2.629	-0.318	-0.097	-0.086
2005	-0.013	0.063	0.032	0.187	0.084	0.827	-0.793	0.119	-0.074	0.325	3.483	-0.430	-0.105	-0.128
2006	-0.011	0.682	0.041	0.328	0.080	1.504	-1.089	0.014	-0.062		3.772	-0.515	-0.116	-0.129
2007	-0.011	0.799	0.030	0.462	0.074		-1.202	-0.058	-0.104		4.010	-0.585	-0.127	-0.106
2008	-0.009	0.808	0.023	0.592	0.066		-0.999	-0.085	-0.089	1.173		-0.568	-0.133	-0.083
2009	-0.001	0.406	0.028	0.694	0.047		-0.512	-0.133	-0.096	1.295		-0.483	-0.148	-0.060
2010	0.004	0.174	0.012	0.641	0.020	3.593	-0.179	-0.073	-0.090	1.145		-0.378	-0.181	-0.027
2011	0.016	-0.174	-0.008	0.479	0.001		0.171	0.028	-0.059	1.216	4.835	-0.226	-0.186	0.005
2012	0.018	-0.258	-0.033	0.213	-0.018		0.263	0.071	-0.041	0.633	4.841	-0.023	-0.199	0.020
2013	0.021	0.413	-0.044	0.006	-0.038		0.879	0.159	-0.032	0.109		0.183	-0.224	0.016

Source: Authors' calculation based on COMTRADE (2015) database

Figure 12: Maturity level of moulds, injection & compression, for rubber or plastic (848071) at national and global level, 1996-2013

Year	World	Algeria	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	-0.012		0.274	-0.370	-0.007				0.491	1.969	0.037	1.418	0.208	0.070
1997	-0.007	1.527	0.261	-0.020	-0.022	-0.344	0.247	0.029	0.317		0.042	0.648	0.212	0.038
1998	-0.004	0.022	0.265		-0.042	-0.078	-0.187	-0.689	0.687		0.060	0.210	0.071	0.007
1999	0.002	-0.461	0.238	0.205	-0.047	0.160	-0.322	-0.889	0.692	0.554	0.064	-0.085	-0.002	0.000
2000	0.002	-0.828	0.233		-0.034	0.426	-0.498	-0.811	0.696	0.171	0.047	-0.252	-0.067	-0.009
2001	0.011	-0.744	0.223		-0.009	0.759	-0.562	-0.740	0.695	0.078	0.024	-0.338	-0.052	-0.030
2002	0.012		0.238	-0.021	-0.003	0.569	-0.559	-0.486	0.615	-0.647	-0.027	-0.331	-0.004	-0.018
2003	-0.003	-4.725	0.244		-0.023	0.313	-0.489	-0.315	0.718	-1.223	-0.076	-0.247	-0.004	-0.022
2004	-0.018		0.235		-0.044	0.156	-0.455	-0.279	0.713	-0.876	-0.109	-0.156	-0.017	-0.043
2005	-0.033		0.221	-0.335	-0.054	-0.088	-0.337	0.285	0.601	-0.462	-0.146	0.146	-0.020	-0.054
2006	-0.039	-1.873	0.188		-0.057	-0.191	-0.268	0.353	0.299	-0.310	-0.157	0.294	0.033	-0.062
2007	-0.043	-0.176	0.151	-0.363	-0.069		-0.225	0.240	0.332	-0.013	-0.154	0.308	-0.016	-0.072
2008	-0.027		0.136	-0.419	-0.055		-0.120	0.076	0.280		-0.120	0.261	-0.006	-0.058
2009	-0.007	5.899	0.113		-0.041		0.032	-0.141	0.217	0.050	-0.071	0.185	0.035	0.001
2010	0.011		0.085	-0.281	-0.022	0.975	0.098	-0.350	-0.010		-0.001	0.087	0.064	-0.008
2011	0.047		0.070	-0.152	0.019	1.118	0.161	-0.446	-0.370		0.086	-0.069	0.130	0.012
2012	0.090		0.078	-0.233	0.058		0.332	-0.551	-0.351	-0.508	0.189	-0.104	0.204	0.060
2013	0.122		0.097	-0.480	0.099		0.596	-0.092	-0.579	-0.577	0.258	-0.027	0.273	0.099

Source: Authors' calculation based on COMTRADE (2015) database

Figure 13: Maturity level of brassieres and parts thereof (621210) at national and global level, 1996-2013

Year	World	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	0.069	-0.131		0.004				0.759	-1.083	0.032	-0.057	0.191	0.073
1997	0.066	-0.208		0.022	0.872	-0.143	0.391	0.692		-0.032	-0.028	0.212	-0.004
1998	0.054	-0.285		0.010	0.355	0.258	0.035	0.344	-7.269	-0.143	-0.003	0.186	-0.032
1999	0.046	-0.340		0.003	0.028	0.417	-0.195	0.134		-0.217	0.037	0.169	-0.052
2000	0.041	-0.337		0.002	-0.344	0.329	-0.323	0.003		-0.258	0.085	0.116	-0.079
2001	0.040	-0.322	1.357	-0.005	-0.649	-0.076	-0.382	-0.091	-2.295	-0.238	0.106	0.102	-0.098
2002	0.031	-0.305		-0.007	-0.594	-0.347	-0.354	-0.169		-0.201	0.103	0.054	-0.160
2003	0.023	-0.270	1.751	0.000	-0.361		-0.307	-0.237	4.963	-0.220	0.085	-0.014	-0.242
2004	0.016	-0.248		0.013	-0.201	-0.932	-0.262	-0.299		-0.244	0.059	-0.075	-0.301
2005	0.010	-0.180	2.898	0.026	0.404	-1.297	0.026	-0.262	7.525	-0.236	-0.003	-0.153	-0.321
2006	0.008	-0.138	3.683	0.041	0.574	-1.537	0.156	-0.133	4.388	-0.207	-0.038	-0.198	-0.302
2007	0.004	-0.165	3.001	0.056		-1.685	0.199	-0.138	2.310	-0.209	-0.072	-0.210	-0.263
2008	0.001	-0.113	1.691	0.063		-1.829	0.229	-0.183		-0.201	-0.122	-0.210	-0.184
2009	0.000	-0.127	1.445	0.062			0.239	-0.233		-0.172	-0.202	-0.189	-0.051
2010	0.001	-0.141	0.992	0.049	-0.123		0.171	-0.242		-0.170	-0.210	-0.170	0.120
2011	0.003	-0.165	0.581	0.025	-0.898	0.176	0.085	-0.238		-0.119	-0.205	-0.136	0.306
2012	0.003	-0.176	0.076	-0.011		0.824	-0.018	-0.216		-0.034	-0.177	-0.106	0.486
2013	0.007	-0.162	-0.287	-0.036		1.027	-0.290	-0.208	5.468	0.023	-0.092	-0.081	0.608

Source: Authors' calculation based on COMTRADE (2015) database

Figure 14: Maturity level of articles of bedding nes (940490) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	0.041	-2.278		0.025	0.031	-0.050			0.603	-0.547	-0.340	0.431	0.187	-0.107	0.056
1997	0.073	-0.994		0.055	-0.263	-0.045	1.062	0.026	0.442			0.412	0.618	-0.050	0.031
1998	0.093	-0.486		0.060	0.343	-0.042		0.215	0.461	0.294	-0.311	0.321	0.527	0.016	0.014
1999	0.100	-0.087		0.042	0.580	-0.030		0.299	0.331	0.016	-0.183	0.220	0.156	0.095	0.010
2000	0.101	0.170	-0.399	0.013	0.471	-0.007	1.696	0.309	0.201	-0.238	-0.036	0.117	-0.117	0.212	0.009
2001	0.104	0.490	-0.044	0.027	0.182	0.024	1.379	0.265	0.036	-0.087	0.124	0.162	-0.289	0.246	-0.006
2002	0.099	0.485	0.251	0.028	0.002	0.051	1.050	0.269	-0.140	0.110	0.330	0.293	-0.354	0.196	-0.007
2003	0.085	0.179	0.499	0.015	-0.248	0.053	0.553	0.249	-0.308	0.437	0.442	0.305	-0.390	0.175	-0.001
2004	0.070	0.125	0.628	0.003	-0.563	0.055	0.232	0.253	-0.421	0.635	0.527	0.306	-0.374	0.156	-0.010
2005	0.043	0.004	0.725	-0.030	-1.072	0.059	-0.062	0.241	-0.504	0.356	0.631	0.364	-0.342	0.115	-0.018
2006	0.023	0.020	0.640	-0.017	-1.452	0.057	-0.236	0.313	-0.621	0.524	0.670	0.398	-0.142	0.086	-0.027
2007	0.008	0.009	0.434	-0.013	-1.614	0.045	-0.292	0.294	-0.540	0.612	0.667	0.450	-0.035	0.091	-0.040
2008	-0.003	0.086	0.202	-0.010	-1.583	0.037	-0.305	0.281	-0.321	0.577		0.509	0.120	0.065	-0.048
2009	-0.001	0.210	-0.236	0.011	-1.130	0.033	-0.280	0.285	0.038	0.143		0.540	0.421	-0.005	-0.041
2010	-0.004	0.731	-0.511	0.010	-0.594	0.019	-0.117	0.243	0.145	-0.133	0.530	0.453	0.482	-0.016	-0.058
2011	-0.001	1.376	-0.764	0.013	-0.216	0.025	0.210	0.172	0.242	-0.312	0.433	0.437	0.470	-0.056	-0.067
2012	0.006	1.284	-0.898	0.017	0.043	0.011	0.257	0.032	0.267	-0.404	0.305	0.373	0.324	-0.085	-0.048
2013	0.014	1.024	-1.074	0.012	0.946	0.007	0.201	0.189	0.270	-0.031	-0.001	0.228	-0.035	-0.082	-0.023

Source: Authors' calculation based on COMTRADE (2015) database

Figure 15: Maturity level of propene (propylene) (290122) at national and global level, 1996-2013

Year	World	China	Germany	S. Arabia	S. Korea	Turkey	USA
1996	-0.058	0.193	-0.073	0.533	0.000	0.314	-0.389
1997	-0.088	-1.396	-0.122		0.018	1.822	-0.328
1998	-0.067		-0.090	0.550	0.006	1.453	-0.180
1999	-0.061	-2.043	-0.055	0.387	-0.031	1.255	-0.076
2000	-0.073	-2.668	-0.053	0.308	-0.064	1.136	0.064
2001	-0.054	-2.511	-0.049	0.170	-0.058	1.010	0.177
2002	-0.052	-1.529	0.010	0.143	-0.008	0.863	0.167
2003	-0.062	-1.472	0.076	-0.071	0.018		0.182
2004	-0.068	-1.383	0.122	-0.195	0.033	0.650	0.172
2005	-0.066	-0.450	0.147	-0.273	0.059	-0.048	0.114
2006	-0.078	-0.614	0.140	-0.314	0.101	0.085	0.041
2007	-0.070	-0.843	0.099	-0.335	0.143	-0.085	-0.049
2008	-0.045	-0.622	0.026	-0.249	0.136	-0.042	-0.189
2009	-0.005	-0.286	-0.009	-0.035	0.112	-0.082	-0.210
2010	0.011	-0.605	-0.090	0.056	0.090	0.056	-0.233
2011	0.027	-0.445	-0.180	0.184	0.083	0.184	-0.283
2012	0.036	-0.470	-0.231	0.222	0.101	0.366	-0.279
2013	0.050	0.155	-0.193	0.002	0.115	0.664	-0.217

Source: Authors' calculation based on COMTRADE (2015) database

Figure 16: Maturity level of polypropylene in primary forms (390210) at national and global level, 1996-2013

Year	World	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	-0.086		-0.018	-0.974	0.026				4.125		-0.025	-0.144	0.836	-0.430	-0.026
1997	-0.060		-0.305	-0.866	-0.066	-0.235	0.891	-1.205	1.175	2.746		-0.142	0.892	-0.185	0.019
1998	-0.013		-0.419	-0.308	-0.090			-1.174		1.700	0.345	-0.106	0.304	-0.115	0.068
1999	0.025		-0.382	0.055	-0.124		0.667	-1.105	-1.377	1.053	0.317	-0.054	0.069	-0.050	0.090
2000	0.044	-1.814	-0.381	0.313	-0.162	-1.194	0.060	-0.740	-0.578		0.268	-0.027	-0.088	0.021	0.115
2001	0.060		-0.346	0.411	-0.116	-1.181	-0.289	-0.443	0.265		0.173	-0.021	-0.240	-0.096	0.119
2002	0.065		-0.328	0.493	-0.065	-0.678	-0.499	-0.187	1.230	0.795	0.089	-0.005	-0.302	0.012	0.120
2003	0.060		-0.313	0.546	-0.050	-0.083	-0.666	-0.094	2.217		0.197	-0.029	-0.382	0.148	0.107
2004	0.056	-0.335	-0.268	0.577	-0.042	0.369	-0.776	-0.081		1.234	0.318	-0.054	-0.427	0.243	0.091
2005	0.037	0.099	-0.018	0.448	-0.003	0.658	-0.781	-0.167	3.945	1.615	0.429	-0.095	-0.442	0.236	0.050
2006	0.014	0.482	-0.010	0.249	-0.010	1.190	-0.774	-0.231	5.028	1.804	0.527	-0.128	-0.143	0.260	0.011
2007	-0.004	1.268	0.048	0.215	-0.031		-0.663	-0.335	4.067	1.917	0.681	-0.164	-0.122	0.269	-0.030
2008	-0.010	1.184	0.112	0.204	-0.023		-0.458	-0.397	2.713	1.959	0.825	-0.165	-0.106	0.238	-0.084
2009	-0.003	0.582	0.170	0.179	0.012		-0.164	-0.482	0.621	-0.370	0.821	-0.163	-0.133	0.184	-0.111
2010	0.003	0.079	0.219	0.145	0.008	2.634	0.102	-0.633	-0.002	-0.450	0.822	-0.151	0.233	0.073	-0.147
2011	0.012	-0.300	0.255	0.277	0.024	4.309	0.377	-0.640	-0.632	-0.459	0.736	-0.093	0.725	-0.044	-0.172
2012	0.017	-0.549	0.249	0.316	0.029		0.646	-0.517	-0.874	-0.507	0.584	-0.006	1.217	-0.121	-0.195
2013	0.027	-1.354	0.218	0.384	0.062		0.810	-0.157	-1.324	-0.925	0.326	0.091	1.778	-0.201	-0.187

Source: Authors' calculation based on COMTRADE (2015) database

Figure 17: Maturity level of transistors, except photosensitive, > 1 watt (854129) at national and global level, 1996-2013

Year	World	China	Germany	Jordan	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	0.061	0.422	0.058			1.622	-0.098	-0.254	-0.168	-0.156	0.028
1997	0.063	0.250	0.093			1.439		-0.147	-0.007	0.316	0.041
1998	0.048	0.110	0.095		-0.509	0.832	0.250	0.001	0.578	0.388	0.030
1999	0.026	0.070	0.087	0.165	0.034	0.477	0.450	0.098	0.154	0.499	-0.009
2000	0.001	0.080	0.040	-0.787	0.718	0.225	0.671	0.166	-0.752	0.507	-0.032
2001	-0.010	0.065	-0.010	-1.188	0.959	0.058	0.705	0.316		0.439	-0.035
2002	-0.034	0.056	-0.060	-1.475	1.098	-0.089	1.340	0.177		0.321	-0.028
2003	-0.053	0.074	-0.097	-1.145		-0.219	1.883	0.051	-3.514	0.272	0.016
2004	-0.066	0.095	-0.110		1.085	-0.323	2.170	-0.057	-4.028	0.257	0.062
2005	-0.075	0.206	-0.140	-1.442	0.910	-0.255	2.308	-0.226		0.048	0.092
2006	-0.069	0.168	-0.129		0.872	-0.047	2.546	-0.339		0.079	0.096
2007	-0.057	0.185	-0.107		0.581	-0.056	2.719	-0.427		0.088	0.104
2008	-0.041	0.179	-0.104	-0.074	0.257	-0.078		-0.476		-0.013	0.084
2009	-0.010	0.174	-0.062	0.869	-0.233	-0.096		-0.489		-0.074	0.026
2010	0.020	0.190	-0.001		-0.492	-0.079		-0.406	1.100	-0.052	-0.055
2011	0.042	0.196	0.043		-0.532	-0.063		-0.317	0.641	-0.095	-0.186
2012	0.062	0.208	0.066		-0.785	-0.059		-0.138	-0.240	-0.149	-0.328
2013	0.090	0.242	0.118		-1.327	-0.048		0.123	-0.637	-0.089	-0.396

Source: Authors' calculation based on COMTRADE (2015) database

Figure 18: Maturity level of pneumatic tyres new of rubber for buses or lorries (401120) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	-0.013	-2.666		0.136	0.380	-0.024				-0.290	0.186	-1.168	-0.002	-0.466	0.128	0.050
1997	-0.029	-2.271		0.157	0.393	-0.026	0.821	-0.359	0.039	-0.076	0.013		-0.044	-0.134	0.142	-0.022
1998	-0.040	-0.926		0.136	0.488	-0.033	0.673		0.303	0.147	-0.182	0.078	-0.053	0.115	0.157	-0.067
1999	-0.032	0.560		0.088	0.256	-0.038	0.450	-0.275	0.146	0.293	-0.420	0.232	-0.039	0.299	0.164	-0.074
2000	-0.014	1.342	0.116	0.045	0.113	-0.022	0.234	-0.323	0.029	0.200	-0.521	0.421	-0.015	0.444	0.167	-0.053
2001	0.003		0.324	0.048	-0.008	-0.003	0.130	-0.305	-0.041	0.082	-0.476	0.437	-0.015	0.508	0.142	-0.037
2002	0.008	1.939	0.505	0.048	-0.075	-0.002	-0.015	-0.296	-0.012	-0.081	-0.372	0.491	-0.007	0.554	0.113	-0.017
2003	0.003	1.840	0.761	0.034	-0.086	-0.011	-0.122	-0.320	0.035	-0.237	-0.288	0.536	-0.009	0.654	0.021	0.002
2004	0.001	1.712	0.883	0.027	-0.141	-0.014	-0.212	-0.349	0.067	-0.363	-0.219	0.526	-0.008	0.773	-0.025	0.015
2005	0.003	1.261	0.955	-0.004	-0.146	-0.013	-0.333	-0.332	-0.057	-0.519	-0.144	0.391	-0.001	0.697	-0.064	0.045
2006	0.003	0.725	0.964	-0.003	-0.114	-0.011	-0.155	-0.369	-0.151	-0.730	-0.143	0.426	0.001	0.662	-0.078	0.061
2007	-0.007	0.195	0.900	-0.008	0.143	-0.018		-0.339	-0.164	-0.779	-0.165	0.473	-0.006	0.616	-0.074	0.062
2008	-0.018	-0.044	0.765	0.003	0.280	-0.018		-0.224	-0.170	-0.395	-0.244		-0.010	0.461	-0.056	0.051
2009	-0.007	-0.325	0.491	0.036	0.424	-0.015		-0.020	-0.202	0.241	-0.542		-0.008	0.189	-0.023	0.056
2010	0.009	-0.398	0.237	0.051	0.570	-0.003	2.008	0.004	-0.172	0.369	-0.787	0.193	0.004	0.100	0.055	0.053
2011	0.029	-0.333	-0.071	0.072	0.658	0.009	3.432	0.033	-0.084	0.493	-0.639	0.145	0.025	-0.043	0.185	0.055
2012	0.043	-0.390	-0.174	0.088	0.689	0.007		0.079	-0.005	0.587	-0.470	0.105	0.046	-0.181	0.225	0.059
2013	0.053	-0.491	-0.478	0.086	0.683	0.001		0.097	-0.058	0.561	-0.215	0.246	0.040	-0.106	0.228	0.040

Source: Authors' calculation based on COMTRADE (2015) database

Figure 19: Maturity level of polyethylene - specific gravity >0.94 in primary form (390120) at national and global level, 1996-2013

Year	World	Bahrain	China	Egypt	Germany	Iran	Jordan	Kuwait	Lebanon	Morocco	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	-0.011		-0.480		0.098						-0.006	0.002	0.765	0.042	-0.119
1997	-0.021		-1.009	-3.418	0.005	-1.185			-0.944			-0.065	0.118	0.301	-0.061
1998	-0.012		-1.179	-0.867	-0.023						0.293	-0.070	-0.195	0.421	-0.011
1999	-0.001		-1.127		-0.041		0.717		0.417	-1.492	0.204	-0.055	-0.208	0.445	0.020
2000	0.004	5.959	-1.085	1.409	-0.052	2.665	0.814	-0.077	0.273		0.131	-0.043	0.311	0.371	0.032
2001	0.010		-0.967	1.778	-0.064	1.498	0.834	0.176	0.212	1.290	0.015	-0.055	0.841	0.166	0.049
2002	0.027	2.342	-0.818	2.101	-0.021	0.948	0.758	0.454	0.286	2.064	-0.046	0.000	0.993	0.151	0.079
2003	0.032	1.378	-0.780	2.257	0.014	0.649	0.557	0.653	0.247	2.806	-0.090	0.028	1.060	0.206	0.110
2004	0.028	0.671	-0.730	2.447	0.027	0.444	0.447	0.796	0.112	3.296	-0.122	0.035	1.041	0.280	0.130
2005	0.020		-0.296	1.787	0.064	0.239	0.239		0.139	3.049	-0.194	0.043	1.184	0.273	0.136
2006	0.011	0.323	-0.385	1.223	0.063	-0.203	0.164	0.967	0.081	2.728	-0.217	0.034	1.148	0.371	0.127
2007	-0.002	0.773	-0.280	1.019	0.032		0.141	1.055	-0.113	2.392	-0.237	0.017	1.006	0.396	0.122
2008	-0.010	0.772	-0.177	0.524	-0.002		0.204	1.155	-0.319	2.157	-0.178	0.004	0.748	0.327	0.115
2009	-0.007	0.407	-0.070	0.276	-0.025		0.281	1.316	-0.442	0.992	-0.094	-0.019	0.032	0.245	0.077
2010	-0.015	-0.244	-0.032	0.005	-0.060	-0.539	0.483		-0.448	0.756	-0.050	-0.054	0.142	0.188	0.026
2011	-0.008	-0.983	0.053	-0.083	-0.071	-1.321	0.721		-0.245	0.342	-0.014	-0.057	0.265	0.131	-0.023
2012	0.015	-1.877	0.101	-0.203	-0.047		0.801		0.095	0.081	0.046	-0.019	0.468	0.020	-0.066
2013	0.050	-2.857	0.104	-0.401	-0.015		0.692	0.069	0.505	-0.310	0.083	0.041	0.578	-0.178	-0.106

Source: Authors' calculation based on COMTRADE (2015) database

Figure 20: Maturity level of sacks and bags (including cones) of polymers of ethylen (392321) at national and global level, 1996-2013

Year	World	Algeria	Bahrain	China	Egypt	Germany	Iran	Jordan	Lebanon	Morocco	Oman	S. Arabia	S. Korea	Tunisia	Turkey	USA
1996	0.021			0.088	-0.205	-0.044				-0.494	0.605	0.161	0.122	0.963	-0.172	0.097
1997	0.027			0.080	-0.517	-0.021	0.798	-0.072	0.220	-0.452	0.472		0.032	1.286	-0.220	0.087
1998	0.039			0.081	-0.135	0.017	0.549		0.142	-0.190	0.159	0.249	0.002	1.523	-0.131	0.067
1999	0.053			0.095	0.116	0.059	0.444	0.299	0.179	-0.183	-0.068	0.353	-0.015	1.540	-0.029	0.063
2000	0.062	0.281	0.250	0.088	0.101	0.100	0.287	0.865	0.152	-0.188	-0.158	0.415	-0.028	1.184	0.026	0.078
2001	0.062		0.193	0.065	-0.007	0.110	0.087		0.109	-0.098	-0.099	0.475	-0.002	0.914	0.052	0.081
2002	0.067	-1.362	0.103	0.064	-0.099	0.125	0.227	1.278	0.111	-0.027	0.078	0.437	0.001	0.757	0.085	0.079
2003	0.066	-1.063	-0.027	0.057	-0.152	0.134	0.450	1.271	0.113	0.143	0.344	0.751	-0.007	0.685	0.106	0.074
2004	0.062		-0.123	0.042	-0.210	0.137	0.717	1.145	0.135	0.291	0.366	0.659	-0.013	0.598	0.116	0.066
2005	0.048		-0.195	0.023	-0.316	0.119	0.793	0.841	0.191	0.407	0.538	0.595	-0.008	0.414	0.127	0.053
2006	0.035	-0.216	-0.145	0.001	-0.521	0.096	0.756	0.630	0.271	0.380	0.591	0.591	-0.008	0.322	0.077	0.045
2007	0.020	0.434	-0.126	-0.024	-0.571	0.076		0.326	0.272	0.530	0.564	0.605	-0.005	0.298	0.057	0.026
2008	0.008		-0.043	-0.048	-0.542	0.050		-0.054	0.226	0.556	0.447		0.008	0.220	0.029	-0.003
2009	-0.003	1.816	0.118	-0.064	-0.269	0.017		-0.649	0.149	0.540	0.055		0.034	0.329	0.009	-0.004
2010	-0.011	1.094	0.318	-0.079	0.072	-0.002	-0.926	-0.746	0.090	0.384	-0.524	0.068	0.052	0.313	0.006	-0.009
2011	-0.010	-0.080	0.544	-0.085	0.301	-0.010	-2.114	-0.673	0.033	0.066	-0.682	0.036	0.078	0.356	0.012	-0.010
2012	-0.001	-1.395	0.699	-0.077	0.587	-0.010		-0.392	-0.031	-0.309	-0.979	0.385	0.118	0.427	0.034	-0.001
2013	0.021		0.634	-0.047	0.540	0.009		-0.075	-0.065	-0.594	-1.147	1.084	0.182	0.070	0.075	0.026

Source: Authors' calculation based on COMTRADE (2015) database