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THE EMERGENCE OF HIGHLY SOPHISTICATED
LEBANESE EXPORTS IN THE ABSENCE
OF AN INDUSTRIAL POLICY

Sami Atallah and Ilina Srour

Working Paper No. 876



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Abstract

This paper explores the experience of the Lebanese industrial sector in exporting highly sophisticated products. The analysis relies on the "product space" map for Lebanon, which shows that between 2000 and 2008, as much as 40 new highly sophisticated products that require a high level of capabilities were being exported. Literature argues that such phenomena are observed in countries that have undergone structural economic changes; however, industrial policy in Lebanon is almost non-existent. The study resorted to triangulation of primary, quantitative and qualitative- as well as secondary data in an attempt to explain the drivers behind these new exports. The conjecture was that these exports are mainly the result of a demand driven shock rather than a productivity improvement. Indeed, effort for discovery of new exports has been based on the entrepreneurial skills of industrialists and their social and business networks abroad, which have been used to cater to an increasing demand mainly on part of Arab and some African countries. The persisting low productivity observed in the sector is comparable to its status in the 1960s and beginning 1970s, before the onset of the civil war. The then booming industry was also influenced by similar external favorable conditions, but had failed to further develop namely due to lack of adequate policy. The paper argues that Lebanon could be going down the same road should industrial policy not become a national priority.

JEL Classification: F1, O1

Keywords: Industrial Sector, Exports, Productivity, Industrial Policy, Lebanon

ملخص

تسكنشف هذه الورقة تجربة القطاع الصناعي اللبناني في تصدير المنتجات المتطورة. ويعتمد التحليل على خريطة "الفضاء المنتج" في لبنان، مما يدل على أن ما بين 2000 و 2008، هناك ما يصل الى 40 منتجات جديدة متطورة للغاية التي تتطلب مستوى عال من القدرات والتي يتم تصديرها. يقول الأدب أن مثل هذه الظواهر تلاحظ في البلدان التي خضعت للتغيرات الاقتصادية الهيكلية. ومع ذلك، فإن السياسة الصناعية في لبنان تكاد تكون معدومة. لجأت الدراسة إلى تثلث البيانات الابتدائية والكمية والثانوية في محاولة لتفسير الدوافع وراء هذه الصادرات الجديدة. وكان الظن أن هذه الصادرات هي أساسا نتيجة لصدمة الطلب مدفوعة بدلا بتحسين الإنتاجية. وفي الواقع، أسندنا الجهد لاكتشاف الصادرات الجديدة على مهارات تنظيم المشاريع من الصناعيين والشبكات الاجتماعية والتجارية في الخارج، والتي تم استخدامها لتلبية الطلب المتزايد جزئيا بشكل رئيسي. لاحظنا انخفاض الإنتاجية العربية وبعض الدول الأفريقية باستمرار في القطاعات الغير قابلة للمقارنة إلى وضعها في الستينيات وبداية السبعينيات، قبل بداية الحرب الأهلية. وقد أثرت هذه الصناعة المزدهرة أيضا على الظروف المواتية الخارجية المماثلة، ولكن فشلت في مواصلة التطوير وهي نتيجة لعدم وجود سياسات كافية. وتقول الورقة ان لبنان يمكن ان تسير على نفس الطريق إذا لم تصبح السياسة الصناعية أولوية وطنية.

1. Introduction

The Lebanese industrial sector has had a long history of missed opportunities for development. The country's geopolitical location along with its delicate social and religious fabric has led external and internal forces to push its economy in the direction of playing an intermediary role and facilitating the circulation of capital, commodities and labor. Furthermore, since its independence, Lebanon has adopted a laissez-faire economy with a liberalized trade system, paying little attention to industrial policy. In fact, even in the present day, what one can call industrial policy consists of no more than a number of industrial financing schemes with subsidized interest rates, several trade agreements with the EU and the Arab countries, and a law – issued in 2006 - on the protection of national production¹.

Through taking a more scrutinizing look at Lebanon's industrial exports – using the “product space” mapping method² - between the years of 2000 and 2008, and despite this gloomy outlook on industry, it appears that the country has started exporting new, more technically sophisticated, and diversified products. The product space comes in light of a new high-dimensional theory of development which, unlike traditional economic theory, recognizes that economic growth is largely determined by the productive structure of an economy. This alternative view asserts that “*what* a country produces matters more than *how much* value it extracts from its products” (Hidalgo 2009, p.2).

The argument is that in the long run, the complexity - variety and sophistication - of the product basket a country produces will be a bigger determinant of the country's level of development than the value it extracts from exporting these products. This is noticeable in the experiences of resource-poor countries (such as Korea and Taiwan) that have managed, through exporting highly sophisticated products, to outgrow resource-rich countries that do not produce such highly sophisticated products but enjoy generous revenues from natural resource exports (such as Venezuela and Nigeria). Indeed recent research that has sought to test this theory empirically has shown that diversification to new products is strongly correlated with economic development. Rodrik (2006) suggests that industrial upgrading is an important indicator of economic performance, which is itself dependent on specialization patterns. Countries with a broad-based manufacturing sector – where assets can be used in a wide range of goods - are more likely to take advantage of new opportunities than ones with a specialization in few primary-based products.

Using product space jargon, countries will find it relatively easy to make short jumps. Long jumps however would be harder to make mainly for two reasons: firstly, firms cannot create new products requiring capabilities that are non-existent in the economy; secondly, firms cannot create new capabilities on their own and without any government intervention. This is so because the process of product discovery is fraught with market failures, namely *coordination failures* and *information spillovers* (refer to Section 1). Without government intervention to correct for these failures, firms

¹ The law was issued on December 8, 2006. It concerns the “Cancellation of legislative decree No.31 on Anti Dumping” dated August 5, 1967 and substitutes it with the “Law on the Protection of National Production”.

² The product space is a network that mirrors the productive capacity or embedded knowledge of a country by highlighting the capabilities it possesses and the opportunities these imply. It is an industrial map that presents the idea of relatedness between different products traded in the global economy. Products that are tightly connected in the map share most of the requisite capabilities – the tangible and intangible inputs that are required for production activities. A country's position on the product space determines its ability to move into new products. Countries can move to a new product that shares most of the requisite capabilities with the existing product basket, which is defined as making a *short jump*. Countries can also move to a product that shares few capabilities with the existing basket, which is defined as making a *long jump*. (For further reference see Hidalgo, 2009, and Hausmann, Hidalgo *et al.* , 2011)

are unlikely to make long jumps within the product space (Hidalgo, 2009; Hausmann and Klinger, 2006).

In this respect, Lebanon presents an anomaly to the theory. Despite the absence of government intervention, between 2000 and 2008, the manufacturing sector managed to create 53 new highly sophisticated export products. Amongst these export products, 13 are the outcome of short jumps, which means that they share high capabilities with the 2000 export basket. However, the bulk of these new products – 40 out of the 53 - have made long jumps, which means that they share *few* capabilities with the 2000 export basket. In the absence of any industrial policy to correct for these failures through institutional or policy changes, the production and export of these 40 products seems to be an exception to the rule.

This paper aims to primarily examine how firms in Lebanon have managed to export sophisticated products that share *few* capabilities with the existing export basket. Using firms in Lebanon as a case study, we hope to shed light on how new capabilities are formed in the absence of industrial policies. Identifying the factors that triggered and facilitated this emergence would provide important guidance to the design of future public policies. To that end and using the product space as an analytical tool, this study examines how these capabilities have developed by focusing primarily on the firms that have produced these new long jump sophisticated products. Adopting a data and methodological triangulation approach, the study resorts to both quantitative and qualitative analysis to understand the emergence of these capabilities.

The rest of this paper proceeds as follows. Section 1 surveys the literature on export diversification. In Section 2, we lay down the hypotheses and describe the methodology and data used in the analysis. Section 3 presents the findings and describe the main features of the new products. In Section 4, we analyze the findings and in Section 5, we conclude.

2. Literature Review

This section synthesizes the key literature on the relationship between export diversification and economic development as well as on the different pathways to diversification and the potential factors that serve as catalysts to this process.

Research has shown that diversification to new products is strongly correlated with economic development. . Rodrik (2006) argues that enhancing the productive capabilities over a large range of manufactured goods – including the production of new ones - is an “integral” part of development. Building on the work of Hausmann *et al.* (2005), Johnson *et al.* (2006) find that growth accelerations are associated with structural changes in manufacturing. Furthermore, Hausmann *et al.* (2007) show that the productivity level associated with a country’s exports is not fully captured by factor endowments such as human capital or institutional quality. They show that the level of export sophistication is highly correlated with subsequent economic growth.

Hausmann and Klinger (2006) make this point by mapping out the product space. The probability that a country will make a new product is strongly related to how close that product is to other products the country already makes. Crucial to this concept of closeness is the notion of capabilities, i.e. inputs that are required for production activities. The product space is not even or homogenous in terms of input specificity. Some activities such as oil and primary products require highly specific inputs – these products are found on the periphery of the product space – while others use or rely on capabilities that can be used for various products – and hence they are found in the core of the space. The ability of countries to diversify and to move into more complex products is highly dependent on their initial location on the product space. A highly connected

product space mitigates the challenge of enhancing the complexity of an economy. Conversely, a sparsely connected product space makes it harder. This is so because countries will tend to create new products that are close to the current product mix, i.e. share the same capabilities (Hidalgo, 2009; Hausmann and Rodrik, 2006).

The development of manufactured goods is fraught with externalities and spillovers. Leaving this to the market forces would not succeed simply because the market cannot reveal the profitability of products that do not yet exist. The two major obstacles that constrain diversification are *coordination failures* and *information spillovers* (Rodrik, 2004). The former is where markets are not complete and this makes the return to one investment depend on some other investments to be made. In other words, no industrialist will make new investments in areas where there is no electricity or a proper transportation network. The latter is where the “discovery process” – discovering the minimum cost at which producing the given product would be profitable³ – of new goods is expensive and hence is often avoided. To see this, consider Hausmann and Rodrik’s (2003) theoretical framework of export emergence in developing countries. In their model, an export “pioneer” triggers the “discovery process” of a new product. This pioneer faces two risks when investing in this activity. The first arises from the fact that the discovery process is characterized by high uncertainties of production costs which render the profitability of the new activity unknown *a priori*. The second is a direct result from the free-rider problem: once the pioneer makes the investment and discovers the product, other producers can follow and imitate him and reap a share of the benefits. The possibility of the realization of any of these risks creates a disincentive to invest in the potential discovery and the entrepreneur would prefer to wait for other first-movers to make the investment. Consequently, entrepreneurs need the right incentives to “plunge” and experiment in making new products.

Discovering new products requires a combination of specific private and public inputs. If the new product is in close proximity to the current basket of produced goods, the private sector may be able to exploit the existing capabilities on its own (Hausmann and Rodrik 2006). Making products that are farther away from the current product mix would necessitate certain capabilities which will not emerge on their own due to market failures. Government intervention would be crucial in providing complementary inputs – rules, organization, infrastructure, labor training, and others – that are specific to subsets of activities. In South Korea and Taiwan for instance, they have taken the form of export subsidies; Singapore and Malaysia created export processing zones; the Chinese government set up special economic zones, etc.. What is evident is the fact that the intervention has to fit the specifics of the context and hence is not fully knowable *ex ante*. In a nutshell, theory predicts that diversification into products farther away from the existing product mix is not possible without an industrial policy.

The discovery of new products though has not always been in line with the predictions of the theories linking product discovery to market failures. In several cases, exports of products that share few capabilities with existing export baskets have suddenly surged and without any government intervention to address the failures. These episodes are even more intriguing when they take place in developing countries given that the export baskets of the latter typically have a high concentration rate in low-sophisticated products that are on the periphery of the product space, such as natural resources. The established international trade theories cannot explain how firms have taken these different diversification paths. Hence, recent empirical research has emerged to

³ Product discovery here does not refer to making new products which would require R&D. It refers to the ability of industrialists to discover better ways to produce an existing product in the world market at lower costs (Rodrik, 2004).

fill the gaps. Yet, this research remains in its infant stages, and as a result relies heavily on a comparative case study approach to explain this understudied phenomenon. Focusing on case studies, several authors have investigated the main uncertainties and barriers to the discovery of new products as well as how firms managed to overcome these obstacles and address market failures without the help of the state.

Klinger (2007) empirically examines the extent and nature of uncertainty that firms in developing countries face in their discovery of new exports. Using a comparative case study approach, he investigates eight cases of export emergence from three countries: Morocco, Peru and Egypt. He finds that across all cases, the two main uncertainties were *productivity uncertainty* and *demand uncertainty*. The former arises when the production costs are unknown to the entrepreneur *a priori*: the entrepreneur lacks knowledge of the production technology and inputs needed to produce the product. The latter arises when the expected revenues are unknown to the entrepreneur *a priori*: the entrepreneur lacks knowledge of potential markets and their characteristics from market value of the product to the size of the demand and consumer preferences. Firms could have one, both or neither of these uncertainties. Klinger finds that firms that wish to make a short jump discovery often face these uncertainties to a much lesser extent.

Artopoulos *et al.* (2013) study export emergence of some differentiated goods in Argentina. They examine four cases (wine, television programs, motorboats and wooden furniture), and investigate how firms have been able to discover and successfully export these products to developed markets. They use a method of data triangulation that relies primarily on qualitative data, collected through a set of interviews with the relevant actors, and secondarily on quantitative data from customs, local trade associations, etc. They find that the main barriers to discovery were not related to production uncertainties but rather to demand uncertainties: firms lacked foreign market knowledge related to demand characteristics and quality expectations of the foreign consumer base as well as to the stringent requirements of foreign distributors. Across all four cases, this barrier was overcome by adopting a new set of business practices that differed completely from those that prevailed in the domestic market. Furthermore, in three of the four cases, it was an export pioneer who initiated the discovery and adopted these new practices. The authors argue that it was the pioneers' experience in working and/or living in those foreign countries that made them the leaders in their respective industry by giving them a knowledge advantage about these markets over their counterparts in the Argentinean industry. These newly adopted business practices are then diffused throughout the industry. The diffusion of these practices and opening of gates in foreign markets prompts other producers in the industry to follow and eventually triggers an export emergence process in the industry.

Agosin and Bravo-Ortega (2009) examine three cases of successful export emergence in Chile: wine, pork and blueberries. Firms in these industries faced both production and demand uncertainties. Akin to other cases of export emergence, it was a pioneer who led the discovery and successful export in each of the three industries. The uncertainties were resolved mainly by cooperating with foreign actors. For instance, in the pork industry, the Chilean pioneer acquired the necessary knowledge to produce pork that meets the requirements of the foreign markets by associating with a large Japanese trading company. As for the case of wine, the pioneer had connections within the Italian wine industry. Through his association, he imported the technology needed to produce wine that meets the high standards of customers in the targeted markets. The pioneers managed to make the discovery on their own and without help from the state. In addition to having a foreign-market knowledge advantage, pioneers were large firms that did not face any

liquidity constraints. However, the entry of followers into the export markets was facilitated by the help of associations of independent producers as well as by technical assistance programs subsidized by the state.

Most of these findings are also reiterated in Hernández *et al.*'s (2007) study of five cases of export emergence in Ecuador. Similarly, in all cases, a pioneer led the discovery process after resolving the main production and demand uncertainties. The pioneer initiated the discovery because he was always on the lookout for new export ventures and ultimately because of his knowledge advantage. Furthermore, he benefited from several technical assistance programs that were mainly financed by international cooperation. In all five cases, the pioneers were able to monopolize their industries for up to three years due to medium to high barriers to entry, which corrected for one of the market failures, namely *information spillovers*. As for *coordination failures*, they were corrected for by private-public collective action that was led by the pioneer and promoted by public-private agencies. Furthermore, the government facilitated the export emergence process by reducing market tariffs through trade agreements and liberalization and by providing access to long-term finance, business development services, and entrepreneurial development programs. Nonetheless, the state was completely absent during the discovery stages and did not subsidize the cost of discovery.

Sabel *et al.* (2012) examine the emergence of fresh cut-flower exports in Colombia. In this case, it was not only one pioneer but rather a group of local and foreign business leaders who initiated the discovery process after realizing that Colombia has a natural, geographic and economic advantage to produce fresh cut-flowers at a low cost. Association with foreign actors, including foreign investment in one of the companies, greatly benefited the process and was crucial for its success. The uncertainties were resolved through coordination among the pioneers. The Colombian government encouraged initial investments through the removal of import restrictions and the provision of trade agreements, export subsidies as well subsidized credit. Nevertheless, the pioneers bore all the investment costs and overall the state's help was limited and sporadic.

Cirera *et al.* (2012) examine the relationship between export diversification and firm behavior by identifying the firm level determinants that are conducive to the process of export diversification and that are associated with different pathways of diversification. They empirically explore these questions using a sample of firms in Brazil for the period 2000-2009. They test five broad categories as determinants of export diversification: structural characteristics of the firm, position of the firm in the domestic market, characteristics of the product basket of the firm, characteristics of the process of production and learning efforts of the firm. They find that the firm level characteristics that affect diversification towards more or less distant products are the degree of diversification of the existing production basket as well as the position of the firm in the domestic market: firms with a high degree of diversification and more market power were more likely to diversify to unrelated products.

3. Hypothesis, Methodology and Data

In light of this literature and the results of the Lebanese product space mapping, this study aims to test the following two hypotheses:

Firstly, the study puts forward the conjecture that in Lebanon, the discovery of highly sophisticated export products is an outcome of firms' ability to overcome demand rather than productivity uncertainties. In other words, the long jumps in the Lebanese product space are demand driven rather than resulting from a productivity shock. Therefore, following Klinger (2007), the study

postulates that Lebanese entrepreneurs have been able to obtain enough information about potential markets to make their exports profitable and hence demand uncertainty is reduced.

Secondly, Lebanon's industrial sector is facing a positive external shock, manifested in favorable macroeconomic conditions that are similar to the conditions that bolstered this sector prior to the civil war. Therefore, the booms and busts of industry seem to be significantly affected by external factors.

Therefore, the present study examines the process of export diversification in the Lebanese manufacturing sector during the period 2000 to 2008 using a mix of quantitative and qualitative research, namely data and methodological triangulation. This type of methodology is quite common in social sciences research. It is based on the argument that more than one method should be used in order to validate research findings (Campbell & Fiske, 1959), where convergence of results from the several methods reinforces the belief that these "[...] results are valid and not a methodological artifact" (Bouchard, 1976, p. 268). Thus, the research relied on a series of in-depth interviews, a semi-structured survey, as well as a desk review covering existing secondary sources of data.

The first step was to identify the new products in the 2008 export basket. To that end, we use two datasets from two sources: (1) data on all Lebanese products that were traded in the global market in 2000 and 2008, classified by their four-digit Harmonized System (HS) Codes, and obtained from the Lebanese Customs, (2) as well as data on the Revealed Comparative Advantage (RCA) of these products which was calculated and provided by Ricardo Hausmann, César Hidalgo *et al.*, authors of *The Atlas of Economic Complexity* (2011). The RCA is a measure of the importance of a product in a country's export basket that controls for both, the size of the country's economy and the size of the product's market⁴. A country is said to enjoy a comparative advantage in a product if the RCA of that product is greater than 1 (Hausmann, *et al.*, 2011). Thus, using both these datasets the study identified 221 products that were exported in 2000 with an RCA>1 and 242 products that were exported in 2008 with an RCA>1. The comparison between these two baskets of exports showed that 103 of the 242 products that were exported in 2008 with a comparative advantage were not being exported in 2000 with a comparative advantage⁵. These 103 products are henceforth referred to as the "new products"⁶.

The 103 products were then classified into highly sophisticated and low-sophisticated products. This classification is based on whether they are located in the core of the product space or its periphery. According to the exact definition given by Hidalgo *et al.* (2007), "The core is formed by metal products, machinery, and chemicals, whereas the periphery is formed by the rest of the

⁴ "The Revealed Comparative Advantage is defined as the ratio between: (i) the share of the market of a country that a product has and (ii) the share of the world market that a product represents" (Hidalgo 2009, p. 5). Hence, "a country has Revealed Comparative Advantage in a product if it exports more than its "fair" share, that is, a share that is equal to the share of total world trade that the product represents" (Hausmann, *et al.*, 2011, p. 25).

⁵ It is worth noting here that these products were either not being exported in 2000 or were being exported in 2000, but with an RCA<1, i.e. didn't represent a significant share of the export basket, but by 2008, they were being exported in significantly larger amounts, i.e. with an RCA>1 and thus were considered "new" in 2008.

⁶ This comparison reveals that out of the 221 products that were being exported in 2000 with an RCA>1, 82 did not make it into the 2008 export basket. This means that by 2008, these 82 products were either no longer being exported or were being exported but with a lower share than their fair share - i.e., they lost their revealed comparative advantage. Investigating why Lebanon lost its comparative advantage in these products in 2008 is very interesting and useful and will complement the study at hand. However, the large number of these products combined with limited access to firms prevents us from providing this discussion, which could be an avenue for future research.

product classes”; therefore, the HS codes of the products were used to place each one in the core or the periphery. The result was 50 periphery and 53 core products.

The products were further classified as the outcomes of short or long jumps from the 2000 export basket. This was done based on the *densitymin* measure of each product, which was also calculated and provided by Hausmann, Hidalgo *et al.*. This measure represents the density of a product and ranges between 0 and 1, with higher values indicating that the country has a comparative advantage in many goods close to this product, and is thus more likely to export this product in the future. To identify the nature of the jump we looked at the 2000 measure of the *densitymin* of these new products. This allowed us to know whether these products are close to the existing 2000 export basket and hence can be easily "jumped to", i.e. short jump, or far from the 2000 export basket and hence not easily jumped to, i.e. long jump. The cutoff used for the density measure to define long jump vs. short jump products was 0.1929, where this number refers to the average *densitymin* of the 103 new products. Consequently, any new product that had a 2000 *densitymin* ≥ 0.1929 was considered to be the outcome of a short jump while any new product with a 2000 *densitymin* < 0.1929 was considered to be the outcome of a long jump⁷. This exercise resulted in a total of 49 short jump products (36 in the periphery and 13 in the core) and a total of 54 long jump products (14 in the periphery and 40 in the core).

For the remainder of the paper, we focus our attention on the new products in the core of the product space. This choice was made by considering a public policy perspective, where the emergence of products in the core is more relevant because these products are more sophisticated and hence are larger determinants for future economic growth. Furthermore, once a country discovers new products in the core it becomes easier for it to largely diversify because the products in the core are very highly connected to several other products. In contrast, products on the periphery are very sparsely connected and therefore it is more difficult for the country to attain future diversification from these products.

When describing the features of the newly introduced exports we will consider the 40 long jump products and 13 short jump products (all in the core). However, when looking at the firm level determinants that explain the process of diversification, we will only focus on the long jump products. This is so because the objective of this study is to examine how firms were able to move into new products that share *few* capabilities with the existing export basket, i.e. the firms that were able to make a long jump. Furthermore, theory predicts that it is natural for firms to diversify by making short jumps because the capabilities required for those new products already exist in the economy.

In order to analyze the firm level characteristics that affected the discovery of these 40 long jump products, a sample of these products was selected based on a number of criteria. The first was to filter the 40 products based on their export volume and select only those whose export volume exceeds the average export volume of the 40 long jump products. Only 13 products out of the 40 satisfied this criterion and thus the remaining 27 products were dropped from the sample.

The next step was to identify which firms manufacture and export these 13 products. This information was provided by the Lebanese Chamber of Commerce and the Association for

⁷ Alternative cutoff values were used to check the sensitivity of the results to the choice of average value as the cutoff. Using the median value of 0.178904 resulted in changing only 16 out of the 103 products from long to short jump products, thus overestimating our results. Using the average value plus one standard deviation (0.2399) resulted in changing only 27 products from short to long jumps, thus underestimating our results. These minor alterations resulting from changes in the cutoff value helped increase our confidence in the choice of average value of 0.1929.

Lebanese Industrialists. Due to limitations of the Chamber of Commerce data, we were not able to have the list of the exporters for 3 out of these 13 products. Hence, these 3 products had to be dropped from the sample. Furthermore, in order to have a broad perspective on the emergence of these products, out of the remaining 10 products we chose only those that had at least two firms producing them. Two out of these 10 products did not satisfy this last criterion. Thus, this sampling process resulted in a final sample of 8 products. From the Chamber of Commerce data, we had a list of 124 firms that have been registered to export these 8 products. For a list of these products refer to Annex 1, and for a visual summary of this sampling process refer to Figure 1 below.

The third step was to collect information on these firms through a semi-structured questionnaire that includes questions on: (1) export history, (2) the factors leading to the product discovery, (3) the nature of the main uncertainties faced, (4) the means to resolving these uncertainties, and (5) the role of the government and/or business associations, international agencies, and other relevant institutions. The questionnaire was composed of a number of close-ended and open-ended questions. The close-ended questions were sent to the firms, and their responses were used to build a database. This database would serve to provide overall descriptive statistics on the profiles of the firms who have made the long jumps to the core part of the product space. The open-ended questions of the questionnaire were left for a sample of firms to be further interviewed in-depth.

In reality, access to firms proved to be quite difficult, so the response rate to the close-ended questions was quite low. In addition, many of the firms proved to be miscoded as producers/exporters when in fact they were only re-exporters. Given the limitation of non-response, a sample of 16 firms formed the database from which we could derive a profile for these industrialists. In addition, in-depth interviews were conducted with a few firms to triangulate the findings from the quantitative data in order to gain a deeper understanding of the issues at hand.

4. The Lebanese Manufacturing Sector

4.1 A historical overview

The history of the Lebanese economy can be described as one of lost chances for industrialization and gravitation towards the development of the services sector. The country had its first industrial opportunity in the 19th century with the flourishing of its silk industry; however, foreign competition and the channeling of capital to trade rather than to the modernization of the sector, led to its decline and eventual vanishing. Later, industries such as textile, footwear, food-processing, and wooden products developed in the period between the two World Wars. During World War II, Lebanon was presented with another industrial opportunity with the increased expenditures by Allied troops and the situation of forced import substitution faced with increasing demand. However, the end of the World War brought along challenges to the further development of these industries manifested in decreased demand and increased competition. In addition, the post-independence government adopted an open economy system and provided little protection for these growing industries. Therefore, the contribution of industry to the national economy remained low until the late 1950s. During the 1960s industrial output and exports witnessed significant increases mainly due to a number of external factors. The emigration of part of the industrial and commercial bourgeoisie from Egypt, Syria, and Iraq to Lebanon⁸ brought in capital to the industrial sector through direct investment or bank lending. In addition, the closure of the Suez Canal in 1967, combined with the growing Arab oil economy, provided a spur for industrial

⁸ This took place following the socialist policies in these countries, the agrarian reforms, and high economic interventions on part of their regimes.

exports to the Arab market, with Saudi Arabia and Kuwait in particular becoming the main markets for Lebanese industrial exports. The industrial sector boom continued to the 1970s up to the eve of the civil war. The 15-year war had devastating effects on local industries. The sector suffered from physical damage, labor migration, capital flight, and destroyed infrastructure. However, during the second half of 1980's a small number of industries benefited from the decline in real wages and the depreciation of the Lebanese Lira. Gaining this competitive edge led to increased exports to Iraq and the Gulf States, which played a role in reducing the negative impact of the war on the sector. Post-war recovery was slow due to strong competition from foreign manufacturers, accompanied by a finance-based monetary policy that focused on financial and exchange rate stability and foreign capital inflow. This in turn had a negative impact on the revival of industry, and was even referred to as a process of deindustrialization (see Dibeh, 2005). Therefore, the industrial sector's occasional booms have been the result of positive external shocks and favorable macroeconomic conditions rather than the fruit of public industrial policy, which has never been a priority for the Lebanese government.

4.2 Market concentration

Several studies have discussed the monopolistic/oligopolistic nature of the Lebanese industrial sector (see Gaspard, 2005 and Nasr, 1978). In fact, a study on the competitive markets in Lebanon conducted by the Ministry of Economy and Trade and the Consultation and Research Institute in 2003 showed that at least half the markets in the Lebanese industrial sector, which account for at least 40% of the total market turnover value, may be considered as having monopolistic or oligopolistic structures. These markets are likely to exhibit a corresponding behavior in terms of pricing and restrictive practices. Table 1 below shows the markets for which concentration ratios were the highest within the manufacturing sector. The CR1 and CR3 indicators refer to the concentration ratios of the largest 1 and 3 establishments, respectively, in the given markets. As the report argues, a major factor that can explain the high concentration levels in the Lebanese manufacturing markets is the small size of these markets "relative" to the minimum efficient scale of production and the associated capital requirements.

The presence of high concentration rates usually indicates the presence of high barriers to entry, which prevent markets from becoming more competitive. High cost of capital and low labor productivity are cited as the major barriers to entry. It is suggested that the low productivity levels in Lebanon have been masked by the boosted profits, which result namely from the high market concentration levels that have reduced price competition. In the case of Lebanon there is also a significant role played by "natural" barriers, which are mostly determined by the overall performance of the economy rather than that of a given market. In addition, administrative and legal institutions and processes in Lebanon act as an "artificial" barrier to entry (CRI, 2003).

4.3 Export activity and destinations

The share of the industrial sector out of total GDP has been decreasing almost steadily as Figure 2 below depicts. This share dropped from 12.5% in 1997 to 7.5% in 2009 (Economic Accounts of Lebanon 1997-2007, 2009).

However, a number of interesting observations can be made about Lebanon's industrial exports: Firstly, industrial exports per capita have been increasing; they amounted to \$282 in the year 2000 and increased to \$785 in 2009 (authors' calculations based on Economic Accounts of Lebanon 1997-2007 ;2009 for industrial export figures and World Development Indicators for population

figures). Secondly, industrial exports as a percentage of total exports rose from 37% in 2000 to 57% in 2007 (authors' calculations based on Economic Accounts of Lebanon, 1997-2007, 2009).

Moreover, the level of export sophistication, measured by EXPY⁹, has also witnessed a substantial increase from \$10,207 in 2000 to \$13,924 in 2008, a 36% increase during that period (Table 2). Lebanon achieved one of the highest EXPY growth rates (along with Tunisia) among non-oil middle income Arab countries over this time period. Its EXPY in 2008 was also the highest among the group members as well as higher than the world average of \$13,283.

In addition, Lebanon's position on the product space improved between 2000 and 2008 (Figures 3 and 4). The total number of exported products increased from 898 products in 2000 to 978 in 2008. But more importantly, comparing the distribution of these products, the number of core products increased by 21% (from 307 in 2000 to 370 in 2008) while the number of periphery products increased by only 3% (from 591 products in 2000 to 608 in 2008), reflecting an increase in the sophistication of Lebanese exports.

With regards to the 103 new products several interesting characteristics can also be observed: One, their average PRODY¹⁰ value is \$16,374, which is higher than Lebanon's EXPY of \$13,924. This indicates that the sector is producing goods more sophisticated than Lebanon's level of development. Two, half of these products are located in the core part of the product space. This indicates that there is potential for more export discovery in the future. Three, 40 out of the 53 products (Table 3) have made long jumps, which according to Hausmann and Klinger (2006) is unlikely to happen because their discovery process is fraught with market failures.

Both long jump and short jump products cover several categories of products (Figure 5). The 40 long jump products are distributed across 8 categories of products, and the short jump products fall within 5 categories. Just over half of the 53 newly discovered export products – both long and short jump products - are concentrated in four categories: chemicals and allied industries, plastics/rubbers, wood and wood products, and stone/glass.

Long jump products have higher PRODY values than short jump products: the average PRODY of the long jump products is \$22,737 which is significantly higher than the average PRODY of the short jump products which is \$15,882 (Table 3 and Table 2.1 in Annex 2).

Moreover, the export value of long jump products has witnessed a higher growth rate than that of short jump products. Lebanon's total export value increased from \$714 million in 2000 to \$3.4 billion in 2008 which amounts to a yearly average increase of 22%. The export value of the long jump products increased from \$7 million in 2000 to \$184 million in 2008, which amounts to a yearly increase of 51%. This is more than twice the increase of the total export value. As for short jump products, their export value increased from \$5 million to \$91 million for the same period, which translates into a 45% yearly increase (Table 4). Not only did the value of exports increase over the years, but their share of total exports also went up: in 2000, the export value of long jump products was \$7 million, forming 0.83% of total exports (\$714 million), and it increased to \$184 million in 2008 forming 4.41% of total exports (\$3.4 billion). Short jump products also gained

⁹ EXPY is the level of sophistication associated with a country's export basket. It is a weighted average of the PPP-adjusted PRODYs (see footnote 11) of all the exported products in that country, where the weights are simply the value shares of the products in the country's total exports (Hausmann, Hwang and Rodrik, 2007). This measure of EXPY is PPP-adjusted.

¹⁰ PRODY is a quantitative index that reflects the sophistication of a product. It is constructed by taking a weighted average of the per-capita GDPs (PPP-adjusted) of the countries exporting a product, where the weights correspond to the revealed comparative advantage (RCA) of each country in that product (Hausmann, Hwang and Rodrik, 2007). This measure of PRODY is PPP-adjusted.

ground but not as much as their long jump counterparts: short jump products' share of total exports increased from 0.64% to 2.6% for the same period.

As for the destinations of exports, the top three destination regions for both long jump and short jump products are Middle East and North Africa (MENA), Western Europe and Western Africa. As expected, MENA is the dominant market for both types of products where for the period 2000 to 2008, it received 65% of long jump products and 59% of short jump products. Western Europe is a much bigger and significant market for short jump products compared to long jump products (35% vs. 13% for the same period), while Western Africa is a much bigger market for long jump products compared to short jump products (14% vs. 3% for the same period) (Figure 6).

Looking at the export markets at a more disaggregated level, the top five MENA markets for long jump products between 2000 and 2008 were, in ascending order: Saudi Arabia, Iraq, United Arab Emirates, Syria and Egypt. As for short jump products, the top markets were, in ascending order: Syria, Jordan, Kuwait, Saudi Arabia, Iraq, and the United Arab Emirates (Table 5). Syria has been a very significant market for short jump products (28% share of MENA market), while Saudi Arabia and Iraq have been significant markets for long jump products (23% and 21%, respectively). The significance of these markets will be discussed in further detail in Section 4.

4.4 Looking back in time

Initial analysis of Lebanon's long jump products sheds light on the fact that the manufacturing sector is discovering highly sophisticated exports. Looking at the sector over a longer timeframe, it appears to have regained some of its position in the product space.

Lebanese firms had occupied 5 of the 10 densest products in 1975, but by 2000 they produced none (Figure 7). For instance, in 1975 firms in Lebanon exported locksmith wares, lighting fixtures, as well as engines and motors and others. Although the 10 densest products had changed in 2000, Lebanese exports were not able to maintain ground with the changes in the economic transformation worldwide. However, by 2008 Lebanese manufacturers were producing two of the world's densest products; color prints and miscellaneous articles of base metal (Table 2.2 in Annex 2).

The level of capabilities in the economy, measured by the Economic Complexity Indicator¹¹ (ECI), was the highest in 1968. It declined from then till it reached its minimum in 1998 only to regain some ground by 2008 (Figure 8).

Figure 9 ranks Lebanon's ECI for the period between 1964 and 2008. It shows that Lebanon's rank peaks in 1975 to being the world's top 21st. The country's rank fluctuated between 1975 and 1998, following an overall declining trend, where it reached a low level of 44th in the world in 1998. Since then, the country's ECI improved relative to other countries reaching a rank of 31st in 2008.

5. Analysis of Results

5.1 Demand vs. productivity shocks

The most interesting aspect of the observed export diversification in Lebanon is that it has taken place in highly sophisticated domains of production that require new capabilities, which are usually the result of a policy-driven structural change in the economy. Knowing that no such structural change has occurred, the research question that this study explores is whether the

¹¹ The Economic Complexity Indicator is an index that has been developed by Hausmann *et al.* (2011) to measure the economic complexity of a country, which is intimately connected to the complexity of the products that it exports. For a mathematical definition of this index, see Hausmann *et al.* (2011).

increase in the sophistication of the Lebanese export basket has been the result of discovery of new markets, i.e. demand driven, or the consequence of a decrease in costs of production, i.e. the presence of a productivity shock. The findings presented in this section lead us to lean towards the demand positive shock explanation rather than the productivity positive shock.

The dismissal of the increase in productivity hypothesis emerges from several observations that we discuss below. There is a large amount of literature discussing the role trade liberalization in developing countries plays in opening up channels for technological upgrading, which often leads to higher levels of efficiency and productivity. On the one hand, a developing country can implement embodied technological change (ETC) through the importation of “mature” machineries -including second-hand capital goods-from more industrialized countries (see Barba Navaretti, Solaga and Takacs, 1998). On the other hand, late starter developing countries can enjoy the “last comer” benefit of jumping directly on a relatively new technology (Perkins and Neumayer, 2005). Results from empirical studies show that firms do not always succeed in benefiting from these imports and their potential ability to increase productivity due to deficiencies in the necessary physical and human capital needed.

All interviewed firms in our sample agreed that electricity takes up the highest share of their cost of production, which significantly affects their ability to be price competitive as well as use their equipment and machinery to their full capacity. According to a World Bank survey in 2005, electricity was ranked to be the major constraint affecting firms in Lebanon out of 15 potential constraints. It has deterred the manufacturing sector more than other sectors: 76% of manufacturing firms have cited electricity to be a major constraint compared to 51% in the trading sector (Figure 10).

Comparing Lebanon to other countries, the cost of electricity in Lebanon is one of the highest in the region¹². The electricity problem is not confined to cost only. Firms also suffer from intermittent supply, with an average duration of service interruption of 7 hours. The total losses incurred as a percentage of sales value reaches 8%.

Furthermore, firms systematically reported having a serious shortage in semi-skilled labour that is well trained in the fields of maintenance and operation of machinery and equipment, which has a negative impact on labour productivity levels. Despite the efforts of the Lebanese educational system to strengthen the vocational training education sector, it has not yet been able to provide the quality and quantity demanded in the labour market. Firms often resort to training their employees privately for a period of time before they start work. Some of the larger firms with more than 100 employees have established their own permanent training departments, which are also an additional cost to the production process.

In addition to their direct effect through ETC, the literature points to FDI (Foreign Direct Investment) inflows as playing a major role in generating technological spill-overs in favour of domestic firms. Firms benefiting from FDI inflows can absorb new imported technologies through labour mobility, input-output relationships and reverse engineering (see Coe and Helpman, 1995; Coe, Helpman and Homaister, 1997). However, this also does not seem to be the case in Lebanon. Regarding FDI, statistics¹³ show that the net inflows of FDI as a percentage of GDP have maintained levels higher than those in the Arab countries as well as those in upper-middle income

¹² Firms pay 9 cents per Kw/h whereas their counterparts in Egypt pay 2 cents, in Jordan 5 cents, and in Syria 2 cents (Al Safir, October 12, 2000).

¹³ There are no official statistics that date to before the year 2002.

countries (Figure 11). According to the UN Conference on Trade and Development (UNCTAD), Lebanon was the fourth largest recipient of FDI in nominal terms among 20 MENA countries.

Yet, a more detailed inspection of the destinations of FDI shows that real estate and construction account for the largest part of it, especially government contracts won by foreign firms (mostly European and Asian) in the fields of electricity, water, telecommunications, transportation and infrastructure (IDAL, 2013). FDI in the industrial sector is almost absent. This is due to several impediments that discourage foreign businesses including but not limited to, corruption, arbitrary licensing decisions, complex customs procedures, archaic legislation, an inadequate judicial system, and weak enforcement of intellectual property rights (IDAL, 2013). These factors, among others, have pushed the International Finance Corporation (IFC) in its 2011 report to rank Lebanon 113st out of 183 countries worldwide and 11th out of 19 MENA countries in terms of ease of doing business.

Furthermore, the structure of the Lebanese industry is an indicator of the low levels of FDI present in this sector. The dominant legal form of firms is that of single ownership or partnership, and in fact all the enterprises covered by the study sample stated to be family-owned businesses. Consequently, the capital of these enterprises is controlled by the owners who are local businessmen, and foreign ownership is almost absent (with the exception of two firms that reported to have 50% foreign ownership). Gaspard (2005) makes an observation for the period 1964 - 1972 where he says that foreign sector accounts showed that the outflow of interest, rent and dividends averaged only about 5% of gross private operating surplus. This indicates that the structure of ownership and capital of industrialists today and those of the pre-war period are quite similar.

Research also shows that technological catch-up leading to productivity gains may be induced by exporting to richer countries both through substituting/replacing outdated technologies in the exporting sectors and through the development of entirely new businesses characterized by process and product innovations. The aim here is satisfying a more sophisticated demand coming from the industrialized countries (“learning by exporting”, see Keller, 2001; Epifani, 2003; Melitz, 2003; Yeaple, 2005). The “learning by exporting” hypothesis is tricky to analyze within the Lebanese context because there are factors that support it and others that tend to refute it. The aspect pertaining to the development of new businesses and innovations (process or product innovations) is not very likely since the survey results show a very low rate of local R&D (Research and Development) being done. Although around 80% of the surveyed firms reported that they do invest in R&D, the reported levels were very low ranging between 1% and 6%. The in-depth interviews revealed that most of this R&D is in fact related to business development and market research rather than product development. This supports the premises that increased exports are in fact due to a better understanding of the demand and seizing of opportunities in new markets, rather than to the creation of new products or improved processes of production. Nonetheless, market research is helping firms in discovering new demand.

This idea brings us to the second part of our argument, which suggests that the increase in exports has been the result of a positive demand shock, indicating that the hypothesis of “learning by exporting” is at work, at least to a certain extent.

The results point to the observation that export discovery has taken place after overcoming demand uncertainties. Firstly, the firms reported that the biggest obstacle they faced was the small size of the local market, which rendered considering export a necessity. Therefore, the size of the local

market has been a major instigator for firms to seek outside markets as a means of expanding their production and developing their businesses.

Secondly, the means to reaching export markets has been through market studies and research. In an interview with one of the firms, which produces and exports generators, they talk about the fact that the successive owners/inheritors of the firm have all been highly educated engineers who are very involved in the production process and quality of the product. Another firm stressed the importance of visiting foreign markets and industrial exhibitions to stay up-to-date with the newest technologies and establish connections in foreign markets. Therefore, highly skilled entrepreneurs who are well educated and well connected seem to be significant drivers of export discovery.

Furthermore, firms that have made such investments in discovering new demand are firms that have a high domestic share of output. As Figure 129 below shows, the majority of the surveyed firms had a domestic share of output that exceeded 30%. This observation is in line with existing literature suggesting that firms with high domestic shares are more likely to diversify their production because they face lower risks (see Cirera *et al.*, 2012).

In addition, the surveyed firms assert that they began exporting after discovering demand for their products in foreign markets, more specifically, the Gulf countries. To verify this observation, one can look at the various trade agreements between Lebanon and a number of countries that took place during the periods of increased export. Several free trade agreements were signed between Lebanon and foreign countries or trade associations in the period following the year 2000. In 2004, the EFTA (European Free Trade Association) which included Switzerland, Norway, Iceland and Lichtenstein was signed. Another agreement with the EU was achieved in 2006 with the ratification of the EU-Lebanon Association Agreement. In 2005, the full establishment of the GAFTA (Greater Arab Free Trade Area) agreement was achieved. Furthermore, a number of bilateral agreements were ratified during this period with a number of Arab, European and African countries (Table 6).

The data from the export volumes and destinations of a sample of the 40 long jump products reveals a number of interesting observations. The study looked into “spurts” in exports for each destination country, which reflect a spike in the volume of exports to the given country in a given year. After two to three years of the trade agreements with the Arab countries, we can observe a spurt in the volume of exports to these countries. For instance, following the free trade agreement in 2001 with Iraq, a total of 11 spurts in 7 long jump products took place between 2003 and 2008. Similarly, free trade agreements were signed with Qatar and UAE in 2001, and they were followed by 8 and 10 spurts for each country respectively for the period between 2003 and 2008. The free trade agreement with Saudi Arabia was followed by the highest number of spurts. The agreement was ratified in 2003 and as of 2004 a total of 15 spurts were observed for KSA (refer to Table 3.1 in Annex 3 for a full mapping of the spurts). This shows that exporters were responsive to the increased demand opportunities in the Arab states, especially benefiting from their already established regional comparative advantage in terms of their cultural edge over non-Arab exporters to these markets.

5.2 Macroeconomic conditions

Looking at the industrial sector from a more macro perspective, and comparing the situation today to that of the pre-war temporary boom in industry, some important inferences can be made.

Literature suggests that the share of manufacturing output should increase in developing countries undergoing a structural transformation of industrialization by an average of 3.2 percentage points

each decade (Chenery *et al.*, 1986). However, this has not been the case for Lebanon even during the booming periods of the sector. Gaspard (2005) reports that the rate of increase during the period 1950- 1974 was 1.7 percentage points per decade. This number decreased to around 1.2 percentage points per decade for the period between 1997 and 2009. Therefore, this alone could be a strong indicator for the postulation that little structural transformation has taken place in the Lebanese industry.

However, the industry in 2008 and that of pre-1975 have other points of similarity. In his analysis of the industrial sector prior to the civil war, Gaspard (2005) observes that the low performance of the industry in terms of productivity was in contrast with two advantages that the manufacturing had enjoyed: (1) a solid mechanization process and (2) large Arab markets for exports. Both of these factors were present in 2000-2008, and have most likely contributed to the diversification of production and exports.

Nonetheless, just as in the pre-war period, it does not seem that these favorable conditions led to an increase in the total factor productivity (TFP), which remained low. It is important to look at TFP since it is a proxy for technological change in a country (see Crafts, 1996, and Barro, 1999). Barro (1999) explains: “growth accounting provides a breakdown of observed economic growth into components associated with changes in factor inputs and a residual that reflects technological progress and other elements”. In Lebanon, TFP during 1964 – 1974 was around 1.5% (Gaspard, 2005). It decreased to -6.3% during the war (1980 – 1989), then increased back to 2.9% in the period 2000 – 2006 (Pipitone, 2009). These low rates in turn indicate the absence of a structural change process leading to sustained growth. It appears that just as in the 1960s and beginning 1970s, the low productivity in manufacturing, despite other favorable conditions, remains a main obstacle preventing Lebanon’s industry from undergoing a full-fledged process of industrialization.

6. Conclusion

To sum up, this paper has looked into the industrial exports of Lebanon using the product space framework, which tells a story that one does not usually expect to hear in the context of a small developing country such as Lebanon. Analysis of the product space for Lebanon suggested that between 2000 and 2008, a total of 40 highly sophisticated exports have emerged from a long jump. In a country that has not witnessed a structural change resulting from industrial policy, the research looked into the possible causes of this jump into the core part of the product space. The study used a mixed methodology, and combined qualitative and quantitative sources of data to generate its results.

The findings suggest that Lebanese exporters have been largely driven by demand as a source for their increased export activity. The fact that the local market capacity is small and saturated impels producers who are aspiring to expand and diversify their production to be outward looking. Industrialists have benefited from their experience, entrepreneurial skills, and connections with foreign markets to overcome demand uncertainties.

The study dismissed the productivity shock hypothesis because there were no clear indications that such shock has occurred. On the contrary, qualitative data showed that firms suffer from high costs of production and lack of adequate skills. Furthermore, a historical analysis showed evidence for the persistence of low productivity, which was the main reason for Lebanon to miss its opportunity at industrialization in the 1960s and 1970s.

Analysis of the product space suggests that Lebanon might be facing yet another chance at industrialization, which should not be missed. In this respect, industrial policy plays a crucial role in creating an industrial base that supports the generation of skills and productivity. Therefore, an overall country strategic orientation towards industrialization is needed in order for the country to be able to reap the benefits of the observed temporary booms in its industry. The fact that Lebanese industrialists have been able to diversify their exports using few capabilities shows that the sector does have potential for development with encouraging internal conditions.

The issues that this paper touches upon can only lead us to the conclusion that more research is much needed within this topic of study. A larger sample of firms will certainly provide more in-depth and representative information. In addition, the role of external networks of firms needs to be further looked into as well as the channels and types of technology transfer. Furthermore, more information at the firm level on the cost of intermediate inputs and value added per worker would provide more insight into the evolution of productivity in the Lebanese industrial sector.

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Figure 1: Sampling Process

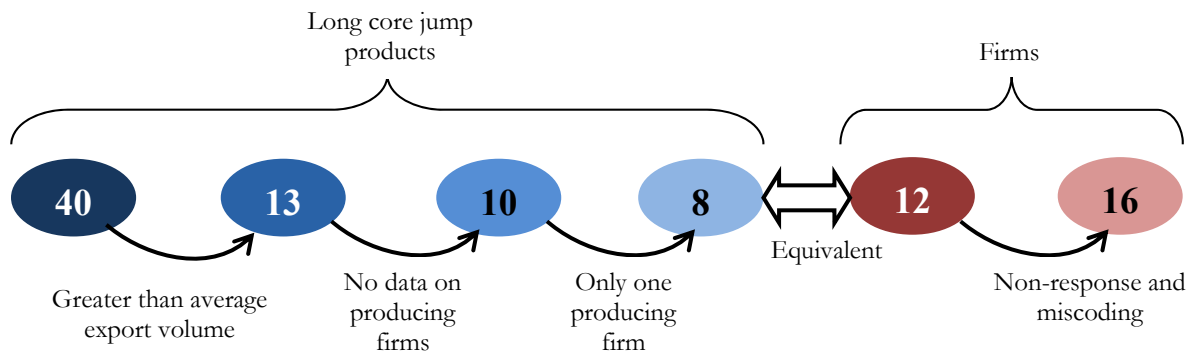
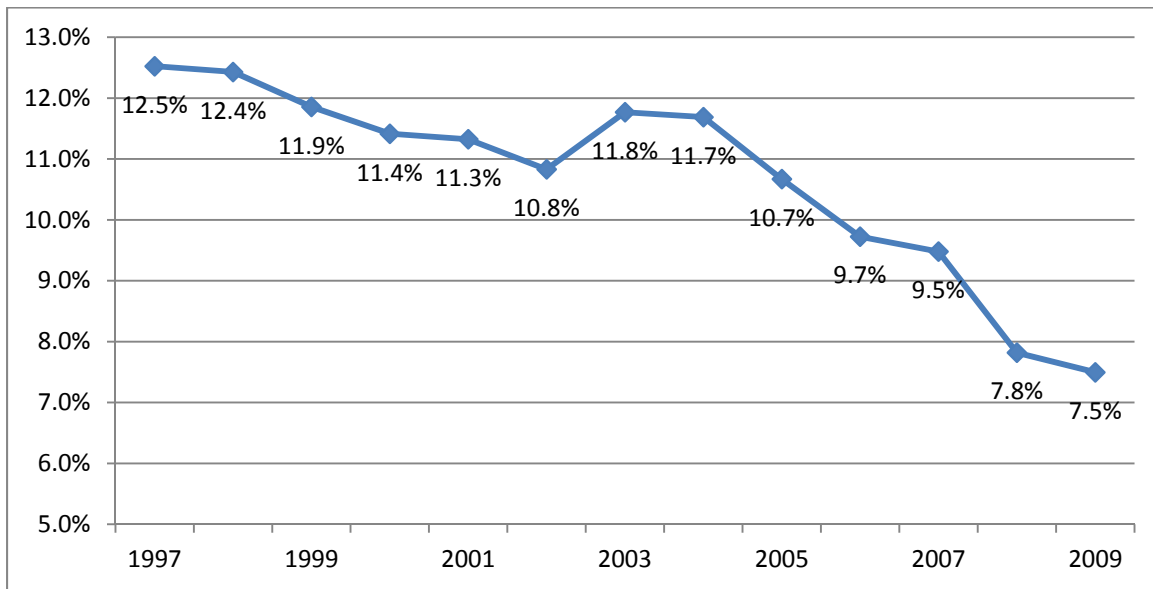
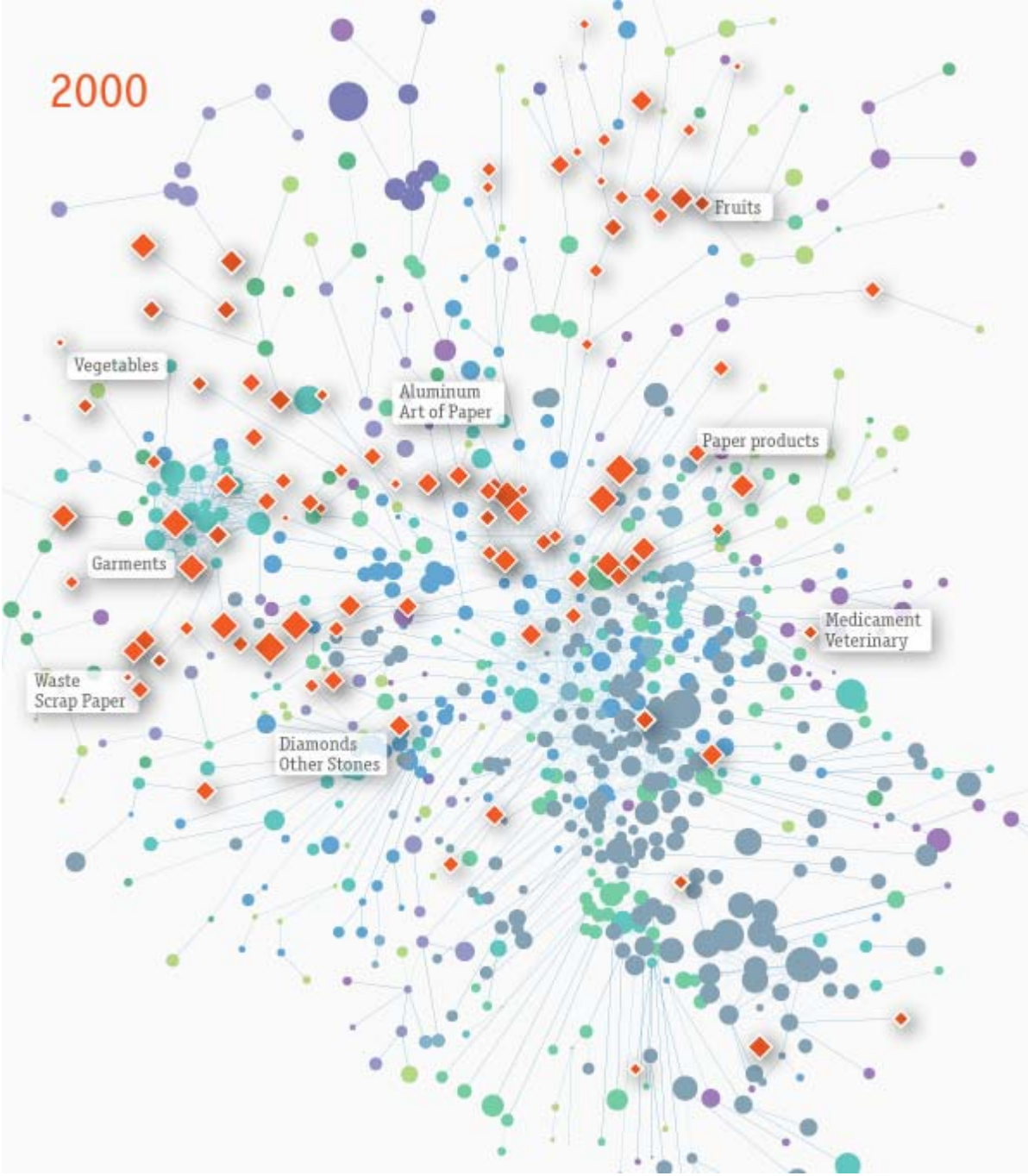


Figure 2: Ratio of Industrial Sector Value Added to National Value Added



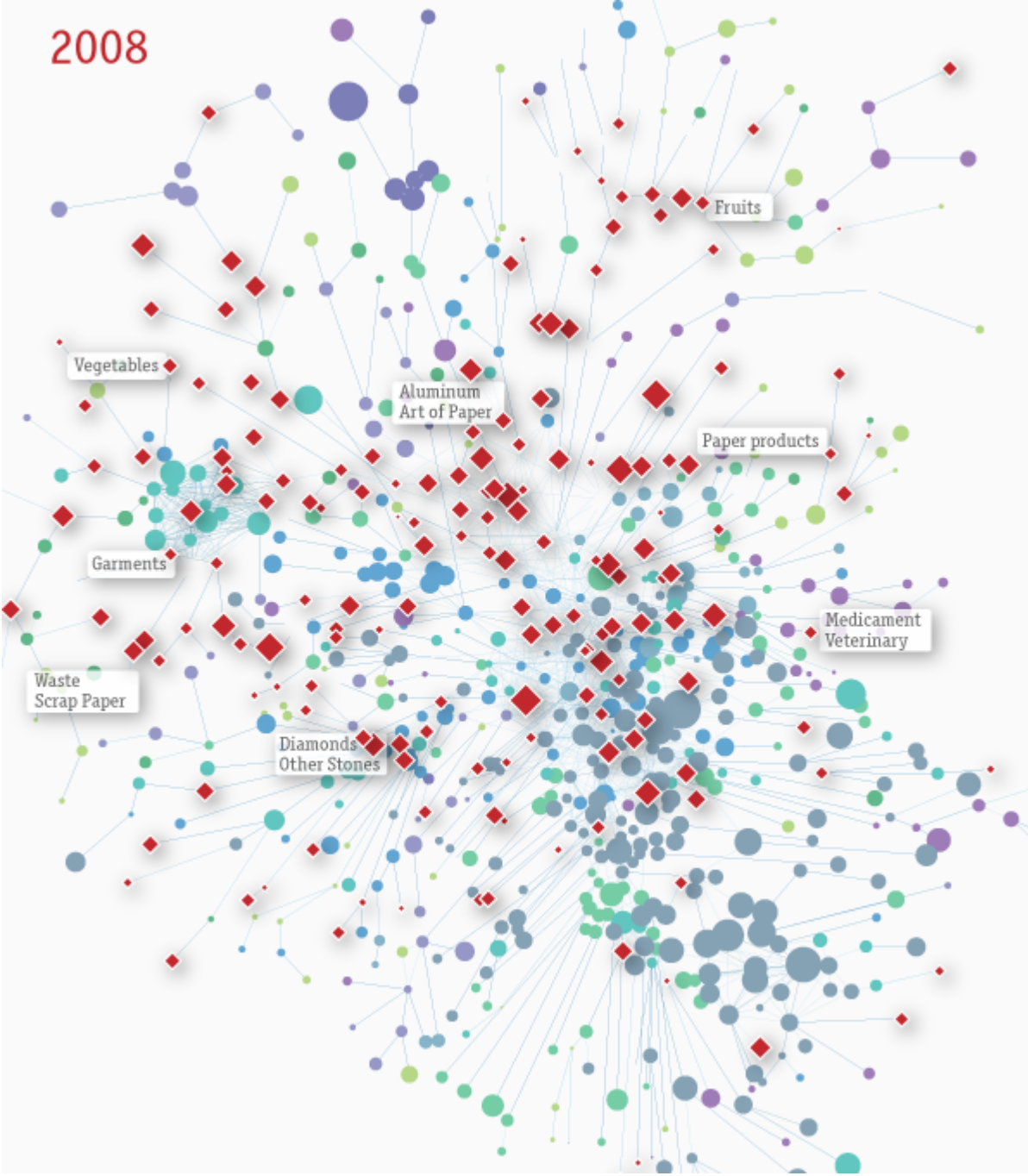
Source: Authors' calculations based on the Economic Accounts of Lebanon 1997-2007; 2009

Figure 3: Product Space of Lebanon's Exports in 2000



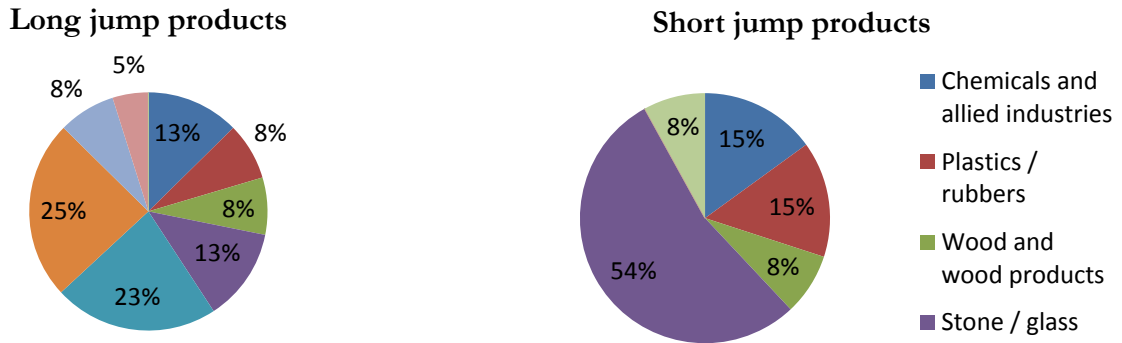
Source: Based on Hidalgo et al. (2007)

Figure 4: Product Space of Lebanon's Exports in 2008



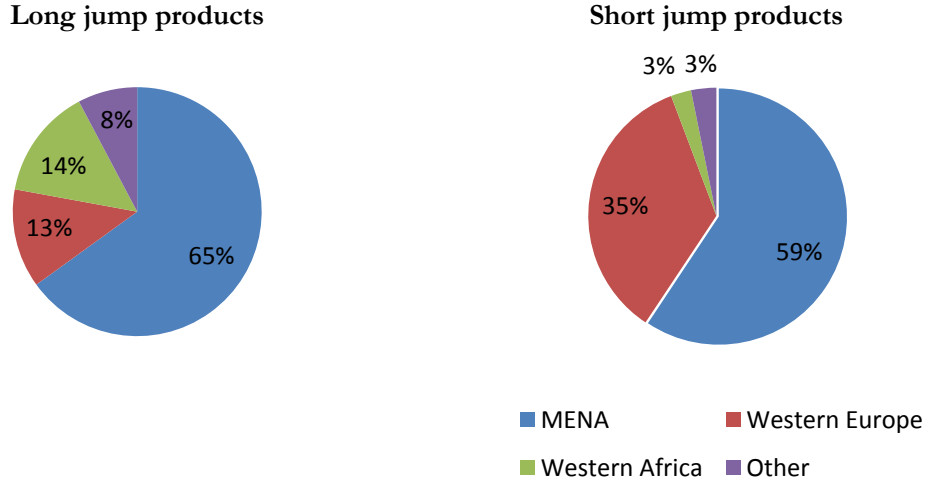
Source: Based on Hidalgo et al. (2007)

Figure 5: Long and Short Jump Products Classified by Categories



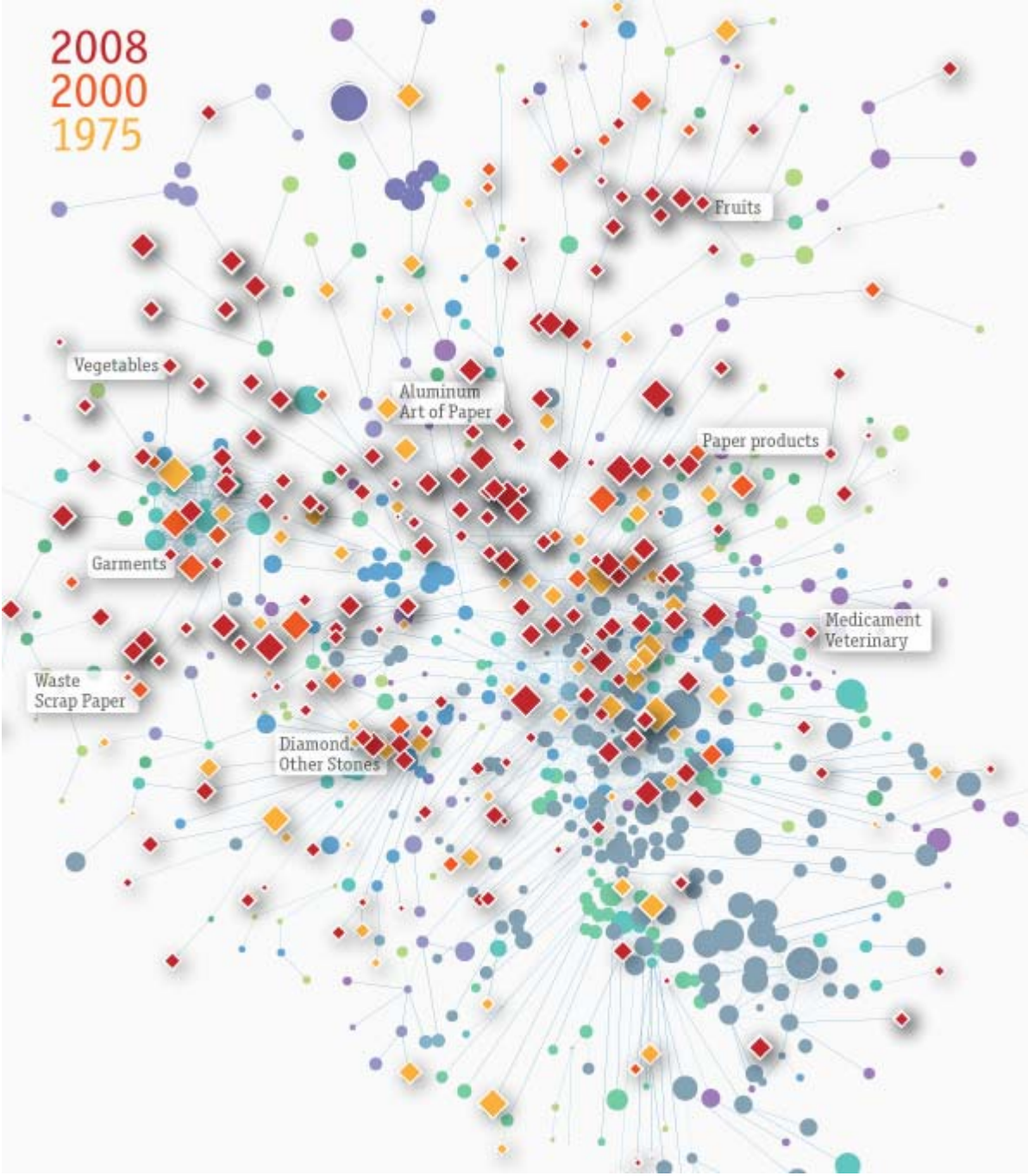
Source: Authors' calculations based on customs data

Figure 6: Regional Markets of Long and Short Jump Products between 2000 and 2008



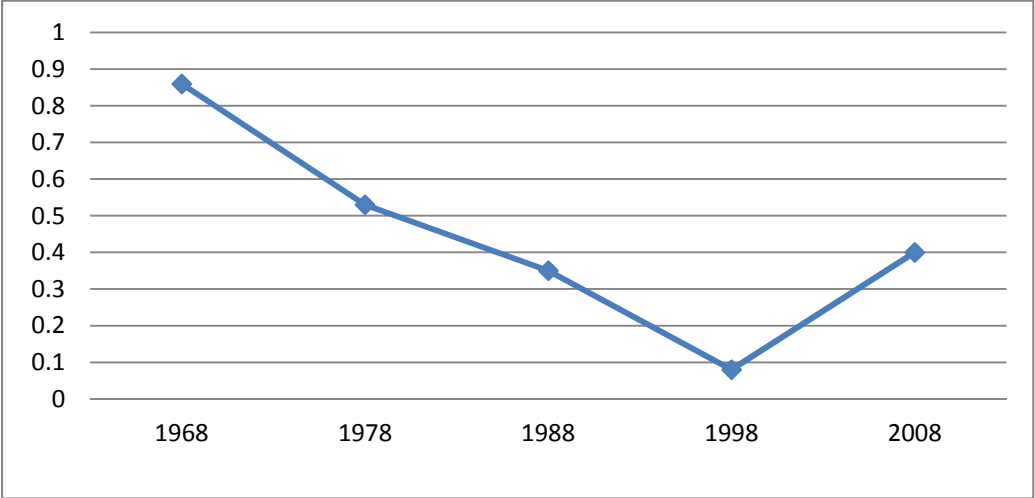
Source: Authors' calculations based on customs data

Figure 7: Product Space of Lebanon's Exports in 1975, 2000, and 2008



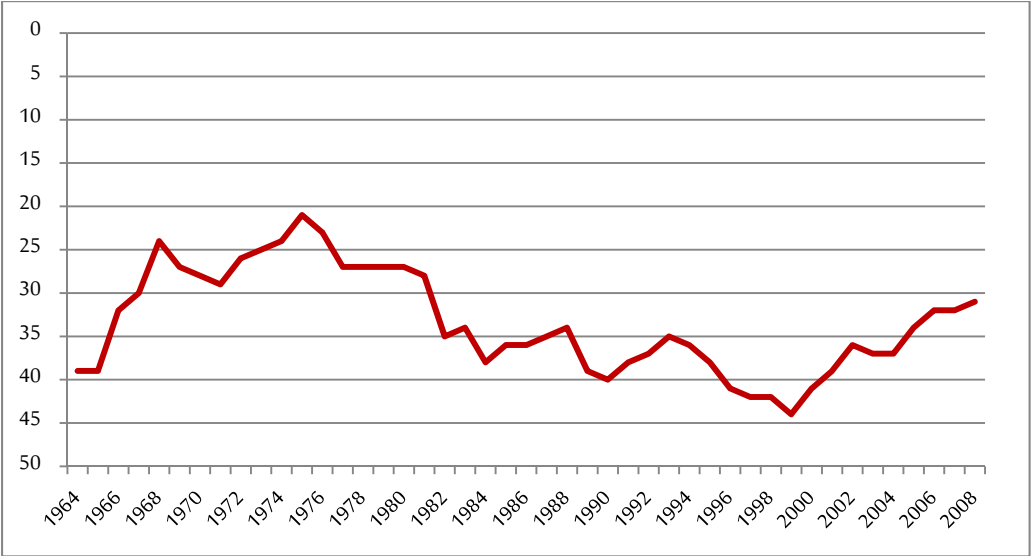
Source: Based on Hidalgo et al. (2007)

Figure 8: Economic Complexity Indicator for Lebanon, 1968-2008



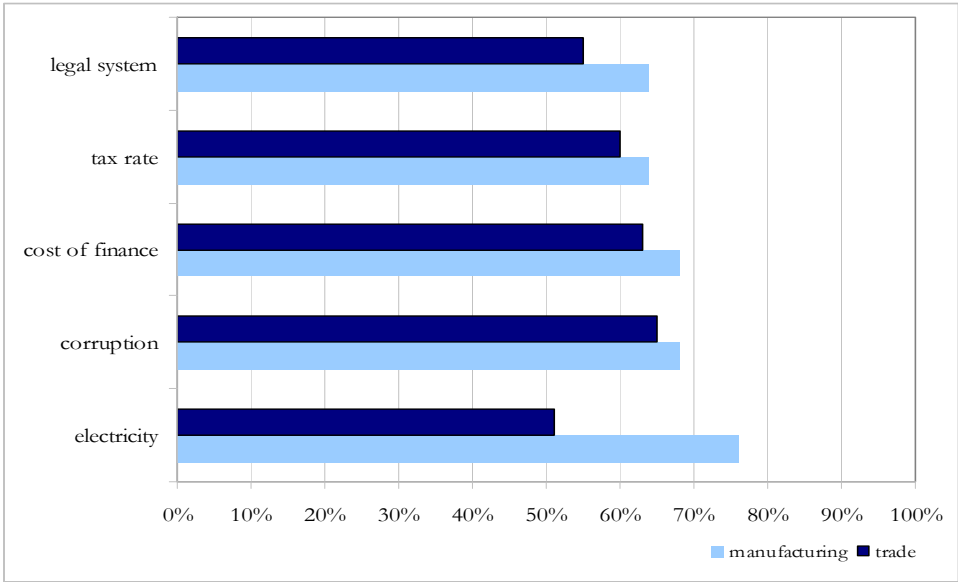
Source: Hausmann *et al.* (2011)

Figure 9: Lebanon’s ECI Rank over the Period 1964 to 2008



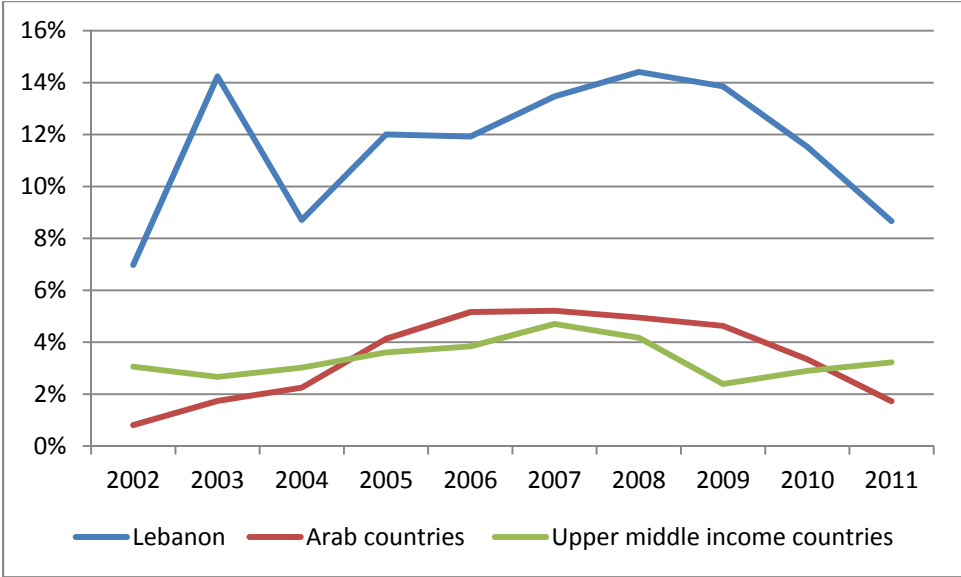
Source: Simoes and Hidalgo (2011)

Figure 10: Top Five Constraints Affecting Firms in Lebanon, by Sector, 2005



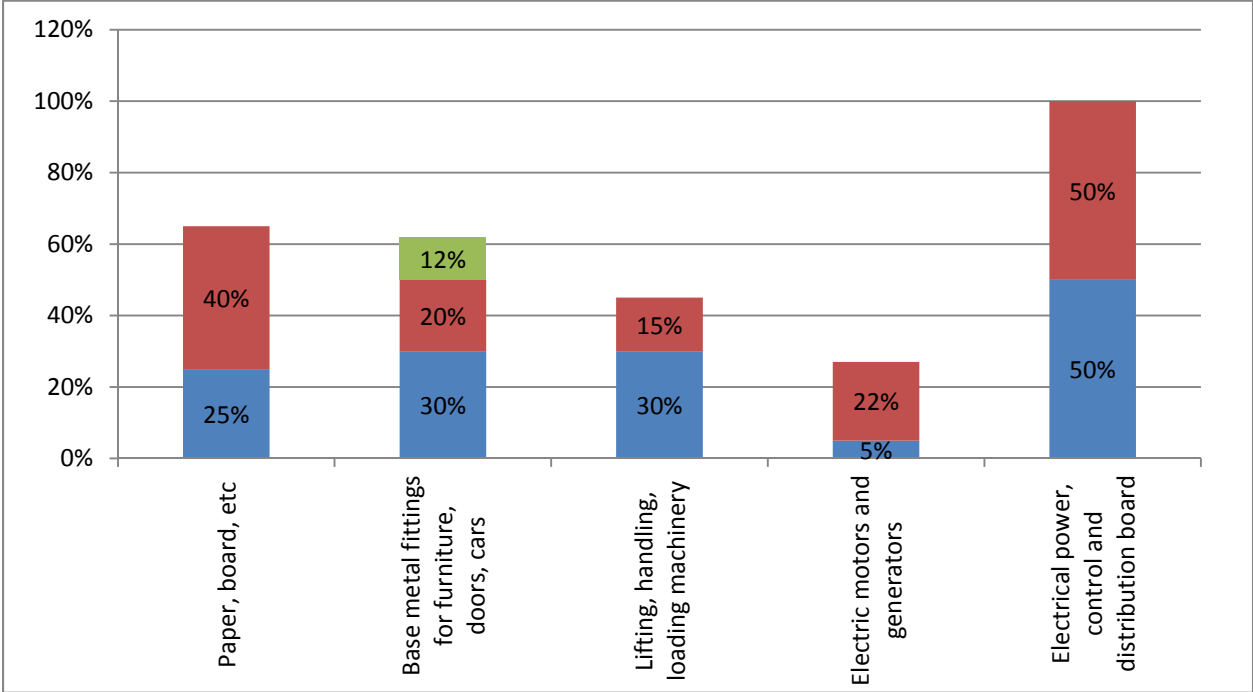
Source: World Bank Investment Climate Survey (2005)

Figure 11: FDI Net Inflows as a Percentage of GDP, 2002 – 2011



Source: World Development Indicators (WDI) database, 2014

Figure 12: Distribution of Firms by Domestic Market Share and Type of Product



Source: Authors' calculations based on collected primary data

Table 1: High Concentration Markets in the Lebanese Manufacturing Sector

Economic activity	CR1 (%)	CR3 (%)	Number Of firms	Market turnover (USD mil)
Soft drinks	45	69	10	172
Mineral waters	52	88	5	27
Hygienic paper and diapers	41	59	16	109
Pesticides and other agro-chemical products	59	64	5	95
Soap	57	77	19	89
Detergents and house cleaning products	49		2	61
Cement, lime and plaster	46	65	16	75
Articles of concrete, cement and plaster	40	57	88	225
Treatment and coating of metals; general mechanical engineering	48	100	3	249
Insulated wire and cable	67	85	5	61
Repair of electrical elevators	43	79	13	21

Source: "Competition in the Lebanese economy A Background Report for a Competition Law for Lebanon" (2003), compiled from data supplied by the VAT Department, Ministry of Finance.

Table 2: Export Sophistication (EXPY) and Its Growth Rate between 2000 and 2008

Country	EXPY 2000	EXPY 2008	Percentage change
Egypt	\$10,206	\$12,878	26.2%
Jordan	\$11,829	\$13,123	10.9%
Lebanon	\$10,206	\$13,924	36.4%
Morocco	\$8,463	\$11,140**	31.6%
Syria	\$13,877*	\$10,617**	-23.5%
Tunisia	\$10,086	\$13,783	36.6%
Max	\$25,248	\$26,229	
Min	\$1,996	\$3,407	
Mean	\$10,714	\$13,283	
Standard Deviation	\$4,375	\$4,759	
No. of Countries	133	128	

Note: *2001, **2007

Source: CID Trade Dataset (2008), UN Commodities Trade Dataset (2008) and Hausmann, Hwang and Rodrik (2007)

Table 3: Characteristics of the Newly Exported Products, in Number and Average PRODY Value, 2008

	Short jump products	Long jump products	Total products
Periphery	36	14	50
	\$9,987	\$15,075	
Core	13	40	53
	\$15,882	\$22,736	
Total products	49	54	103

Source: Authors' calculations based on customs data

Table 4: Export Value, Long Jump Products, Short Jump Products (\$ millions)

	Total	Long jump	Short jump
2000	714	7	5
2001	889	21	9
2002	1,045	23	13
2003	1,524	33	16
2004	1,747	52	26
2005	1,880	69	33
2006	2,283	80	44
2007	2,816	167	64
2008	3,478	184	91

Source: Authors' calculations based on customs data

Table 5: MENA Markets of Long and Short Jump Products between 2000 and 2008

Export Market	Share of MENA market of Long Jump products (%)	Share of MENA market of Short Jump products (%)
Saudi Arabia	23	9
Iraq	21	9
United Arab Emirates	11	9
Syria	9	28
Egypt	8	7
Kuwait	6	10
Jordan	5	11
Tunisia	3	0.41
Qatar	3	7
Algeria	3	0.01
Sudan	2	6
Yemen	2	2
Turkey	1	0.001
Other	2	2

Source: Authors' calculations based on customs data

Table 6: Bilateral Trade Agreements with Lebanon, 1999 - 2004

Country	Date ratified	Nature of Agreement
Chile	Feb-99	MFN treatment, technical cooperation
Cuba	Feb-99	MFN treatment, encourages trade, technical cooperation
Egypt	Feb-99	Free trade zone agreement
Azerbaijan	Mar-99	MFN treatment (custom duties, transit), economic cooperation (construction, tourism, transport, oil, etc.)
Iraq	May-00	Encourages economic, trade, technical cooperation, and the exchange of expertise
Yemen	May-00	Framework agreement (encourages trade)
China	Apr-01	MFN (custom duties, trade procedures)
Qatar	Apr-01	Framework agreement
Yemen	May-01	Encourages economic cooperation and the exchange of experience
Iraq	Jun-01	Free trade agreement
Indonesia	Aug-01	Cultural, technological, and economic cooperation
Pakistan	Aug-01	Framework agreement (encourages trade)
UAE	Aug-01	Free trade zone agreement (lists tariff exemptions and reductions, facilitate transport). Encourages trade and economic cooperation
Belarus	Dec-01	Framework agreement
Slovakia	Aug-02	Framework agreement (MFN in maritime, encourages economic and trade cooperation)
KSA	Jul-03	
Croatia	Jul-03	MFN, framework agreement
Bulgaria	Feb-04	Framework agreement
Vietnam	Nov-04	Framework Agreement

Source: Ministry of Economy and Trade.

Annex 1

Table 1.1: List of the Final Eight Long Jump Products Sample

HS code	Product Name	Number of exporters
3901	Polymers of ethylene, in primary forms	8
3919	Self-adhesive plates, sheets, film etc of plastic	5
4811	Paper, board, etc coated, impregnated, coloured, nes	9
8302	Base metal fittings nes for furniture, doors, cars/et	56
8428	Lifting, handling, loading machinery nes	10
8501	Electric motors and generators, except generating set	28
8537	Electrical power, etc, control and distribution board	15
8609	Cargo containers designed for carriage of goods	3

Annex 2

Table 2.1: PRODY of Long and Short Jump Products, 2008

	HS	Product name	Prody
Long jump products		Chemicals and allied industries	
	2834	Nitrites, nitrates	9,006
	2839	Silicates	8,446
	3207	Ceramic, glass pigments, opacifiers, colours, enamels	22,494
	3212	Pigments for paint, stamping foils, dyes, retail	17,008
		Plastics and rubbers	
	3901	Polymers of ethylene, in primary forms	18,620
	3912	Cellulose, chemical derivatives nes in primary forms	25,794
	3919	Self-adhesive plates, sheets, film etc of plastic	30,426
		Wood and wood products	
	4811	Paper, board, etc coated, impregnated, coloured, nes	37,521
	4816	Carbon, copy, duplicating, stencil, offset plate paper	23,594
	4906	Plans and drawings for architectural etc use	21,460
		Stone and glass	
	6913	Statuettes and other ornamental ceramic articles	14,674
	7005	Float glass, surface ground, polished glass in sheets	30,215
	7015	Glasses for spectacles, clocks, watches, unworked	20,343
		Metals	
	7301	Sheet piling, welded angles, sections of iron or steel	59,145
	7413	Stranded copper wire, cable, plaits, etc, uninsulated	16,675
	8113	Cermets and articles thereof, waste or scrap	35,437
	8202	Hand saws and blades for saws of all kinds	26,232
	8215	Spoons, forks, kitchen & table ware nes except knives	14,073
	8302	Base metal fittings nes for furniture, doors, cars/et	23,462
	8310	Non-illuminated base metal sign plates, letter, numbe	18,100
		Machinery / electrical	
	8407	Spark-ignition internal combustion engines	21,383
	8428	Lifting, handling, loading machinery nes	25,676
	8435	Presses, crushers etc for wine, fruit juice, beverage	23,786
	8440	Book-binding machinery including book sewing machines	29,464
	8465	Machine tools for wood, cork, bone, hard plastics, et	23,868
	8485	Machinery parts, without electric features, nes	29,958
	8501	Electric motors and generators, except generating set	22,000
8510	Shavers and hair clippers, electric	12,941	
8537	Electrical power, etc, control and distribution board	24,520	
	Transportation		
8609	Cargo containers designed for carriage of goods	11,605	
8710	Tanks and other armoured fighting vehicles	15,254	
8714	Parts and accessories of bicycles, motorcycles, etc	20,987	
	Miscellaneous		
9112	Clock cases, cases of a similar type	23,639	
	Average of Prody	22,964	
Short jump products		Chemicals and allied industries	
	3208	Polymer based paints, varnishes in non-aqueous medium	19,412
	3405	Polishes, creams, scouring pastes, etc	14,660
		Plastics and rubbers	
	3923	Containers, bobbins and packages, of plastics	14,221
	3925	Plastic articles for use in construction nes	17,705
		Wood and wood products	
	4821	Paper or paperboard labels including printed labels	10,145
		Textiles	
	5601	Textile wadding and articles, textile flock, dust, ne	16,045
		Stone /Glass	
	6809	Articles of plaster or plaster based compositions	17,999
	7215	Bar and rod of iron or non-alloy steel nes	12,275
	7306	Tube, pipe of iron or steel, except seamless > 406.4m	15,051
7325	Cast articles, of iron or steel nes	17,864	
7326	Articles of iron or steel nes	16,036	
7607	Aluminium foil of a thickness < 0.2mm	20,179	
	Average of Prody	15,966	

Source: Authors' calculations based on customs data

Table 2.2: Top Ten Goods in the Densest Part of the Product Space, 1975 and 2008

	Rank	SITC	Product name	If exported by Lebanese firms
1975	1	6940	Nails, screws, nuts, bolts etc. of iron, steel, copper	
	2	6991	Locksmiths wares, safes, strong rooms of base metal	x
	3	8124	Lighting fixtures and fittings and parts	x
	4	6794	Castings or iron or steel in the rough state	
	5	6911	Structures & parts of Struc.: Iron/Steel; Plates	x
	6	5224	Metallic oxides of zinc, chromium, manganese, iron	
	7	6573	Coated/impregnated textile fabrics & product nes.	
	8	6282	Transmission, conveyor/elevator belts of rubber	x
	9	6992	Chain and parts thereof, of iron or steel	
	10	7188	Engines & motors, N.E.S such as water turbines etc.	x
2008	1	6996	Miscellaneous articles of base metal 208.7	x
	2	6785	Tube & pipe fittings (joints, elbows) of iron/steel	
	3	6921	Reservoirs, tanks, vats, and similar containers	
	4	7449	Parts of the machinery	
	5	6210	Materials of rubber (e.g. Pastes, plates, sheets, etc.)	
	6	8935	Art. Of electric lighting of materials of Div.58 199.2	
	7	8939	Miscellaneous art. of materials of Div.58 198.1	
	8	5335	Colour preptns of a kind used in ceramin, enamello. 1975.2	x
	9	8932	Sanitary or toilet art. Of materials of Div.59 196.2	
	10	6632	Natural or artificial abrasive powder or grain	

Source: Hausmann and Klinger (2006) and authors' calculations based on customs data

Annex 3

Table 3.1: Spurts in Exports by Destination Countries, 2000 to 2008

Product HS	2002	2003			2004			2005			2006			2007			2008	
4811											Nigeria			Nigeria			Algeria	
8302					Saudi			Saudi	Italy		Italy	Morocco	Congo	Syria				
8428					Kuwait	Iraq			Saudi					Iraq			Saudi	
8501		Iraq							Nigeria	UAE				Pakistan			UAE	
8537											Nigeria						Algeria	
8609																	Spain	
9102					Kuwait	Saudi	UAE	Qatar		Bahrain	Qatar	Kuwait		UAE				
8465		UAE			Qatar				Nigeria		UAE	Saudi		Jordan			Nigeria	
8308									Qatar					Qatar				
8310		Saudi									Saudi			Qatar	UAE			
6914																	Turkey	Germany
8440		Iraq	Kuwait		Saudi					Kuwait							UAE	Kuwait
7107								Saudi	UAE	Qatar								
2839					Syria													
8441					Saudi									Saudi				
8202								Italy	Spain					Saudi				
7301	Nigeria											Iraq					Iraq	Sudan
6913		Jordan	Bahrain	France	Bahrain			Qatar	UAE		Kuwait			Bahrain				
3919		Syria									Iraq			Syria	Saudi		Iraq	
7801									Ireland					Tunisia	Jordan			
4816		Iraq			Syria			Jordan	Iraq					Saudi				
3212		Syria												Saudi			Syria	
3912									Nigeria		Nigeria							
3901		Gabon							Saudi		Gabon	Greece		Saudi	Greece	Iraq	Syria	
3207					Egypt			UK	Spain		US			Spain	Egypt			

Source: Authors' calculations based on customs data.