ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية
2013

working paper series

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Working Paper No. 816

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December 2013

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First published in 2013 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Abstract

The diversity of MENA countries' exports has increased together with flows of FDI to the region. This paper investigates whether this association results from a more general relation between FDI inflows and the diversity of a country's exports. At odds with the presumption of the literature, we find no evidence of such a relation. However, we find that a more skilled workforce and better institutions are correlated with more diversified exports.

JEL Classification: F2

Keywords: Diversification, foreign direct investment, exports.

ملخص

ازداد تنوع صادرات بلدان منطقة الشرق الأوسط وشمال افريقيا جنبا إلى جنب مع تدفقات الاستثمار الأجنبي المباشر إلى المنطقة. تبحث هذه الورقة ما إذا كان هذا الارتباط ناتج عن علاقة أكثر عمومية بين تدفقات الاستثمار الأجنبي المباشر وتنوع صادرات الدولة. على خلاف ما افترضت الأدبيات عن هذا الموضوع، لا نجد أي دليل على هذه العلاقة. ومع ذلك، نجد أن المؤسسات العاملة التى يوجد بها أكثر مهارة ترتبط بوجود صادرات أكثر تنوعا.

1. Introduction

The diversification of production is an integral part of the development process. In a series of influential contributions, Chenery and his coauthors (see e.g. Chenery, 1960, Chenery and Taylor, 1968, and Chenery et al., 1962) showed that the rise of a country's income followed a "uniform pattern of change in the structure of production". Namely, he observed that early stages of development were associated to a rise in the share of industrial output, while later stages displayed a contraction of industrial output. More recently, Imbs and Wacziarg (2003) complemented Chenery's findings by showing a robust relation between the diversity of a country's production and its per capita output. They observed that the diversity of output tended to increase with income for low initial levels of income per capita, and that the trend reversed for high levels of income.

From an economic point of view, specialization has the advantage of exploiting scales economies and benefiting from learning by doing. However, it induces the risk of a heavy dependence on shocks to the demand of a specific good. The resulting high uncertainty is detrimental to factor accumulation and growth (see e.g. Fischer, 1993). In contrast, economic diversification, allows smoothing the effect of a specific sector's shock, as Méon and Weill (2003, 2004) show. Acemoglu and Zilibotti (1997) offer an integrated view of the relation between development and diversification. They argue that because of indivisibilities in investment opportunities, early stages of development should be associated with both lower growth and higher volatility. Lucky countries could growth out of that stage thanks to positive income shocks allowing them to seize more opportunities and diversify.

Interestingly, exports seem to play a particular role in the dynamic of diversification. Hummels and Klenow (2005) find that richer countries export a broader variety of goods and at slightly higher prices. Cadot et al. (2011) even show that the relation between income and the diversification of exports maps the relation between income and the diversification of output reported by Imbs and Wacziarg (2003). They moreover observe that the relation is driven by the extensive margin, meaning that diversification is driven by the exports of new goods. Those findings can be related to those of Hausmann et al. (2007), who find a positive relationship between a country growth and the income of the countries that import its products. Moreover, using IV estimations they can show that causality runs from the destination of imports to the income of the exporting country. Taken together with the previous two findings, Hausmann et al.'s (2007) suggest that a country could increase its growth by diversifying its exports, in particular by exporting more to richer countries. Hidalgo and Hausmann (2009) moreover directly observe that the complexity of a country's exports is predictive of its future growth, while Abdon et al. (2010) report a positive correlation between the complexity of a country's exports and its per capita income.

In addition to its correlation with per capita income, the diversification of exports entails specific advantages, especially for a developing country. The once-celebrated contribution of Singer (1950) and Prebisch (1959) were early warnings against the specialization of exports. Their line of reasoning was that the comparative advantage of countries at an early stage of their development would lock them in a vicious circle. By specializing in exporting food and raw materials, they would reinforce the initial international division of labor, remain confined to low-growth sectors, and contribute to the deterioration of their terms of trade. They would thus diverge from the "core" of the world economy, and become increasingly shoved to its "periphery", in Prebisch's (1959) terms. Although, the policies of import-substitution that they inspired have come under strong criticism, those theories serve as a reminder of the risks associated with specialization. Moreover, although reliance on natural resources is not necessarily a curse for a country, (see e.g. Stijns, 2005, Reinhardt, 2000, Hill, 1996, and Gylfason, 2008), it might be the case if not accompanied by an effective development

strategy. High predominance of natural resources might make a country vulnerable to the high volatility of commodity prices and to the "Dutch Disease".

The issue is of a particular importance for Arab countries, because they exhibit a low share of manufactures in their GDP and exports, although at different degrees and for different reasons. Economic analyses of the region divide it into two groups. One includes natural resources rich countries such as Algeria, Kuwait, Saudi Arabia and United Arab Emirates (UAE). The other includes natural resources poor countries such as Morocco, Tunisia, Yemen and to some extent Egypt. In both cases, the counties face a challenge of diversifying their economies.

Lack of diversification is also an issue for many natural resources poor countries in the region. This is because they have low or very low shares of sophisticated manufactures in total exports, which prevent them from benefiting from the above-mentioned advantages. Even countries with "fair" shares of manufactures in total exports still have a diversification problem since many of them are highly specialized in few "traditional" manufacturing industries such as textiles, wearing apparel and food (Sekkat, 2008). This makes them vulnerable to external shocks, such as the termination of MFA, and to fierce competition from other emerging economies, like China and India. Overall, although the region has diversified its exports over the last decade, the diversification remains limited, and its exports tend to be produced at low levels of skill and sophistication, as Gourdon (2010) shows.

If the diversity of exports is beneficial to growth and development, a natural question is to determine how to influence diversification. The present research examines the role of foreign direct investment (FDI) as a possible culprit. In a nutshell, one may expect increasing FDI inflows to foster the trend of diversification in the region, if FDI transfers technology and know-how, and is undertaken by firms trying to cut costs to serve foreign markets. In that respect the MENA may be a topical illustration, because FDI and diversification have increased hand in hand in the region since 2010 as Gourdon (2010) points out.

To address the impact of FDI on diversification, the present paper is organized as follows. The next section is devoted to a survey of the literature. As there is virtually no contribution focusing on the relation between FDI and diversification, we draw from the insights of various strands of the literature. Section 3 describes the situation of Arab countries, both in terms of FDI inflows and in terms of diversification of their production structure. Section 4 provides a thorough empirical analysis of the relationship. Section 5 concludes.

2. The Expected Positive Impact of FDI on the Diversification of Exports

Although the impact of FDI on diversification has received little attention in the literature, existing results suggest that FDI inflows may raise the diversification of exports of host countries. This optimistic presumption rests on three series of mechanisms that this section surveys: 1. The characteristics of foreign firms are intrinsically different from those of domestic firms, 2. Foreign firms may generate productivity spillovers, and 3. Foreign firms may reduce the cost of exporting. One should, however, bear in mind that the notion that FDI inflows should increase the diversification of exports is only a contention. Indeed, counterarguments exist. They will be surveyed in section 2.4.

The recent theoretical and empirical literature on trade emphasizes the distinction between the intensive margin of trade, whereby the quantities of already exported goods are affected, and the extensive margin of trade, whereby new goods are exported. It is a priori difficult to relate the arguments that follows to a particular kind of adjustment. Nevertheless, one may contend, on the one hand, that the arguments surveyed in section 2.1, which focus on the role of foreign firms as exporters, essentially relate to the extensive margin. On the other hand, the

arguments listed in sections 2.2 and 2.3, which underline the role of foreign firms as export catalysts, relate to both the extensive and intensive margins.

2.1. The characteristics of foreign firms

The first characteristic that distinguishes foreign firms from domestic firms is the sectors where they invest. The most direct expected impact of foreign investment on diversification may therefore come from the notion that foreign firms may target sectors that are not yet developed in the host country. Foreign capital flows, in the form of greenfield investment may thus develop sectors producing new goods, resulting in new types of exports, hence increased diversification of exports.

In line with this effect, Banga (2006) distinguishes the traditional export sector, defined as the industries where exports shares are higher in the host country, and the non traditional export sector, defined as industries characterized by lower exports. Using sector and firm-level data on Indian exports over the 1985-1990 period, he finds that FDI inflows from the US had a direct effect on the diversification of India's exports.

A second difference between foreign firms and domestic firms is that the former tend to export more than the latter. The point is for instance made by Kneller and Pisu (2004). They argue that foreign firms can use a foreign country as a platform to export to third countries, and benefit from regional free trade agreements. Global firms also engage in international production processes, implying intra-firm exports. Finally, Kneller and Pisu (2004) recall that foreign firms may produce multiple goods that may result in increased exports if demands are correlated.

Kneller and Pisu (2004) study a panel of 741 UK firms between 1988 and 1996. In line with their theoretical presumption, they find that foreign multinationals were responsible for one third of the exports of the UK manufacturing sector in 1996. Furthermore, foreign firms were more likely to simply engage in exports than their domestic counterparts. Finally, when they did export, they exported a larger share of their production.

As a result, one may expect FDI inflows to be followed by an increase in the volume of exports, which may in turn increase the diversification of exports, because, as Bertrand et al. (2007) point out firms typically export several products. They thus point out that in 2000 only 42.2 percent of exporting US firms exported a single product abroad.

A third difference between domestic and foreign firms that may result in a positive impact of FDI on export diversification is that exporting firms are typically more skill- and capital-intensive than local firms, both in a developed country like the US, as reported by Bernard et al. (20007), and in a developing country like Chile, as reported by Alvarez and López (2005). In developing countries, foreign firms may therefore produce goods that do not fit the country's initial comparative advantage. They would thus contribute to diversifying its exports.

2.2. Productivity spillovers

The second series of reasons why FDI may raise the diversity of the host country's exports is related to the new trade theory. That theory was initially designed to incorporate the stylized fact that not all the firms from the same sector engage in export activities. As Bernard et al. (2007) put it, exporting firms are rare. They recall that, in the US, only four percent of operating firms sell goods abroad, and that the ratio does not even exceed 15 percent in traditionally export-oriented sectors like manufacturing, mining and agriculture. Moreover, they remark that exporting firms are more productive, because they self-select in exporting activities.

The new trade theory, for instance put forward by Mélitz (2003), incorporates those stylized facts by assuming that firms willing to export incur a fixed cost. Their productivity must therefore exceed a threshold for them to start exporting. This theory implies that if FDI enhances productivity, it should also result in an increase in exports and in the diversity of exports.

Indeed, there is evidence that FDI enhances productivity, and this stylized fact has moreover been central to the theory of multinational firms almost since its inception, following Caves (1974). Hymer (1976) even argues that the existence of multinational firms is due to their ownership of technological assets. The contention has received overwhelming empirical support, which Harrison and Rodríguez-Clare (2010) summarize by writing that the direct effect of foreign firms on the productivity of their subsidiaries is their most important contribution.

However, to make sure that FDI results in increased diversification, FDI must produce spillovers that transcend sector boundaries. In that respect, the evidence is mixed, but recent results are optimistic. The early results of Blomström and Wolff (1994) suggested the existence of horizontal spillover effects. However, Aitken and Harrison (1999) showed that the findings of Blomström and Wolff (1994) were due to a misspecification of the estimated relation between foreign investment and productivity. Using a correct specification resulted in the relation being insignificant. Kokko et al. (2001) nevertheless reported horizontal spillovers from FDI in Uruguay, provided foreign firms entered the country at the time it was pursuing a policy of import substitution, i.e. before 1973. Finally, Keller and Yeaple (2009) reported evidence of horizontal spillovers for US manufacturing firms over 1987-1996. They found that the magnitude of spillovers could explain 14 percent of productivity growth, but that it was heterogeneous. They found that spillovers affected mainly firms in the high-tech sector, and small firms with low productivity.

If foreign direct investments also affect productivity in firms located in their supply chain, thereby producing vertical spillovers, their impact on the diversification of exports will be larger. One easily imagines that foreign firms' subsidiaries have an incentive to improve the productivity of their suppliers. In line with this intuition, Javorcik (2004) observed positive spillovers from foreign firms operating in Lithuania on the upstream part of their supply chain.

Both horizontal and vertical spillovers should increase the propensity of domestic firms producing goods that the foreign firm does produce to engage in exports of new goods. It therefore affects the extensive margin of trade, thereby increasing the diversity of exports.

2.3. The cost of exporting

If the new theory of international trade implies that FDI can increase the diversification of exports by increasing the productivity of local firms, it implies by the same token that FDI may increase the diversification of exports by reducing the cost of exporting. Indeed, there are good reasons to consider that foreign firms face lower costs of exporting, or, alternatively, that they have already incurred the fixed cost necessary to engage in international trade. In that case, their foreign subsidiaries will benefit from their parent firms' advantage.

Firstly, foreign firms have specific skills. Banga (2006) points out the international marketing distribution and servicing skills, and the superior knowledge of foreign market conditions of foreign firms. In that respect, participation in foreign trade may result in learning by doing. For instance, Roberts and Tybout (1997) find that Columbian manufacturing firms are more likely to export if they have prior experience with exporting. More precisely, using census data covering all plants with ten or more employees over the 1981-1989 period, they observe that prior export experience increases the probability to export by 60%.

In addition, foreign firms may generate an imitation effect, whereby domestic firms can benefit from their export knowledge. Aitken et al. (1997) stress that multinational firms are a "natural conduit" for information about foreign markets.[1] Greenaway et al. (2004) study the impact of foreign firms on the export behavior of 3662 UK firms with at least 3 years of data between 1992 and 1996. They find that the probability to export increases with the exports of foreign firms, which suggests an imitation effect. Moreover, they find that the probability for a UK firm to export increases with the amount of R&D by foreign firms. They also observe an impact of R&D expenditures on the propensity of UK firms to export, namely the ratio of exports to production. Kneller and Pisu (2007) merging data on UK firms and input-output tables, confirm that the propensity of UK firms to export increased with the presence of foreign firms. Moreover, they reported evidence of positive backward spillovers, namely spillovers that ran from foreign firms to the sectors that served them. They interpreted that finding as evidence of information spillovers, because such spillovers are more likely in vertical than horizontal relations. Sheng et al. (2011) obtain similar results for China, while studying a sample of 134130 to 169810 firms between 2000 and 2003. They find that foreign investment has a positive impact on the propensities to export of domestic firms in the same sector. More importantly, they observe that foreign investment in China impacts the value of exports of domestic firms through backward industrial linkages. Foreign investment therefore increased the diversity of Chinese exports, because its impact spilled over to upstream sectors. Finally, Kokko et al. (2011) report export spillovers in Uruguay.

Secondly, domestic firms can benefit from the networks of foreign firms. Banga (2006) points out that foreign firms open up new channels of distribution to domestic firms. This notion is consistent with the phenomenon known as carry-along trade, and unveiled by Bernard et al. (2010). Using a sample of Belgian firms' exports by product over 1998-2005, Bernard et al. (2010) find that a large majority of manufacturing exporters export many products that they do not produce themselves. They observe that carry-along trade occurs with 90 percent of exporters, 95 percent of exported products, and that it accounts for 30 percent of export value. Foreign firms having a larger propensity to export, they are more likely to carry-along products produced by domestic firms.

Moreover, Bernard et al. (2010) find that when firms become more productive over time, they serve more markets and ship more products per destination. As foreign firms are more productive than domestic firms, and as foreign direct investment generates productivity spillovers, one should expect FDI to result in both foreign and domestic firms exporting more products. The diversity of exports should therefore increase.

Finally, the entry of foreign firms may increase domestic competition. Competition does not reduce the cost of exporting, but increases the cost of not exporting. If foreign investment increases competition on the domestic market, it should encourage exports. In line with this contention, Greenaway et al. (2004) find that foreign competition, proxied by the share of employment of foreign firms in a given sector, increases both the probability to export and the propensity to export of local firms. Again, the scope of goods exported by domestic firms should increase with foreign direct investment, thereby increasing the diversity of the host country's exports.

2.4. Counterarguments

The above arguments paint a rather univocal picture of the impact of foreign direct investment on the diversity of exports. There is, however, a series of qualifications that suggest that FDI may either negatively affect export diversity or even reduce it. These

[1] To illustrate their presumption, they recall the anecdote that the entry in the Bangladeshi garment industry of a Korean manufacturer in resulted in the apparition of hundreds of local exporting producers, thereby making the garment industry the single largest source of foreign exchange earnings.

counterarguments can be subsumed under two headings. The first heading puts together all the arguments that directly relate the characteristics of the firms involved in the foreign investment to the diversity of exports. The second heading features arguments that suggest a negative impact of foreign investment on the productivity of domestic firms.

As regards the first heading, Banga (2006) argued that the impact of FDI on the diversity of exports may be very limited if foreign firms are vertically integrated, because vertically integrated foreign investment will generate little upstream and downstream spillovers if any. He argues that Japanese firms are typically vertically integrated, and that the positive effects of their presence in a sector should therefore be limited. In line with his contention, he finds that the presence of Japanese firms in a sector reduces the export propensity of the domestic firms operating in the sector.

A complementary effect relates to the causality between performance and foreign ownership which could be reversed. One may indeed contend that foreign investors prefer to acquire well-performing firms. This claim is substantiated by Kneller and Pisu (2004) who compare the characteristics of UK acquired and non-acquired firms. Their point estimate implies that being an exporting firm raises the probability to be acquired by a foreign investor by approximately 43 percent. If foreign investors simply acquire exporting firms, then the impact of FDI on the diversity of exports may be limited.

The second heading puts together the distortions that foreign direct investment may generate, and that may prevent it from raising the productivity of domestic firms. Failures on the good market are one such series of distortions. Rodríguez-Clare (1996) builds a model where foreign firms producing a final good may reduce the number of available intermediate goods in the economy if their employment linkages with upstream domestic firms are smaller than those of their domestic competitors. Aitken and Harrison (1999) also suggest that foreign firms may steal the business of domestic firms, in particular smaller firms, which may explain why they could not find horizontal spillovers in their sample of Venezuelan firms.

Distortions in the credit market may also limit the positive impact of foreign direct investment or even make it harmful. Boyd and Smith (1992) illustrate that possibility in a model of investment with adverse selection and costly state verification. Razin et al. (1999) complement that intuition in a model where they assume that foreign firms investing in a country acquire an informational advantage over domestic savers on the quality of firms. Foreign firms then keep high-productivity firms and sell the others to domestic savers. In that context, foreign investors have an incentive to overinvest in the host country, thereby misallocating capital.

Most of all, foreign direct investment may compete against domestic firms on the credit market. Indeed, foreign direct investment is not always a pure flow of capital from abroad, but can be financed locally, and may therefore crowd-out domestic firms. That contention is substantiated in two studies of Ivory Coast where Harrison and McMillan (2003) observe that the share of foreign long-term borrowing at the sector level exacerbates domestic firms' credit constraints. Alfaro et al. (2009) rationalize the possibility of a crowding-out effect of domestic firms by FDI in financially underdeveloped countries in a theoretical model.

Finally, FDI may also result in real overvaluation of the currency of the host country which may stifle exports. The point is made by Prasad et al. (2007) to explain why capital exporting countries do not grow slower than capital importing countries. They indeed observe that capital inflows are associated with real overvaluation of the domestic currency in a sample of non-industrialized countries. FDI inflows may thereby result in a Dutch-syndrome directly affecting the volume and the diversity of exports.

Overall, the relation between the volume of FDI inflows and the diversity of exports is a priori ambiguous. In the rest of the paper, we therefore test it empirically.

3. The case of Arab countries

In this section, we describe the situation of Arab countries in terms of output structure, and of their capacity to attract FDI.

3.1. Output structure in Arab countries

One of the main features of the Arab region is natural resources abundance; although there are important differences across countries. While natural resources abundance can be used to foster diversification, in the Arab world it is often associated with a lack of economic diversification. From this perspective, the region is, therefore, divided into two groups. One includes fossil energy-rich countries (e.g. Algeria, Kuwait, Saudi Arabia and the UAE) while the other includes fossil energy-poor countries (e.g. Morocco, Tunisia, Yemen and Egypt). However, the issue of diversification transcends the dependence on fossil energy. For instance, a country like Morocco is poor on fossil energy but highly dependent on agriculture and rainfall. This caveat notwithstanding, and for clarity sake, we distinguish fossil energy-poor and rich countries in what follows.

As a first illustration of the issue of natural resources and diversification in the Arab world, Figure 1 presents the average structure of GDP during the 1970s and the 2000s for countries for which data are available. The figure shows that the non-manufacturing industry (which in these countries concern mainly fossil energy) represents the highest share of GDP in all countries. More interestingly, these shares decreased between the 1970s and the 2000s in all countries except Algeria. Kuwait seems, however, less successful in decreasing its dependence on energy than the others. Such a decrease is always accompanied by an increase in the share of services and, depending on the country, also by increase (although more modest) in agriculture or manufactures. In contrast, Algeria witnessed a marked increase in the share of the non-manufacturing industry at the same time as a decrease in the shares of both manufactures and services. In summary, the countries under consideration seem to have achieved unequally in term of reducing their dependence on natural resources.

Shochat (2008) offers a detailed descriptive analysis of the various initiatives undertaken by the Gulf countries to diversify their economies. The area of arable land being limited, natural water supply scarce, and climatic conditions hostile, relying on agriculture was not a promising option for diversification. The focus was, therefore, on services and manufactures although market size and a limited labor supply (at least of nationals) make the success of the latter option hypothetical.

The development of the industrial sector targeted energy-intensive heavy industries such as petrochemicals, chemical fertilizers, steel and aluminum. Qatar and Saudi Arabia were the first to establish such industries in cooperation with foreign partners to benefit from technical and marketing expertise. They were followed by Abu Dhabi, Dubai and Bahrain and much later by Kuwait. As a result, the contribution of manufacturing to GDP grew markedly in Gulf countries: doubled in Saudi Arabia and more than tripled in the UAE.

The development of services (tourism, financial and insurance services, advertising, business and corporate services) was also impressive. Its share in GDP doubled with an increase of at least 20 percentage points. Dubai became a popular destination for both Gulf and non-Gulf tourists from around the world. It also developed information technology industries, trade, banking and transportation. Bahrain, which had been an important financial centre since the early 1970s (recycling petrodollars) also boomed as a tourist destination for Gulf citizens. Following these two countries, all Gulf States invested in tourism and other services.

Algeria is still among the least diversified economies of the Arab world. Figure 1 shows that in the 2000s manufactures represented less than 7% of Algerian GDP; i.e. less than in Oman, Saudi Arabia or the UAE. The same holds for services. As a comparison with Gulf countries, Algeria received, on average over the 2000s, less than one million tourists, while Bahrain received almost three times and the UAE four times this number. At the same time, the population of Algeria is more than 30 times that of Bahrain and 10 times that of the UAE. Algerian diversification seems limited by structural bottlenecks, domestic and exogenous factors, and an obsolete industrial base (FEMISE, 2006). The poor diversification of Algerian production reflects in its exports. Exports of the non-hydrocarbon sector represent less than 4 percent of total exports. Such poor performance does not seem to depend on market access, since many industrial and agricultural products enjoy free access to the EU. More likely is the slow progress in structural reforms and the distorted incentives given to the private sector that explain the failure to diversify (FEMISE, 2006).

The energy-poor countries show a more diversified composition of GDP (Figure 2) than the energy-rich. However, diversification is also an important issue for them. For instance, Morocco has almost no fossil energy. However, the country exhibits one of the highest shares of agriculture in GDP (around 16%) and, more importantly, one of the highest shares of rural population in total population. While Egypt presents a similar profile, the specificity of Morocco is that irrigation is very limited, which makes agricultural value added and rural population income highly dependent on drought condition as do GDP (Sekkat, 2004). The high sensitivity of GDP to drought condition reflects also the fact that manufactures and services are not diversified enough.

Leaving natural resources aside, Figure 3 presents the breakdown of the manufacturing sector value added by industry for four fossil energy-poor countries: Egypt, Jordan, Morocco and Tunisia. In the four countries, more than 50% of the manufacturing sector's value added is coming from 3 to 4 industries out of 28. Moreover, the core of the 3 to 4 industries is composed of "traditional" activities: textiles and wearing apparel, food products and chemicals. More worrying is that recent evidence for Egypt, Jordan, Morocco and Tunisia provided by Sekkat (2008) shows that these industries are, in general, inefficient and enjoying high market power. This makes these countries' GDPs vulnerable to external shocks such as the termination of MFA or competition from other emerging economies.

To sum up, it appears that diversification is of high importance in the Arab world. Better diversification conditions growth, its sustainability and its stability. However, the diversification issues goes beyond the dependence on natural resources, and a useful study for Arab countries should include both aspects: diversification in natural resources-abundant and in natural resources-poor countries. Such an approach also has the advantage of highlighting and controlling for the specific role of natural resources.

3.2. Total FDI to Arab countries

The foreseen positive effects of FDI on the host economy have widely served as a basis for policies recommending opening up the economy to foreign investors. After the restrictive policies on foreign ownership pursued throughout the 1970's and the emergence of the Washington Consensus as a streamline for development in the 1980's, FDI was seen by policymakers in developing countries as the best and fastest way to get access to foreign technologies, markets, and increase foreign currency earnings. As it should serve as a support to the building of domestic production capabilities and exports, FDI required specific domestic policies (Gore, 2000).

However, fears were also expressed about the possible negative effects of FDI in developing countries. FDI was sometimes seen as a danger for national industries as it would entail the closing of national companies, thereby increasing unemployment, increase the weaknesses of

the capital account, and prevent internally-led growth. It has also been subject to political criticism, and seen among developing countries as a colonial relic aimed at taking control of national resources. As a consequence, many developing countries such as India passed a series of legislations restricting foreign ownership, repatriation of capital, and conditioning FDI on performance requirements and technology transfer among others (Bajpaj and Sachs, 2000). The official aim was to maximize the benefits of foreign participation in national economies using public policy as a tool to channel investments to critical sectors, gather knowledge, and protect the economy from international competition.

Arab and South Mediterranean countries were not exceptions to this trend. Examples include Algeria, Libya, Egypt, Jordan, Morocco, and Tunisia among others. Before 1990, Algeria allowed direct investments in the hydrocarbons sector only if foreign investors enter the country via joint ventures with the national hydrocarbon company Sonatrach. This illustrates the willingness of public bodies to keep the country's resources under control while gaining access to foreign technologies. Egypt, although not imposing controls on foreign investors' ownership, has used Law 8 of 1997 to channel foreign participation into targeted sectors. Libya allowed foreign participation on a minority basis. Jordan allowed only 50% of foreign ownership in a number of activities, and subjected FDI to a minimum amount of funds. Before the 1980's, Morocco used the "moroccanization decree" to increase local ownership against foreign investments.

Today, most of the countries under study have adopted a more liberal framework towards foreign investors. Since 1995, Morocco has abolished its restrictive framework, and adopted a highly liberalized environment for foreign investors. Tunisia has set foreign investment promotion as a key target of the 11th Economic Development Plan. Inflows have increased partly as a result of the less restrictive framework.

Figure 4 presents the ratio of FDI to GDP for the MED-9 and other regions over three periods.[2] In the first period MED-11 scored the lowest ration (1.11%) of all regions except South Asia (0.68%). However, in the last period the Region exhibited one of the highest ratios (4.19%) just behind Europe & Central Asia (4.53%) and European Union (4.65%) and far ahead of the other regions. This evolution translates the dramatic increase of the ratio of FDI to GDP in the MED-11 (3 percentage points), which equals almost twice the highest increase observed in the other regions.

Figure 5, however, shows that there are notable differences across countries. In the last period, Jordan and Lebanon scored the highest ratio (16.71% and 14.27% respectively) while Algeria scored the lowest ratio (1.37%). In terms of evolution, a similar picture emerges: Jordan and Lebanon show the highest increases (14 and 9 percentage points respectively) while Algeria shows the lowest increase (0.62 percentage point).

3.3. Composition of FDI to Arab countries

Figure 6 describes the evolution between the periods 1996-2000 and 2001-2007 of the composition of FDI inflows to the four MENA for which data is available in the UNCTAD database. FDI to the primary sector is stable in Tunisia, decreasing in Morocco and inexistent in the two other countries. FDI in the secondary sector is either stable, like in Morocco, or on the decrease, like in Saudi Arabia, Tunisia, and Turkey. In all countries, the share of FDI in the tertiary sector increased between the two periods.

Those evolutions do not necessarily imply that FDI in the region will not affect the diversification of output and exports. Previous section emphasizes spillover effects. Also, one should look in more detail at the distribution of FDI inflows within the three large sectors of

[2] MED-9 includes Algeria, Egypt, Jordan, Lebanon , Libya, Morocco, Syria, Tunisia and Turkey

the economy. Figure 7 provides such a break-down, for Turkey and Tunisia, the only two MENA countries for which the data is available in the UNCTAD database.

In Tunisia, it seems that the structure of FDI inflows became more balanced over time. Between 1999 and 2007, the share of the textile industry decline from above 40% to around 20%. At the same time, the share of the chemicals sector increased. A more detailed decomposition is available for Turkey. It shows that the share of the motor vehicles sector in total FDI declined while the share of the chemicals sector increased. An interesting feature of the evolution of FDI in Turkey is that the share of the food and tobacco sector in FDI fluctuated throughout the period.

4. Empirical analysis

In this section, we relate the evolution of the diversity of exports of a country to the volume of its FDI inflows. To do so, we must first measure the diversity of exports. We then investigate causality, before turning to a more comprehensive econometric analysis.

4.1. Measuring the diversity of exports

We measure the diversity of exports using the SITC database, Revision 2, at the 5-digits level of decomposition. We thereby distinguish 1345 products. That level of disaggregation is a compromise between having the finest disaggregation while keeping the maximum number of developing countries and the longest time period in the sample. The idea is that diversification might be slow to emerge. Then, we need to consider a period of time long enough for the potential effects to appear. We thereby end up with 55 low and middle income countries (see Imbs and Warcziak, 2003) from different regions, over 30 years (i.e.1980-2010; see appendix A).

There does not exist any single measure of diversity. We therefore use three standard indices in turn. The first of those indices is the Herfindahl index. It is defined as:

$$H = \frac{\sum_k (s_k)^2 - 1/n}{1 - 1/n}$$

Where s_k is the share of the k's sector in total exports, and n the number of sectors. When exports inflows are spread more evenly across sectors, the share of each sector decreases, and so does its square. At the opposite end of the spectrum, if exports are entirely concentrated in a single sector, its share will be equal to one, and so will be the Herfindahl index. That index therefore ranges from zero to one, lower values signaling a more diversified distribution of exports.

The second index is the Theil index, defined below:

$$T = \frac{1}{n}\sum_{k=1}^{n} \frac{x_k}{\bar{x}} ln\left(\frac{x_k}{\bar{x}}\right), \qquad \text{where } \bar{x} = \frac{\sum_{k=1}^{n} x_k}{n}$$

where x_k is the volume of exports of sector k.

If the volume of exports is evenly spread across sectors, the ratio of the exports of each sector to the average export will tend to one, and its logarithm will be zero. If a sector dominates, the ratio will increase. The Theil index is, therefore, a measure of lack of diversity.

The third index that we use if the Gini index. That index is constructed as follows. Let's denote s_k the share of the k^{th} sector, and rank sectors by order of decreasing share. The Gini index is then:

$$G = \sum_{k=2}^{n} \left[\frac{1}{n} (S_k - S_{k-1}) \right]$$

where S_k is the sum of shares from sector 1 to k.

The main difference between the Herfindahl and Thiel indexes is that the former is a convex function on the shares of total export flows while the latter is a concave function of the shares. The Herfindahl index emphasizes the importance of larger export sectors by assigning a greater weight to them than to smaller export sectors. It gives almost no weight to export sectors with very small proportions of total exports. The Theil index assigns higher weight to those sectors with small proportions of total exports. This implies that the Herfindahl index is influenced more by changes in the share of large export sectors, whereas the Theil index is influenced more by changes in the share of small export sectors.

Figure 8 displays the evolution of the Herfindhal index for Arab countries, Asia, Sub-Saharan Africa, and Latin American countries. Over the whole period, the exports of Arab countries appear as the second most concentrated. Concentration decreased between 1980-84 and 1995-99 before increasing again until 2005-09.

Figure 9 describes the evolution of the Theil index for the same regions as Figure 8. Broadly speaking, the impression is the same as for the Herfindahl index. Namely, it appears that the exports of Arab countries are either the most concentrated or the second most concentrated. Their Theil index also displays a declining trend over the first half of the period of study, before slightly picking up again.

The main shortcoming of the Herfindahl and Theil entropy indexes for the research presented here is that they are sensitive to the number of observations. Although this may be a desirable property, it may be misleading here, because the number of products also varies with the availability of data. The Gini index is not subject to that shortcoming. Regardless of the number of sectors in the sample, a change in the number of sectors does not affect the value of the indicator.

The weight granted to each product line in the Gini coefficient depends on its rank and not its absolute value. Consequently, the Gini coefficient is sensitive to variation in rank more than to the variations of export share. If the share of an export sector increases but does not lead to a progression in the ranking of the export sectors, it will not be fully translated in the index.

Figure 10 displays the evolution of regional Gini coefficients. They are in general very high, corresponding to Lorenz curves that are almost right-angled. The reason has more to do with the level of disaggregation rather than with any conceptual consideration. The interest should be in the comparison and the evolution of the Gini index, not its level. Here, we see a slight monotonous declining trend in the Gini index of Arab countries over the period of study.

Figure 11 complements Figure 10 by displaying the evolution of the Gini coefficient of specific Arab countries. Again, the level of concentration can be very high. Countries such as Algeria, Bahrain, Qatar, or the United Arab Emirates all display Gini coefficients that exceed 90%, especially during the first period. Lebanon, Morocco, and Tunisia appear as the least concentrated countries. Most countries for which data is available for two periods display a decreasing trend in concentration. The only exceptions are Kuwait, Oman, and Qatar, while evolutions cannot be assessed for Lebanon and Tunisia, because data is lacking.

4.2. Causality analysis

In this section, we start assessing the relation between the diversification of exports and FDI inflows. We focus on the issue of causality. Namely, we investigate whether FDI inflows cause the diversification of exports. To do so, we use the concept of causality described by Granger (1969) and the tests that elaborated on it latter on. Consider two stationary variables

X and *Y*. Variable *Y* is causing *X* if one is able to better predict *X* using past information on *Y* than without using such information. Note x_t and y_t the realizations at time *t* of *X* and *Y* respectively (with $t = 1, 2, 3, .., T$). In practice, an equation is estimated where x_t is regressed on x_{t-k} and y_{t-k} (with $k = 1, 2, 3, .., K$). If *Y* causes *X*, the statistic pertaining to the joint significance of the coefficients of the y_{t-k} should be above the critical level. The methodology comprises 2 major steps. First, test whether the variables are stationary. Second, test causality.

The Granger test was for a long time conducted in a pure time series context. Now, new tests taking advantage of both the time series and the cross-section exist. Instead of observing one couple of variable (*X, Y*) over time, one can observe a set of couples (X_i, Y_i) over time (with $i = 1, 2, 3, .., N$). The 2 steps for the analysis are the same as above except that the nature of the data (i.e. time series and the cross-section) involves a preliminary check regarding whether individuals (e.g. countries) are interdependent or not. This is important for the tests to be used subsequently.

To examine whether individuals are interdependent, we use a test suggested by Pesaran (2004). The test is based on the average of the correlations between the residuals from a regression on each individual separately. Practically, consider the variable y_i pertaining to the individual *i*. The variable is regressed on its first lag and the residuals are collected to compute ρ_{ij} which is the correlation coefficient between the residuals from individuals *i* and *j* regressions. The statistics:

$$CD = \sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N-1} \hat{\rho}_{ij}$$

is shown to have a $N(0, 1)$ distribution under the null hypothesis of independence. Where *N* is the number of countries and *T* is the number of years.

The results of the test applied to our sample are presented in Table 1. For all variables, the tests reject the null hypothesis of independence of individuals at the 1% level. To examine stationarity, we should, therefore, use a test that incorporates the interdependence of individuals. Among the existing tests, the one by Pesaran (2005) is the most adequate, because it is targeted toward a situation where *N* (the number of individuals) is higher than *T* (the number of years). In addition, the test allows analyzing non-stationarity within a heterogeneous panel framework, i.e. a panel in which each country is allowed to evolve according to its own dynamics. The test builds on the well-known augmented Dickey-Fuller regressions. Practically, consider y_{it} pertaining to the individual *i* at time *t*. Run the regression:

$$\Delta y_{it} = \alpha_i + \rho_i y_{it-1} + \gamma_i \bar{y}_{t-1} + \delta_i \Delta \bar{y}_t + \vartheta_{it}$$

and take the calculated Student statistics of ρ_i ; t_i. Where $\bar{y}_t$ is the average of y_{it} over all individuals at time *t*. The statistics:

$$CIPS(N,T) = \frac{1}{N} \sum_{i=1}^{N} t_i$$

is used to test for stationarity, but it does not have a standard distribution. We follow Pesaran (2005) and simulate the critical values using the Monte Carlo approach. If the computed statistics (*CIPS*) is above the critical value, one cannot reject the null hypothesis of stationarity.

Table 2 presents the results. The tests reveal that the level of the FDI to GDP ratio is stationary while the diversification indexes are stationary in first difference. Hence, the causality tests will concern the impact of the level of FDI to GDP ratio on the change of the

diversification indexes. Hurlin (2004) proposed a test of causality on a mix of time series and the cross-section data. The idea is to compute for each individual *i* a Wald statistic (W_i) pertaining to the joint significance discussed above. Then, calculate the average of W_i over *i*:

$$W_{N,T}^{Hnc} = \frac{1}{N}\sum_{i=1}^{N} W_i$$

When *N* and *T* tend to infinity, Hurlin (2004) shows that this simple mean converges to a normal distribution. For finite *N* and *T*, the author provides critical values.

The causality test was run on the whole sample, then on specific subsamples, using in turn the three measures of diversification. On the whole sample, the null hypothesis of no causality can only be rejected when using the Theil index. It therefore seems that the FDI inflows causes diversification as measured by the Theil index, but not when diversification is measured with the other indexes. The same result holds for the sample of lower middle income countries. Among low income countries, FDI inflows seem to positively cause diversification when it is measured by both the Herfindahl and Theil indexes, but not by the Gini index. More to the point, among Arab countries, that are the focus of the present study, the null of no causality can never be rejected. It therefore seems that FDI does not cause diversification in those countries.

4.3. Regression analysis

To test the causal effect of FDI inflows on the diversification of exports, the previous section had to focus on bivariate relations. In this section, we move to a more standard econometric specification, where causality is not addressed, but where we can control for likely covariates of the diversification of exports.

Exploiting the panel dimension of our dataset, we relate the diversity of exports in a given period to the FDI inflows of that period. We complement the main variable of interest by a set of control variables. Both variables are measured like in previous section except that now we are working with 5-years averages. In particular, the diversity of exports is measured by the three indexes of diversification: the Herfindhald index, the Theil index, and the Gini index.

The first control variable is the lagged value of the relevant index of diversification. The idea here is to take into account the inertia of diversification. Secondly, we control for the degree of freedom of international trade. The measure of freedom of trade that we use was constructed by the Fraser Institute. It incorporates information on taxes on international trade, international trade tax revenues, the mean tariff rate, the standard deviation of tariff rates, regulatory trade Barriers, non-tariff trade barriers, compliance cost of importing and exporting, size of the trade sector relative to expected, black-market exchange rates, international capital market controls, foreign ownership/investment restrictions, and capital controls. As the diversity of trade seems to evolve hand in hand with the volume of trade, one should expect that measures restricting trade should affect its composition, and its diversity. Such a pattern is illustrated by Kehoe and Ruhl (2003). Mukerji (2009) develops a general equilibrium model suggesting that trade barriers reduce the number of exported goods especially below a certain protection threshold, and illustrates it using Indian data.

Thirdly, we control for a broad measure of the quality of institutions. Here, we use the “Legal Structure and Security of Property Rights” published by the Fraser Institute. It aggregates information on Judicial independence, Impartial courts, Protection of property rights, Military interference in rule of law and the political process, the Integrity of the legal system, the Legal enforcement of contracts, and regulatory restrictions on the sale of real property. Méon and Sekkat (2008) show how institutional quality affects the volume of trade. By the same line of reasoning as above, one may contend that if the volume of trade is affected, so should

be its composition. More to the point, Méon and Sekkat (2008) shows that the impact of institutional quality on exports differs for manufactured and non-manufactured goods. Institutional quality should therefore directly affect the distribution of exports across the two types of goods, affecting diversity in turn.

Fourthly, we control for the quality of infrastructure in the host country. Namely, we add the number of Telephone lines per 100 people to the list of independent variables. That data was retrieved from the World Development Indicators database, maintained by the World Bank. Infrastructure is likely to affect the cost of exporting. As argued in section 2.3, the new trade theory implies that both the volume and the structure of exports should be affected if the cost of exporting was lowered. Munemo (2011) reports a direct link between infrastructure quality and the diversification of exports.

Finally, we control for primary School enrollment as a percentage of population. Again that data was obtained from the World Development Indicators. The intuition here is that a better skilled workforce could produce higher quality and more complex goods, thereby increasing the diversity of exports. Brambilla et al. (2010) report a relation between the skills of exporting firms and the level of income of the destination of exports.

Works on the determinants of diversification generally add income per capita and its square as explanatory variables in order to take account of the non-linear relationship between diversification and the development level. Imbs and Wacziarg (2003) have shown that the diversity of output tended to increase with income for low initial levels of income per capita, and that the trend reversed for high levels of income. Since we are focusing here on a sample of low developing countries, there two variables are redundant.

Table 4 reports the results of panel regressions. Each index of diversity was used in turn. Each relation was estimated twice, using two alternative methods, i.e. panel with fixed effects and GMM. The adjusted R^2 are generally large. Statistical tests suggest that fixed effects should be preferred to random effects.

Overall, coefficients are consistent across estimations. Diversity seems to be persistent, as its lagged value is always significant at the 10 percent level or beyond, and positive. The role of institutions is also consistent. The coefficient is either insignificant, in fixed effect regressions, or negative, in GMM regressions. We therefore find that improving a country's institutions results in a lower concentration, or larger diversity, of its exports. Education seems to play a similar role. It is insignificant in fixed effects regressions, and significantly negative at the 5 percent level or beyond in GMM regressions. Accordingly, a better skilled workforce allows a country to diversify its exports.

Surprisingly, the two remaining explanatory variables are either always insignificant or unstable. Namely, the quality of infrastructure does not seem to play a role in determining the diversity of exports, because its coefficient is always insignificant at standard levels of statistical significance. The index of freedom of trade is often insignificant. It only turns out significant in the regressions using the Gini index as dependent variable. However, it is significantly negative at the five percent level in the fixed effect regression, while it is significantly positive at the same level of significance in the GMM regression. It is therefore really difficult to conclude on any effect of the infrastructure on diversity.

We now turn to the main variable of interest, namely FDI. Despite counterarguments, the survey of the literature led to the optimistic presumption that FDI was likely conducive to a diversity of exports. Our results stand in stark contrast with that presumption, because the coefficient of FDI fails to be significant in all our estimations. In other words, regardless of the statistical technique and the measure of diversity that we used, we could find no relation between FDI inflows and the diversity of exports. One should also stress that the coefficient

is neither positive nor negative. There simply seems to be no relation at all in our sample and over our period of study. Our findings are therefore much clear-cut than those of Gourdon (2010), who could observe an effect of FDI on the concentration of exports in some of his regressions, although the sign of the relation differed depending on the method and the index used. One reason why the results of Gourdon (2010) differ from ours may be that he does not control for the capital stock of host countries nor for the quality of their institutional framework. Yet those two variables have been repeatedly found to affect FDI inflows, for instance by Schneider and Frey (1985) or Méon and Sekkat (2004). Gourdon's (2010) may therefore be subject to an omitted variable bias, which our estimations correct. Moreover, that paper uses a sample including developing and developed economies, which may suffer from similar shortcomings as those made for growth regressions. Adding income per capita and its square as explanatory variables may not be sufficient to take account of the difference in behavior between the two categories of countries. Finally, Gourdon (2010) used the diversification indexes in level as dependent variables which might lead to spurious regression since we found in Section 3.2 that the indexes are not stationary.

5. Concluding Remarks

In this paper, we investigate the relation between FDI inflows to a country, and the diversification of that country's exports, with the aim of determining whether MENA countries could use FDI as a tool to foster the diversification of their exports. A survey of the literature suggests that the impact of FDI on diversity is more likely positive than negative a priori. At the same time, both FDI inflows and diversification have in general increased over time in MENA countries. If the relation was causal, one may hope to diversify MENA countries' exports by easing FDI.

We ran a series of statistical tests of that relationship. We first investigated causality in a bivariate set up. We then explored the relation in a panel model controlling for confounding factors. We find little evidence of a relation. When addressing causality, we find weak evidence of a causal effect of FDI on the diversity of exports.

The relation looks even shakier when it is estimated using standard panel techniques. Here, we found no statistically significant relation between FDI inflows and the diversity of exports. The lack of relation is observed despite using alternative estimation techniques and three alternative measures of the diversity of exports. Consequently, the notion that increasing FDI inflows may be instrumental in diversifying exports is a weak stem to stand upon.

The finding that no relation exists between FDI inflows and the diversity of exports notwithstanding, our analysis provides interesting results on the determinants of the diversity of exports. We thus find evidence that education and the quality of institutions are robustly correlated with the diversity of exports. Developing education and improving the country's institutional framework may thus contribute to diversifying a country's exports. Understanding those effects is food for future research.

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Figure 1: Composition of GDP (Fossil Energy-Rich Countries)

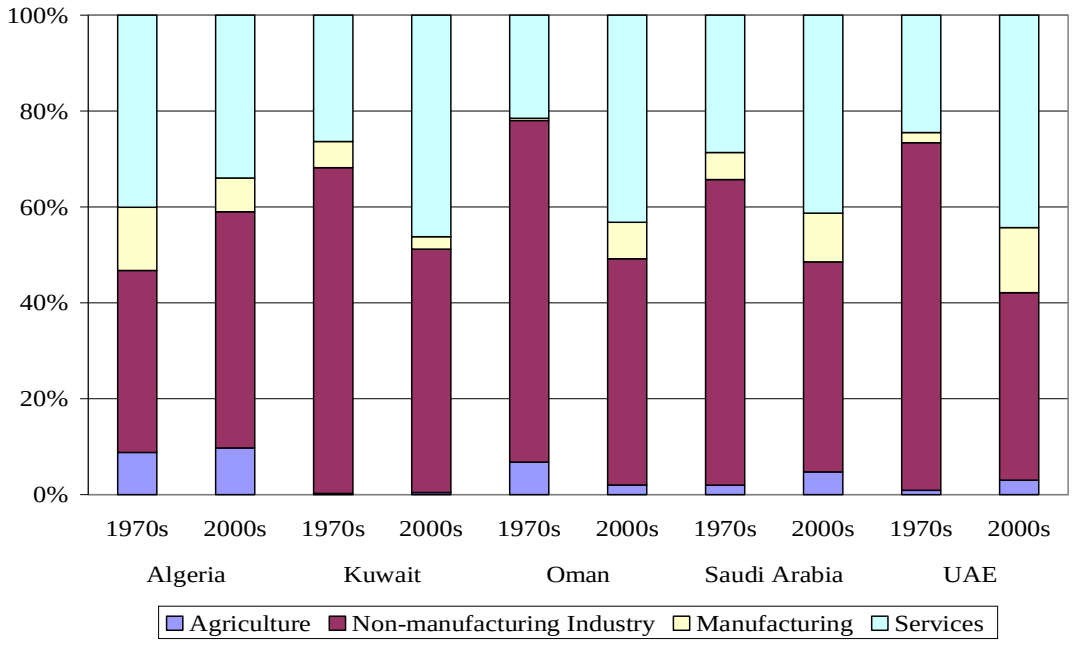


Figure 2: Composition of GDP (Fossil Energy-Poor Countries)

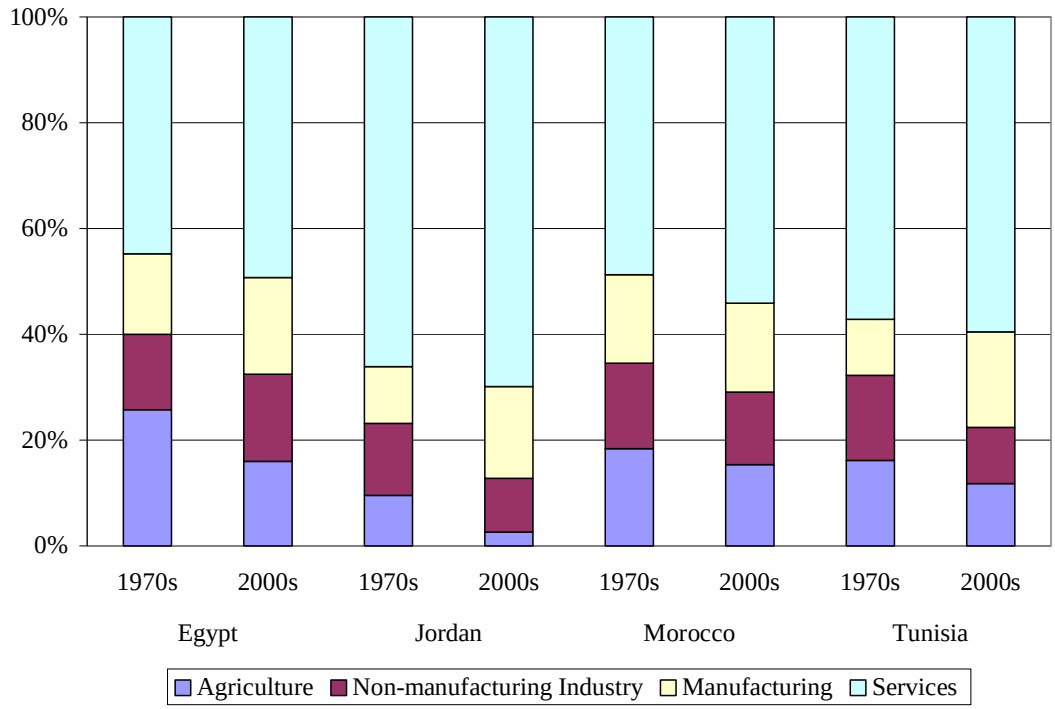
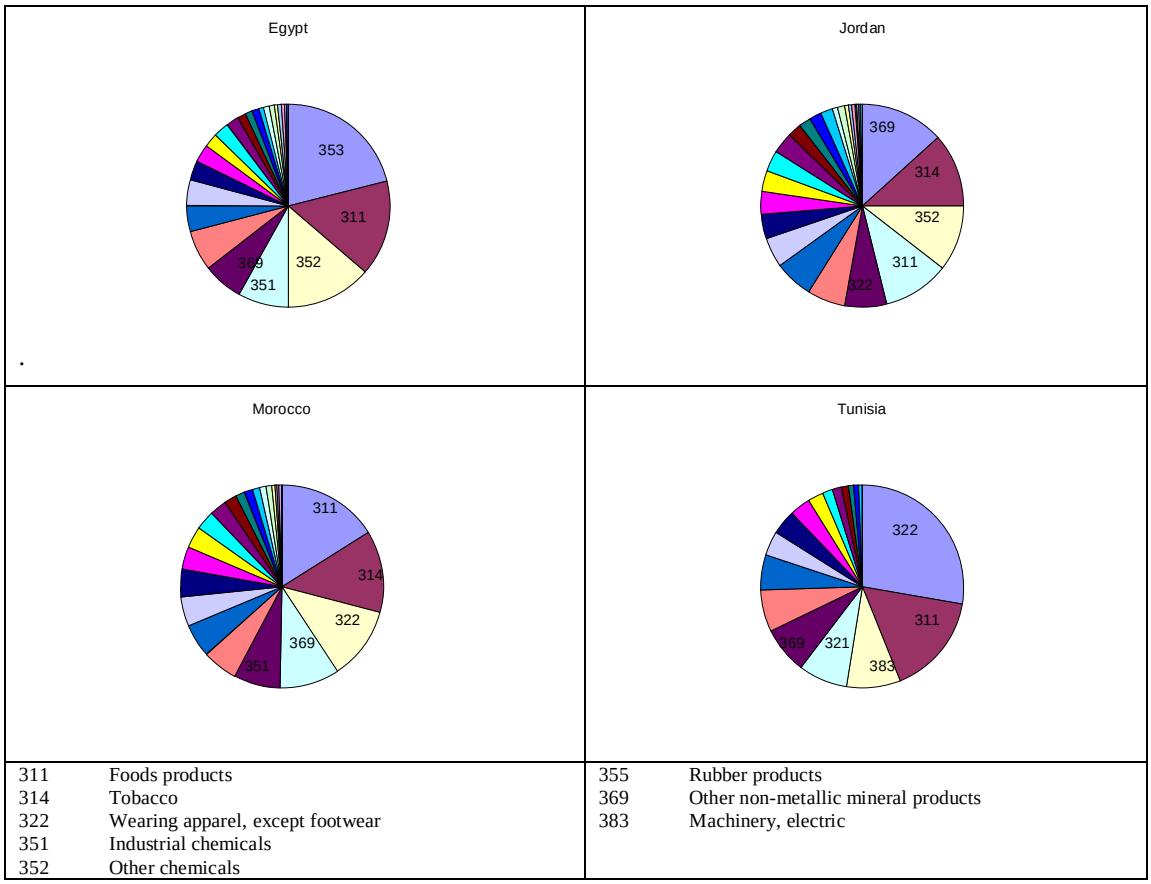
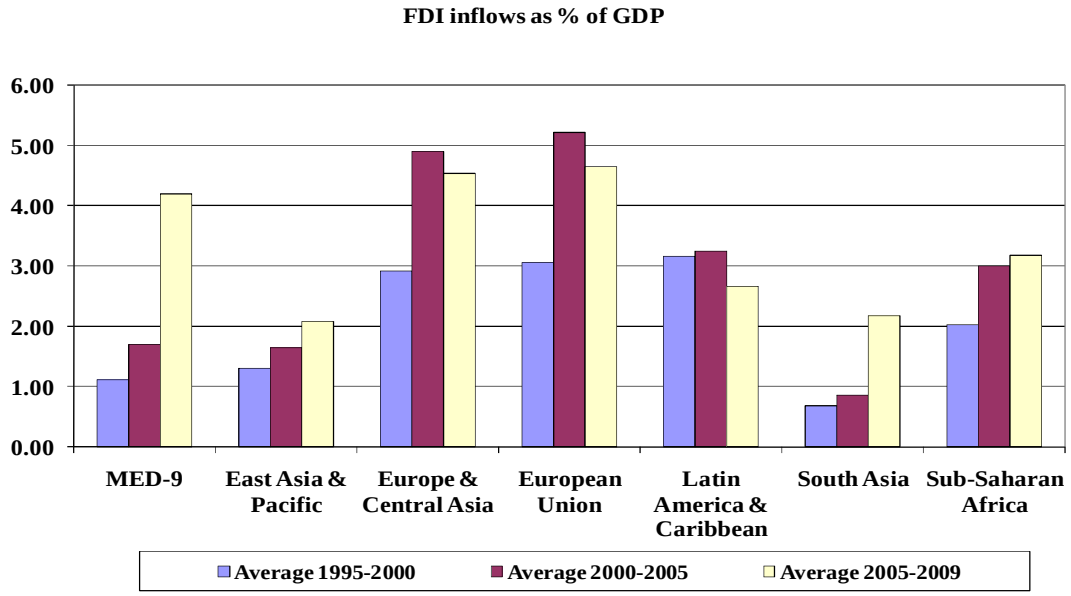


Figure 3: Composition of Manufacturing Value Added (Fossil Energy-Poor Countries, 2000s)



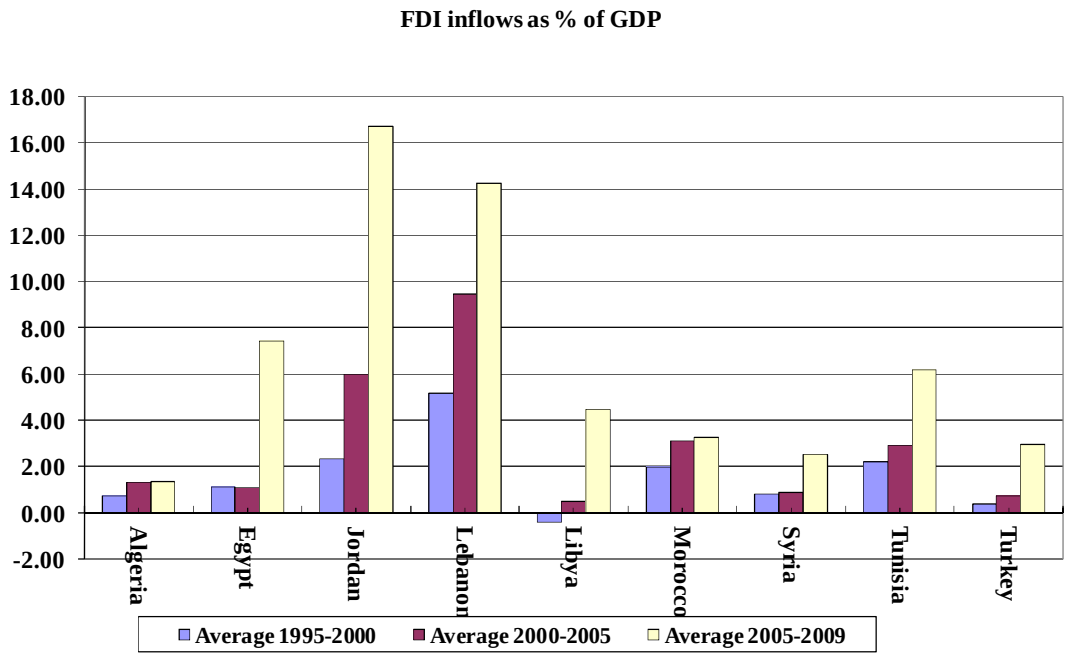
311	Foods products	355	Rubber products
314	Tobacco	369	Other non-metallic mineral products
322	Wearing apparel, except footwear	383	Machinery, electric
351	Industrial chemicals		
352	Other chemicals		

Figure 4: FDI Inflows as % of GDP



Source: UNCTAD World Investment Report 2009, online database.

Figure 5: FDI Inflows as % of GDP



Source: UNCTAD World Investment Report 2009, online database.

Figure 6: Shares of Sectors in FDI Inflows (%)

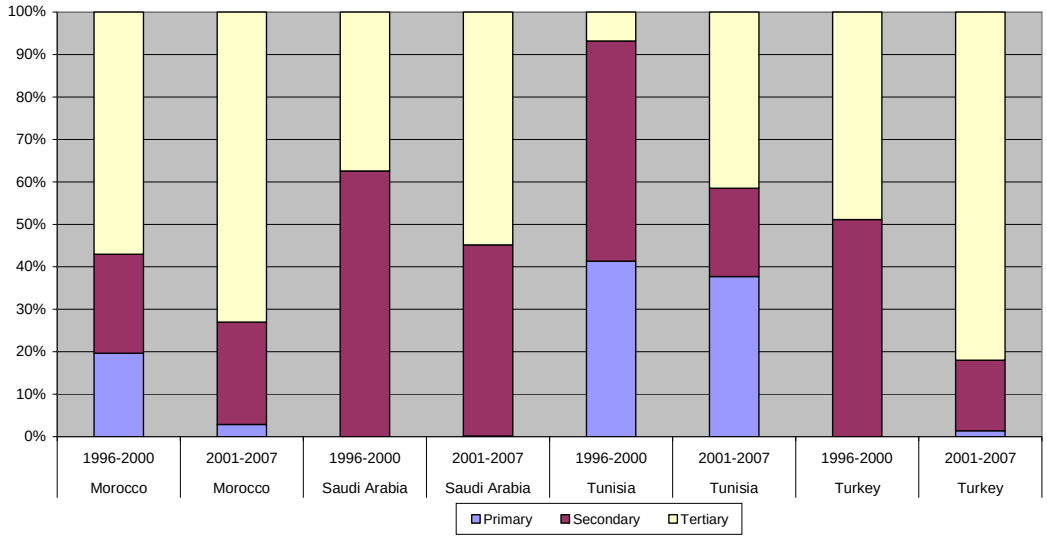
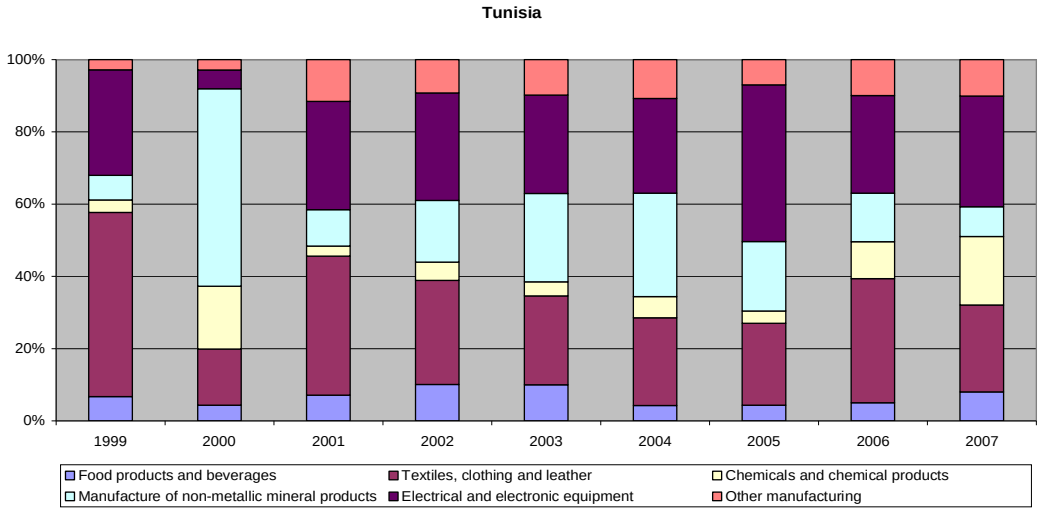


Figure 7: Shares of Sub-sectors in FDI Inflows to Secondary (%)



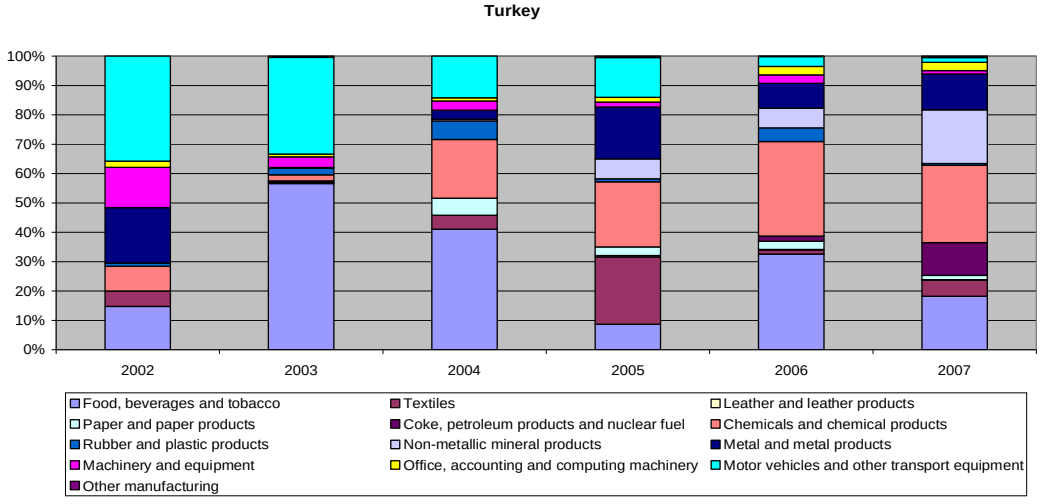


Figure 8: Evolution of the Herfindahl Indexes by Region

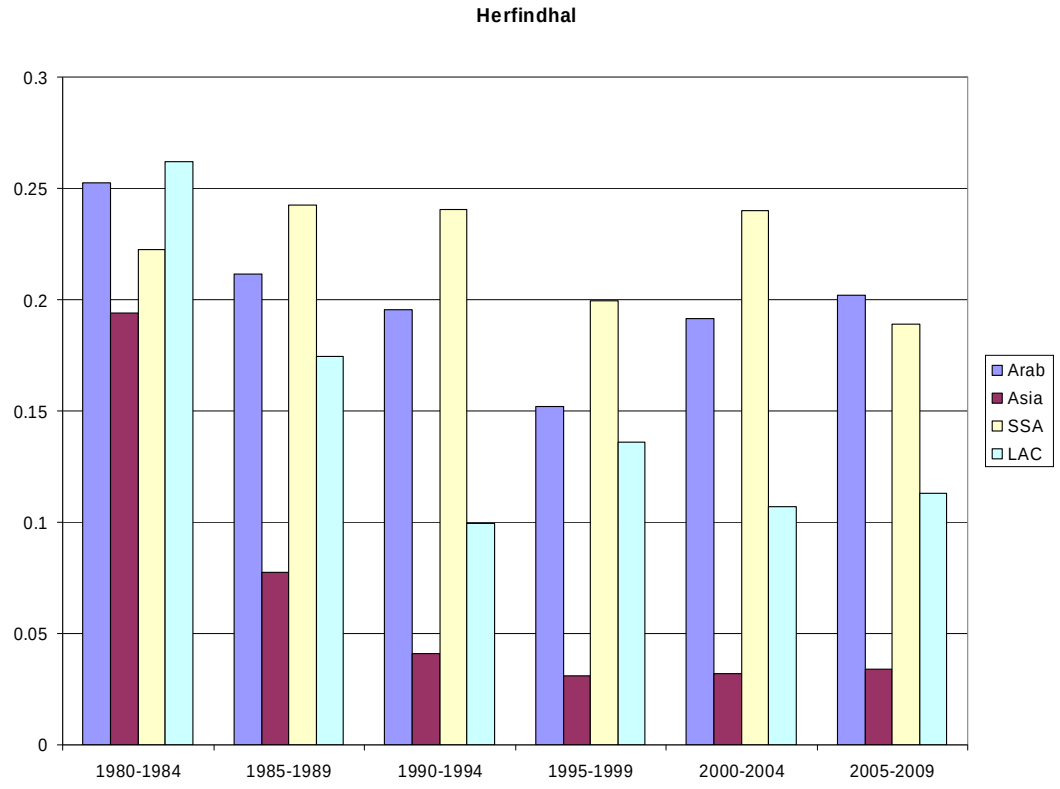


Figure 9: Evolution of the Theil Indexes by Region

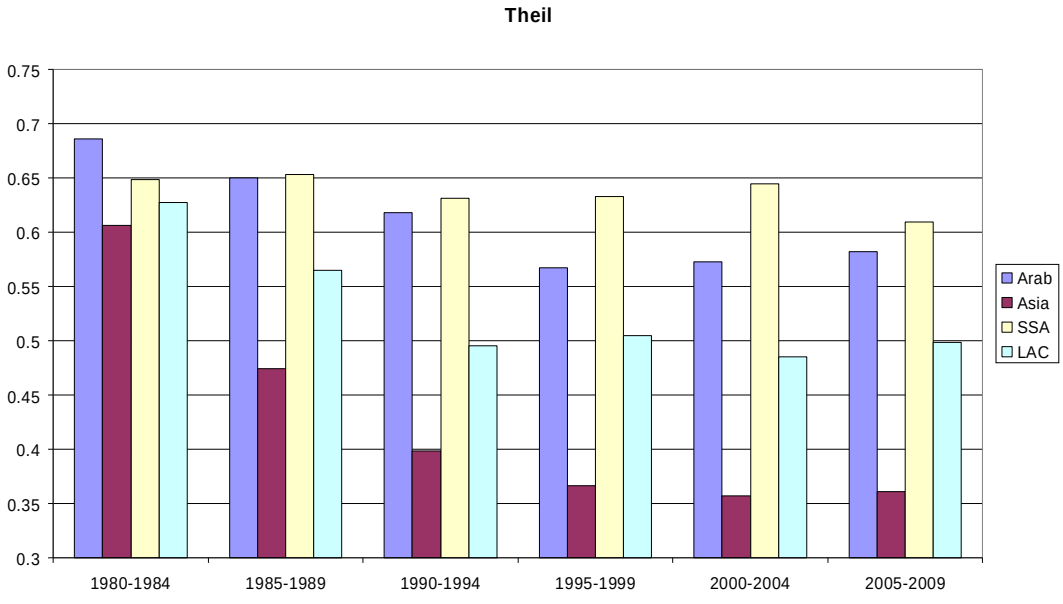


Figure 10: Evolution of Gini Coefficients by Region

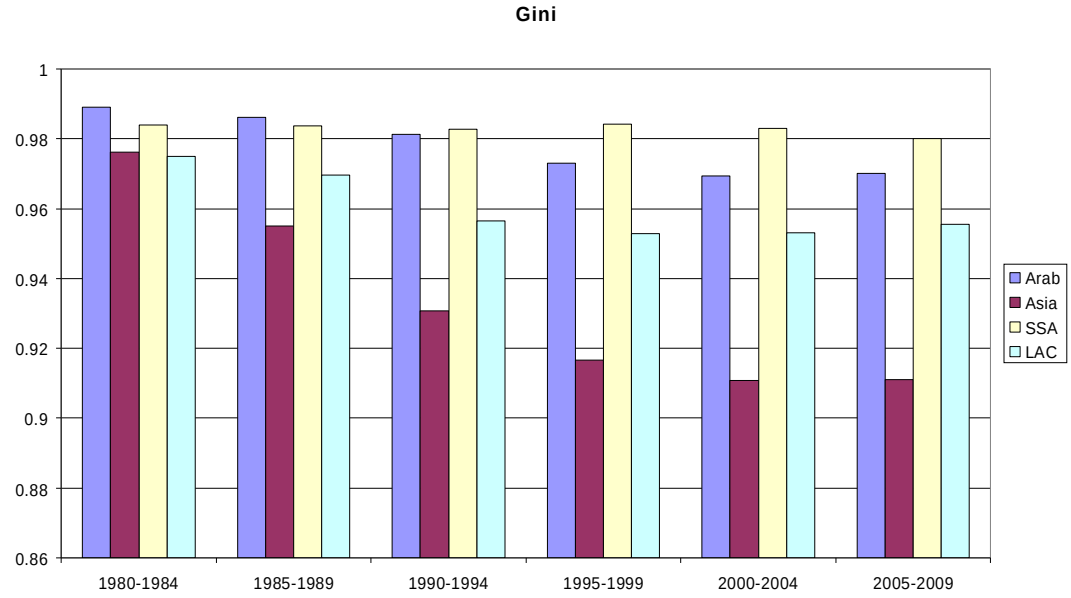


Figure 11: Evolution of Gini Coefficients by Country

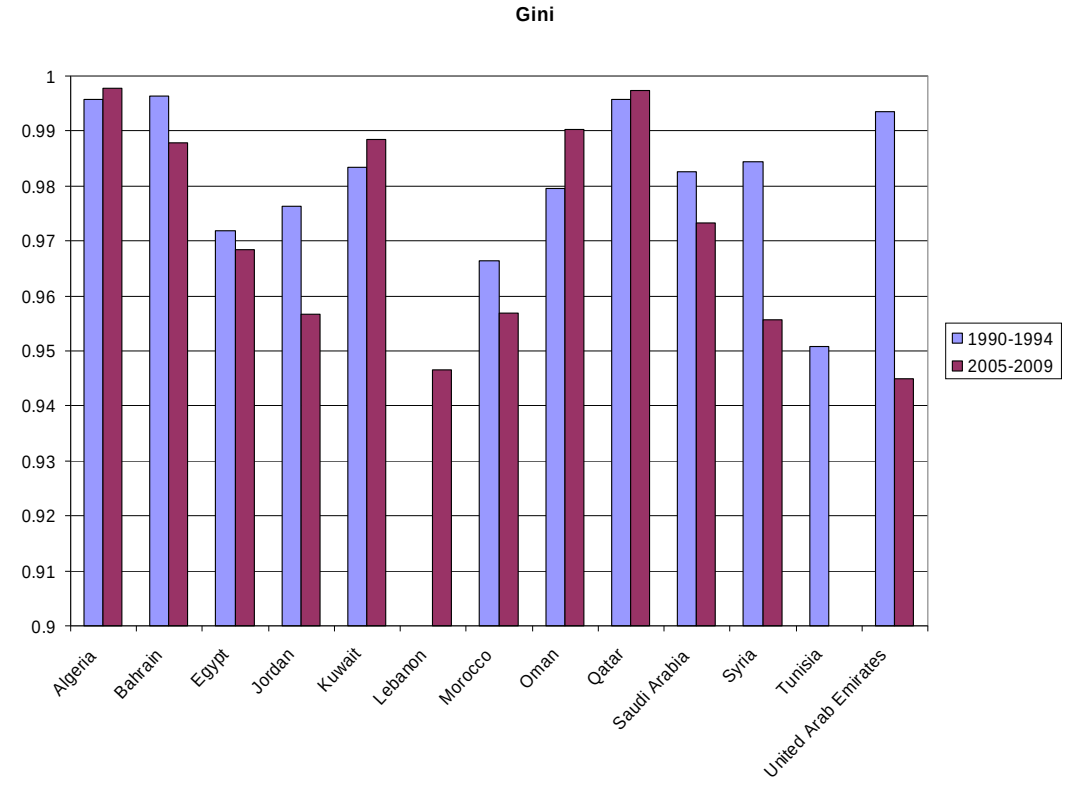


Table 1: Tests of the Independence of the Variables Across Individuals

Variables	Calculated statistics
Log(FDI/GDP)	10.06*
Log(Gini)	5.47*
Log(Herfiandhal)	4.17*
Log(Theil)	5.12*
Critical value	1.65

Note: * = significant at 5%

Table 2: Test of the Stationarity of the Variables

Variable	Stationarity in	
	Level	First difference
Log(FDI/GDP)	-3.52*	-
Log(Gini)	-2.62	-5.10*
Log(Herfindhal)	-2.61	-5.28*
Log(Theil)	-2.63	-5.23*
Critical value	-3.43	-3.43

Note: * = significant at 5%

Table 3: The Results of The Tests of Causality: From *Log(FDI/GDP)* to *ΔLog (diversification index)* Null hypothesis: No Causality

	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)
	Whole sample	Arab	Low income	Lower middle income	Upper middle income
Herfindhal	1.61	0.71	2.77*	1.71	0.44
Theil	1.98*	1.54	2.84*	2.18*	0.95
Gini	1.69	1.86	1.92	1.78	1.35
Number of countries	38	8	11	15	12
Critical value	1.78	2.19	1.99	1.91	1.99

Note: * = significant at 5%

Table 4: Panel Regressions

Variable	Gini		Herfindhal		Theil	
	Fixed effects	GMM	Fixed effects	GMM	Fixed effects	GMM
	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)	(4.6)
Lagged log of the index	0.314	1.005	0.230	0.882	0.256	0.947
	(4.408)	(34.111)	(1.680)	(17.844)	(2.148)	(23.315)
	***	***	*	***	**	***
Log (FDI/GDP)	0.000	-0.003	-0.036	-0.048	-0.002	-0.035
	(0.467)	(0.871)	(0.698)	(0.337)	(0.130)	(0.941)
Log(openness)	-0.014	0.043	-0.310	1.028	-0.115	0.362
	(2.104)	(3.208)	(0.959)	(1.588)	(1.572)	(2.259)
	**	***				***
Log(institutions)	0.001	-0.030	0.385	-1.014	0.078	-0.269
	(0.106)	(3.202)	(1.495)	(2.527)	(1.199)	(2.658)
		***		***		***
Log(infrastructure)	-0.001	0.002	-0.015	0.070	-0.009	0.027
	(0.533)	(1.372)	(0.160)	(1.290)	(0.380)	(1.749)
						*
Log(school)	-0.011	-0.023	-0.706	-0.666	-0.208	-0.211
	(1.616)	(2.249)	(1.376)	(2.102)	(1.723)	(2.144)
		***		**		**
Number of observations	190	160	190	160	190	160
Number of countries	49	49	49	49	49	49
Adjusted R^2	0.95	0.89	0.81	0.65	0.88	0.76
Fixed effect test; P-value F(47,132)	0.00		0.00		0.00	
Test of overidentifying restrictions; P-value		0.463		0.111		0.331

Note: Absolute t-stats in parentheses. * = significant at 10%; ** = significant at 5%; *** = significant at 1%.