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Lebanon —  
Trade and  
Competition Policies  
for Growth

A General  
Equilibrium Analysis

by  
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# **Lebanon – Trade and Competition Policies for Growth: A General Equilibrium Analysis**

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**May 2006**

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# Lebanon – Trade and Competition Policies for Growth: A General Equilibrium Analysis

Sébastien Dessus and Joey Ghaleb

## ABSTRACT

Using recent data on concentration indexes, we estimate that rents accruing from monopolistic positions represent more than 16 percent of GDP in Lebanon. In turn, using an applied computable general equilibrium model, we compare the long term impact of raising domestic competition with that of reducing import tariffs. Simulation results suggest that Lebanon would largely benefit from the reduction of anti-competitive practices. The impact would be particularly pronounced on investment opportunities, but also very favorable to wage earners. By way of comparison, reducing tariffs would be structurally less effective in terms of raising investment opportunities and real wages, which, in the long run, would inevitably affect economic growth. Furthermore, the supply response would be insufficient to offset the direct impact of lower tariffs on higher imports and lower fiscal revenues. As a result, Lebanon would need to undergo some nominal adjustment and implement offsetting fiscal measures in order to contain growing pressures on its external and public deficits.

## ملخص

باستخدام البيانات والمعطيات الحديثة العهد عن المؤشرات التي تقيس مدى التركيز، نتوصل إلى تقديرات تفيد بأن الربح المتحقق من المراكز الاحتكارية يفوق نسبة 16 في المائة من إجمالي الناتج المحلي في لبنان. ومن ثم نقوم – باستخدام نموذج تطبيقي من نماذج التوازن العام القابلة للحساب – بمقارنة الأثر الطويل الأمد الذي ينجم عن زيادة المنافسة على الصعيد المحلي مع الأثر الذي ينجم عن تخفيض الرسوم الجمركية على الواردات. وتوحي النتائج التي أسفرت عنها عملية المحاكاة هذه بأن لبنان يستفيد كثيراً من تخفيض الممارسات المناوئة للمنافسة. علماً بأن الأثر يكون واضحاً بصورة خاصة على فرص الاستثمار، ولكنه مؤات جداً أيضاً للعاملين بأجر. وعن طريق المقارنة، فإن من شأن تخفيض الرسوم الجمركية أن يكون من الوجهة البنوية أقل فعالية من حيث زيادة كل من فرص الاستثمار والأجور الحقيقية، وهو ما لا بد على الأمد الطويل من أن يؤثر في معدلات نمو الاقتصاد. كما أن استجابة جانب العرض ستكون غير كافية لموازنة والتعويض عن الأثر المباشر الناجم عن تخفيض الرسوم الجمركية والمتمثل في زيادة الواردات وتخفيض إيرادات المالية العامة. ونتيجة لذلك، يحتاج لبنان إلى الدخول في عملية تكيف وإصلاح رمزية وتنفيذ إجراءات تعويضية مالية تستهدف احتواء الضغوط المتزايدة على العجزات المالية الخارجية والعامة.

## RÉSUMÉ

Sur la base de données récentes sur les indices de concentration, nous estimons que les rentes dérivées des situations de monopoles représentent plus de 16 pour cent du PIB du Liban. Ensuite, en se servant d'un modèle d'équilibre général calculable appliqué, nous comparons l'impact à long terme d'une concurrence interne à la hausse avec celui d'une réduction des tarifs à l'importation. Les résultats de la simulation suggèrent que le Liban tirerait largement avantage d'une réduction des pratiques anticoncurrentielles. L'impact

serait particulièrement prononcé sur les opportunités d'investissement, mais aussi très favorable pour les salariés. A titre de comparaison, la réduction des tarifs serait structurellement moins effective pour relever le niveau des opportunités d'investissement et des salaires réels, ce qui dans le long terme affecterait inévitablement la croissance économique. En outre, la réponse de l'offre serait insuffisante pour contrebalancer l'impact direct de tarifs plus bas sur des importations plus importantes et de moindres recettes budgétaires. En conséquence, le Liban devrait adopter certains ajustements nominaux et des mesures budgétaires compensatoires pour contenir les pressions croissantes sur ses déficits extérieurs et publics.



## I. Introduction

From the time when the civil war drew to a close, Lebanon has been actively working on repositioning itself as a trade hub linking the Arab East with the European West by signing an Association agreement (EuroMed) with the European Union (EU), implementing the tariff dismantlement with Arab countries (Great Arab Free Trade Area, GAFTA), and keenly pursuing World Trade Organization (WTO) membership. Domestically, a number of fiscal measures were also introduced in this regard, including the unilateral reduction in tariff rates between 2000 and 2003 (subsequently replaced with value added and excise taxes). Concurrently, however, cumulated fiscal deficits related to post war reconstruction needs (infrastructure, institutions, political stability) and poor governance have resulted in an unsustainable public debt dynamics. The gross public debt to GDP ratio reached 164 percent in 2004 and Lebanon has no choice but to drastically and immediately cut its structural fiscal deficits (through higher tax revenue notably) to avoid financial disruption. Such an imperative could hence a priori argue against the pursuit of trade liberalization through further tariff cuts.

Growth can obviously help Lebanon to address its fiscal imbalances. While contractionary fiscal policies could in the short run harm economic growth, some structural reforms might mitigate this negative impact. Beyond tariff reduction, there is potentially a large scope to liberalize the domestic market, through the abolition of anti-competitive regulations and practices. Indeed, a recent study conducted by Consultation and Research Institute (CRI) for the Ministry of Economy and Trade (MOET) in 2003, numerically assessed what was perceived for decades by observers of the Lebanese economy, namely that many sectors are shielded from competition.<sup>1</sup> According to the study, about half of Lebanon's domestic markets are considered oligopolistic to monopolistic and a third of them have a dominant firm with market share above 40 percent. The reasons for such high concentration indexes (hence little internal competition) are of different natures, but always relate in one way or another to the presence of barriers to entry and exit. Some of them are natural, in the presence of economies of scale or fixed costs for instance. Others are artificial, and stem from rules, regulations and norms that practically restrict entry into business. The study lists in this regard outdated commercial laws, long delays in commercial disputes settlements, business-unfriendly administrative regulations, corruption, and the existence of exclusive agencies as important artificial barriers to entry. The absence of anti-trust regulations, high startup costs and capital requirements and the existence of public monopolies in utilities, transports and communication sectors can be added to this list.

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<sup>1</sup> This hypothesis was tested notably when the government unilaterally reduced import taxes in December 2000. The major tariff reduction proved, through the price rigidities observed in the market, the market power enjoyed by an import cartel and a domestic oligopolistic structure. The imperfection in the market structure was tested once again in 2002 following the introduction of the Value Added Tax (VAT). The prices on goods, mainly non-durable, did not increase as retailers "absorbed" the 10 percent VAT, a fact which reflects the sizable mark up previously enjoyed prior to the introduction of the VAT.

In this paper, we combine the findings of this study with the most recent and detailed national accounts published in Lebanon. Such a combination of information suggests that the level of rents accruing from monopolistic positions exceed 16 percent of GDP. By way of comparison, import taxes (excluding excise taxes on petroleum, tobacco and cars, all imported) generated about 2 percent of GDP in 2004. In turn, using a multi-sectoral steady-state computable general equilibrium (CGE) model, we simulate the implementation of several policies, with a view to answering the following questions: (i) could Lebanon afford dismantling further tariffs in light of its currently low tradable productive base and high public financing needs? (ii) what would, on the other hand, be the impact of greater domestic competition on economic activity, trade, welfare and the budget?

Simulation results suggest that Lebanon would largely benefit from a liberalization of its domestic markets, through the reduction of anti-competitive practices. The impact would be particularly pronounced on investment opportunities (as investment costs become cheaper), but also very favorable to wage earners. Domestic liberalization would allow reduction in the cost of several key domestic industries - to the benefit of others, and would hence render the economy overall more productive through allocation gains. Part of the rents that currently accrue to foreign companies would also be eliminated, hence relaxing the balance of payments constraint. By way of comparison, reducing tariffs would be structurally less effective in terms of raising investment opportunities and real wages, which, in the long run, would inevitably affect capital formation and labor market participation - hence economic growth. Furthermore, the supply response would be insufficient to offset the direct impact of lower tariffs on higher imports and lower fiscal revenues. As a result, Lebanon would need to (i) undergo some nominal adjustment (through the exchange rate or factors prices) and (ii) implement offsetting fiscal measures in order to contain growing pressures on its external and public deficits.

This paper finds its place in the literature that looks at the interface between trade and competition policy reforms<sup>2</sup>. Over the recent years, a number of theoretical and empirical contributions indeed permitted to better assess the nature of the relationship between these two policies. Takahashi (2005) theoretically demonstrates that competition policies can be an effective substitute to trade policies to raise welfare. Keen and Ligthart (2005) theoretically suggest that tariff reduction (and its replacement with consumption taxes) can in some cases be welfare reducing with imperfect competition. At the empirical level, Hoekman, Kee and Olarreaga (2001), suggest that tariff reduction can be more effective than competition (entry regulation) policies to reduce mark-ups and market powers in small developing countries. More generally, Hoekman and Mavroidis (2002) make the case that traditional liberalization commitments using existing WTO

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<sup>2</sup> The term competition policy is interpreted in different ways in different countries and different contexts. At its broadest, it can be defined to include all policies that affect competition, or contestability (potential competition) in a market, including trade and regulatory policies as well as competition or antitrust law. More narrowly, it refers to the set of laws and policies adopted by a country to prevent or remedy restrictive business practices by enterprises, whether private or public. Restrictive business practices are those practices that reduce the degree of contestability of a market, such as cartels or other forms of horizontal or vertical market restraints, abuse of dominant market position, monopolization, price discrimination, and the like.

fora will be the most effective means of lowering prices and increasing access to an expanded variety of goods and services in developing countries.

In Middle East and North Africa (MENA) countries, little attention was nonetheless paid to the relationship between trade and competition policies. Recent research on trade liberalization in MENA mostly focused on the direct impact of the Association Agreement (i.e., simple tariff dismantlement for industrial products) with the EU on the signatory countries, moving on at a later stage to side issues of deep integration policies, non-tariff barriers or red tape.<sup>3</sup> To our knowledge, competition in the MENA has not been thoroughly examined under the context of trade liberalization in the recent years. Lahouel (2000) was among the few that addressed competition issues in the Middle East region notably the North African countries. But his work was not followed up by quantitative analysis based on empirical evidence of concentration in domestic markets.<sup>4</sup>

In Lebanon, the picture is even starker. So far, the lack of reliable statistics constituted a main obstacle facing researchers to conduct empirical analyses of trade or domestic competition-based liberalization policies. The very few quantitative studies conducted (Martin, 1996, Ghaleb, 1998) concluded that Lebanon would stand to benefit from an Association Agreement with EU, if able to push simultaneously for greater integration with the Arab world (to reduce trade diversion) and introduce alternative tax instruments. These studies did not consider the impact of (the supposedly high degree of) imperfect competition in Lebanon.

Hence, based on newly available data, this paper is to our knowledge the first one attempting to numerically measure the respective impacts of trade and competition-policy based liberalization of Lebanese markets within an applied general equilibrium framework. The paper is structured as follows: Section II describes Lebanon's trade regime and domestic competition situation. Section III introduces the computable general model which is used to run simulations in Section IV. Section V concludes.

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<sup>3</sup> Hoekman and Konan (1998), for instance, show that Egypt stands to benefit more if they adopt a deep integration strategy than the existing "shallow preferential trade agreement with the EU." In a similar vein, Dessus and Suwa (2000) for Tunisia and Egypt suggest that welfare gains from existing EU agreements would be modest unless accompanied with important internal reforms. The authors notably conclude that Euro-Med agreements can foster trade integration if accompanied by internal reforms aimed at de-segmenting domestic markets, reducing rent-seeking behaviors and improving fiscal systems. Zarrouk (2003) surveys non-tariff trade barriers and other form of barriers facing intra-Arab trade and investment in 8 Arab countries and estimates these barriers to be on average 11 percent of the value of imports. In the case of Lebanon, about 50 percent of the respondents in Zarrouk's survey claimed to pay "additional payments" consisting of red tape and in some instances bribes ranging between 2 percent and 17 percent of the total value of imports.

<sup>4</sup> Chatti (2003) assesses quantitatively the impact for Tunisia of its Association Agreement with the EU under oligopolistic market structures. But the nature and extent of imperfect competition is arbitrarily imposed, as it does not rely on any empirical evidence.

## II. Trade and Competition Environment in Lebanon

Lebanon is a signatory to at least 30 bilateral trade and economic agreements, mostly with European and Arab countries. Most of these agreements provide Most Favored Nation (MFN) treatment for trade in goods with certain exceptions. With regard to services, some of the bilateral agreements include general provisions calling for improving cooperation with regard to trade in services. Lebanon is also a signatory to at least 120 sector-specific bilateral agreements, including tourism, culture, post, telecommunications, and transport. National treatment and MFN treatment for services are accorded in many of these agreements with certain exceptions.<sup>5</sup> Lebanon is not a member of any customs union but has signed bilateral free-trade area agreements with Iraq, Egypt, Kuwait, Syria, Jordan and the United Arab Emirates.

At the regional level, Lebanon is a signatory to the “Taysir” agreement, which foresees the establishment of the Greater Arab Free Trade Area (GAFTA). GAFTA, now grouping 17 Arab countries, just abolished tariffs among members in 2005. Lebanon also signed in 2002 an Association Agreement with the EU, which stipulates the progressive abolition (to be completed in 2015) of tariffs on imported European manufactured goods. The cooperation agreement signed with the EC already grants Lebanese industrial exports duty-free access to EU markets, though under strict rules of origin.<sup>6</sup> Lebanon is not a member of the WTO, but was granted the status of observer in 1999. It started negotiations for accession in 2001.

Thus, from an effective trade protection perspective, Lebanon is among the most open countries in the MENA region. Nashashibi (2002) placed Lebanon only after Jordan in having the least restrictive regime in MENA, ahead of all North African countries that joined the WTO and signed the Association Agreement years before Lebanon. The comparison was done for the 1999-2000 time period, a year prior to the abolition of customs duties and the reduction in tariff rates in late 2000. Nowadays, more than 84 per cent of customs tariff lines have duties equal to 0 or 5 percent, and tariff peaks do not exceed 75 percent. Lebanon does not grant any preferences under the Generalized System of Preferences (GSP), but as mentioned above, tariff preferences are provided following bilateral free trade areas, GAFTA, and to specific sectors. Lebanon does not maintain any tariff quota system, but on potato seeds. Lebanon prohibits the importation of around 326 goods for various reasons (i.e., health, safety, and environment), regulates the importation of drugs and requires import licensing for around 79 tariff groups. Overall, we estimate that import tariffs add on average 5 percent to the world price of imports, excluding excise taxes and VAT. This calculation does not however account for reportedly

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<sup>5</sup> Lebanon also signed over 17 agreements on avoidance of double taxation and the prevention of fiscal evasion and about 30 bilateral agreements on Investments Promotion and Protection (IPPA). Most IPPA contains MFN clauses as well as a national treatment clause. Exceptions from MFN and national treatment include any existing or future customs, economic or free trade union, or regional economic organization. Lebanon does not grant national treatment to foreigners regarding the acquisition of real estate rights. Lebanon grants protection to established investments and provides MFN or national treatment (whichever is better) to over 20 countries.

<sup>6</sup> Lebanon is expected to join soon the Agadir process, a free trade area comprising early signatories of Association agreement, Morocco, Tunisia, Egypt and Jordan. Beyond facilitating trade between these countries, this agreement could facilitate Lebanon’s access to the EU markets. Indeed, the EU recognizes the cumulation of rules of origin to countries members of this process.

substantial bribes collected at customs on international transactions (Zarrouk, 2003). Exports are not, but a few exceptions, subject to taxes, licenses or quotas. Exporters must simply comply with registration requirements. Producer subsidies, in the form of soft loans to SMEs and guaranteed prices for wheat and sugar beat amount to less than 1 percent of GDP every year.

Assessing the competition environment in Lebanon is a much more difficult undertaking, as, unlike trade, it is to a large extent driven by the absence of adequate laws and regulation. Two legislative elements, though, suggest that domestic competition remains limited in Lebanon: (i) there is no competition law in Lebanon; (ii) in contrast, the law of exclusive agencies has been granting for decades now to some privileged importers the exclusivity to supply various international trademarks on the Lebanese market. Furthermore, regulatory barriers to entry and exit are high in comparison with international standards: time and costs to open and close a business not only exceed OECD average, but also MENA average (World Bank 2005).

**Table 1. Time and Costs of Starting and Closing a Business in Lebanon**

<b>Indicator</b>	<b>Lebanon</b>	<b>MENA</b>	<b>OECD</b>
Time to start a business (days)	46	45	19
Cost to start a business (% of income per capita)	110.6	64.2	6.5
Time to close a business (years)	4.0	3.8	1.5
Cost to close a business (% of estate)	22.0	13.4	7.6

*Source: World Bank (2005)*

This perception of poor domestic competition stemming from inadequate legislative and regulatory framework is largely confirmed by CRI (2003), which reports concentration indexes by sectors.<sup>7</sup> About 322 homogeneous markets covering 7,402 establishments are considered in the CRI study. In agriculture, 5 percent of all farmers exploit 47 percent of the total farm area whereas, on the other end of the distribution, half of farmers exploit only about 8 percent of the total arable area. As far as non-agricultural goods and services markets are concerned (excluding social sectors and public administration), 36 percent of them have a dominant firm with a sales market share of at least 40 percent.

The table below reports sectors' average mark-ups and tariffs that we estimate based on CRI and customs data. The methodology used to estimate mark-ups (the ability for firms with market power to raise sales prices above marginal costs) is described in the next section. It is to note that mark-ups apply to both domestic and imported products, while tariffs only apply to the latter category, which explains to a great extent why rents

<sup>7</sup> The immediate measure of market or monopoly power is market concentration. Market concentration is a structural characteristic that usually refers to the sales share of the largest one, three or five, or any small number of sellers in a specific product market. Concentration ratios have also been used for the largest four, five, and even eight sellers in the US. These ratios are denoted, respectively, by CR4, CR5 and CR8. Sales are the most widely used variable in concentration measures, although this can be some other relevant magnitude, such as capital, employment or output. It is also the only feasible one in the case of Lebanon, following the availability of VAT data. A measure that is similar to CR is the Herfindahl-Hirschman Index ( $HHI = \sum Si^2$ , where  $Si$  is the market share of the  $i$ th seller). This measure has the advantage of combining information on both the number of sellers and their total distribution.

stemming from imperfect competition far exceed tariffs at as a percentage of GDP (2.1 against 16.6 percent, see Annex). On the other hand, non tariff trade barriers on imported goods and services are not considered in this analysis, and could somewhat re-balance the magnitude of these two types of distortions. Besides, excise and value added taxes, while formally not considered as import taxes, are de facto much higher on imported goods and services than on domestic ones.<sup>8</sup>

Such a computation suggests that energy, water, transport and communication sectors are among the most concentrated sectors (firms in these sectors are to a large extent State-owned, benefiting from monopolistic or oligopolistic positions), with estimated sales prices more than 20 percent above their marginal costs (under the assumption of profit maximization, see next section). At the other extreme, animal products, textile and furniture are among the most de-concentrated ones. By way of comparison, tariff protection appears to be more balanced across sectors, with tariffs being the highest in furniture, textile and processed food sectors.

**Table 2. Estimated Mark-ups and Tariffs by Sectors (%)**

	Average Mark-up	Average Tariff
Agriculture	8.7	10.4
Livestock and animal products	0.1	1.5
Energy and water	23.5	1.0
Processed food products	11.9	10.8
Textile and leather	1.4	10.8
Non metallic products	15.7	6.9
Metallic products	5.7	4.3
Wood and chemical products	8.8	4.7
Furniture	1.0	26.1
Other manufactured products	3.5	4.3
Construction	13.0	n.a.
Transport and telecommunications	25.4	n.a.
Private services	13.8	n.a.
Trade	13.3	n.a.
Public administration	n.a.	n.a.
Average	10.4	8.1
Weighted average	9.9	5.4

Source: Authors calculations based on CRI (2003). N.a.: not available or irrelevant in the case of the public administration. Weighted averages are computed with sectoral supplies for mark-ups and imports for tariffs.

### III. The Computable General Equilibrium (CGE) Model

The CGE model developed for this study is a typical neoclassical model with endogenous prices, market clearing, and imperfect substitution between domestic and

<sup>8</sup> In 2003, excise and value added taxes collected on imports amounted to LBP 2,092 billion (7.0 percent of GDP). By way of comparison, similar taxes collected on domestic goods amounted to LBP 439 billion (1.5 percent of GDP). Excise taxes are almost entirely collected on imported products (cars, petroleum, and tobacco) and non tradable sectors such as Education, Health and the public sector benefit from VAT exemption. Furthermore, tax collection is probably lower on domestic goods than on imports, as many SMEs remain below the threshold of taxation.

foreign goods, allowing for endogenous capital accumulation and labor force participation. CGE modeling has become a standard tool for integrated assessment of trade and fiscal policies especially for small economies, MENA countries notably.<sup>9</sup> This type of modeling allows combining detailed databases with a sound micro-based theoretical framework capturing the interdependence and inter-linkages of markets. With such characteristics, CGE models are useful tools to assess the long term impact of structural reforms. The underlying assumption of market clearance and monetary neutrality renders, on the contrary, CGE models improper to address short-term impacts of macroeconomic policies.

The model is calibrated with a Social Accounting Matrix (SAM) built for that purpose and based on the national accounts of 1997. The SAM and the model comprise 15 of activity (similar to the breakdown in the table above), one representative Lebanese household and one trading partner, the World.<sup>10</sup> National accounts for the period 1998-2002 were published subsequently, but conserved the same input-output structure. As this paper is interested in long term structural effects, it is hence believed that updating the SAM to account for macro-economic changes would not significantly affect the result. On the other hand, we account for the introduction of the VAT and excise taxes after 1997 and the change in the tariff structure by simulating such policies with the model and recalibrating it accordingly. The SAM reported in Annex incorporates these structural changes.

As in any CGE prices are endogenous on each market (goods and factors) and equalize supplies (imports; Lebanese production for the domestic market; factors supply) and demands (final demand from households, the Government, investors and the rest of the world; intermediate demand from producers; factors demand), so as to obtain the equilibrium. The equilibrium is general in the sense that it concerns all the markets simultaneously.

Supply is modeled using nested constant elasticity of substitution (CES) functions, which describe the substitution and complement relations among the various inputs. Producers are cost-minimizers and constant return to scale is assumed. Output results from two composite goods: intermediate consumption and value added, combined in fixed proportions. The intermediate aggregate is obtained by combining all products in fixed proportions (Leontieff structure). The value-added is then decomposed in two substitutable parts: labor and capital, which are both fully employed. The former is assumed to be perfectly mobile across sectors, while the second is assumed to be (almost entirely) sector-specific<sup>11</sup>, to be consistent with the view that existing barriers to entry limit the reallocation of capital across sectors. This assumption is then partially relaxed with increased domestic competition.

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<sup>9</sup> See for instance Rutherford, Ruström and Tarr (1997), for Morocco, or Dessus and Suwa (2000), for Egypt and Tunisia. The latter also test the relevance of the small country assumption, in the context of regional integration.

<sup>10</sup> Hence this modeling does not allow addressing trade diversion issues, which are beyond the scope of this paper and have already been treated elsewhere (Martin, 1996). Not accounting from potential trade diversion effects, the potential welfare gain stemming from trade liberalization could therefore be overestimated in this paper.

<sup>11</sup> The elasticity of capital supply with respect to sectoral remuneration is inferior to unity.

Income from labor and capital accrue to the representative household. This income is allocated to consumption and savings using the Extended Linear Expenditure System (ELES) specification. Household demand is derived from maximizing the utility function, subject to the constraints of available income and consumer price vector. Household utility is a positive function of consumption of the various products and savings. Income elasticities are differentiated by product. The calibration of the model determines a per capita subsistence minimum for each product, which will be consumed whatever the price and the income of the households, while the remaining demand is derived through an optimization process. The subsistence share in the consumption of basic goods is higher than in the consumption of luxury goods. With lower disposable income, the households' savings rate declines to protect subsistence consumption. Government and investment demands are disaggregated in sectoral demands once their total value is determined according to fixed coefficient functions.

The model assumes imperfect substitution among goods originating from different geographical areas. Import demand results from a CES aggregation function of domestic and imported goods. Export supply is symmetrically modeled as a constant elasticity of transformation (CET) function.<sup>12</sup> Producers decide to allocate their output to domestic or foreign markets responding to relative prices.

Several macro-economic constraints are introduced in this model. First, the small country assumption holds, the Lebanese economy being unable to change world prices; thus, its imports and exports prices on world markets are exogenous. Capital transfers are exogenous as well, and therefore the trade balance is fixed, so as to achieve the balance of payments equilibrium. Second, the model imposes fixed real public expenditures and savings, to reflect the Government's choice of delivering a given amount and quality of public services and ability to borrow. Public receipts thus adjust endogenously to achieve the predetermined government net position, through a change in net transfer from households to Government.<sup>13</sup> Third, investment is determined by the availability of savings, the latter originating from households, Government and abroad.

Imperfect competition is modeled by imposing a mark-up<sup>14</sup> on marginal costs (for domestic products sold on the domestic market) or on the domestic price for

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<sup>12</sup> We retained the following substitution elasticities: 2.0 between imports and domestic goods (CES); 5.0 between exports and domestic goods (CET). These trade elasticities come from the empirical literature devoted to CGE models. They are not specific to Lebanon. See for instance Konan and Maskus (1997) or more recently Gallaway, McDaniel and Rivera (2000).

<sup>13</sup> In real life, this offsetting mechanism does not exist, and other fiscal instruments must be used such as indirect taxes of any sort or direct taxes. But this type of modeling is interesting from an analytical perspective as a net transfer to household is considered to be the less distortionary fiscal instrument. Hence the analysis of any given tax reform is not complicated by the effect of replacing it with another distortionary one.

<sup>14</sup> In the absence of any specific information on the source of imperfect competition, this modeling of imperfect competition a la Cournot is probably the appropriated one. It is a conservative assumption in the sense that it will underestimate the potential welfare gains stemming from output increases if economies of scale exist. At the same time, we are interested, from a policy perspective, to assess the impact of lifting anti-competitive regulation, and must therefore assume (which is plausible in Lebanon, see Section II) that imperfect competition stems to some extent from regulatory barriers to entry.

imports.<sup>15</sup> The rents stemming from mark-ups accrue to the supplier of the good, be it domestic (the Lebanese representative household) or foreign (in the form of capital income transfers). The rent is distributed between foreign and local suppliers in proportion of their respective market shares on the domestic market.

In a perfect competitive market, the firms maximizes profit and chooses output so that marginal revenue (MR), which is the market price, equals marginal cost (MC) where MC is the differentiation of the cost function with respect to output Q. In an imperfect market, the firm turns into a price-maker if it enjoys a dominant position; hence the output decision (Q) affects the price it charges. Thus in the case of a monopoly, we get:

$$MR = P + Q * dP/dQ = P(1 + Q*dP/dQ*Q/P) = P (1+1/\varepsilon) \quad (1)$$

where  $\varepsilon$  is the price elasticity of demand;

The monopolist will contract output to receive a higher market price. Setting  $MR = MC$  and after rearrangement we get the mark-up or the Lerner Index to be inversely proportional to elasticity of demand:

$$(P-MC)/P = 1/ \varepsilon \quad (2)$$

In the case of an oligopoly or any imperfect market structure, the price mark-up becomes equal to the composite competitiveness index divided by the price elasticity of demand or

$$\text{Mark-up} = \text{HHI composite index} / \varepsilon \quad (3)$$

the elasticity for an Extended LES (ELES) demand, assumed for this CGE model is equal to:

$$\varepsilon = -s(1-m)/C \quad (4)$$

where  $s$  is the subsistence minimum,  $m$  a share parameter, and  $C$  the level of consumption.

Finally, the model capture the long term impact of policy reforms on capital accumulation and labor force participation. The model simply allows the total capital stock to evolve in proportion with real investment. In other words, we capture here the long term impact of policy-induced changes in households' saving rates and price of

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<sup>15</sup> The Law of commercial representation in place since 1967 grants exclusive right of importing the following goods to a single import agency: clothes, shoes, electrical and electronic goods, cosmetics, jewelry, cars, furniture, fertilizers, construction materials, pharmaceutical products, oil products, machinery equipments, which constitute approximately one-third of imports and a major source of imperfect competition in Lebanon. Yet, we assume that, for a given group of product (10 different goods in the model, excluding services which are not imported), the mark-up applied on imports is similar to that applied on the comparable domestic goods. This assumption is consistent with the available information on concentration indexes, which lists the number of suppliers for each good - be it produced domestically or imported. This assumption is probably conservative in the sense that it potentially underestimates the welfare impact of reducing imperfect competition, for two reasons: first, because it underestimates the rent accruing to exporters to Lebanon (that would be eliminated with liberalization, hence relaxing the balance of payments constraints); second because the import supply response (assumed infinite) is larger than the domestic supply response, constrained by the availability of production factors.

investment on the steady-state capital stock. Similarly, we assume that labor force participation responds to changes in real wages (nominal wages over consumer price index), with an elasticity of 0.5. The latter reflects the large reservoir of Lebanon's working-age population currently preferring to emigrate or stay out of the labor market in the face of a price structure unable to meet its reservation wage (Kasparian, 2003, Central Administration of Statistics, 2005). In a typical conditional convergence framework, the change in the steady state per capita income would thus affect the transitional growth rate towards this new steady state. If such a growth rate  $x$  can be written as:

$$x = \lambda \ln(y^*/y) \quad (5)$$

with  $\lambda$  the speed of convergence,  $y$  and  $y^*$  respectively the current and steady state capital incomes, then a change in  $y^*$  would entail a change in the transitional per capita income growth rate (expressed in percentage points) equal to the speed of convergence multiplied by the relative difference in steady states. In line with national accounts, estimates of population, capital stock depreciation and technological change growth rates as well as international evidence, the speed of convergence could approach 5 percent. Consequently, a 2.0 percent increase in the per capita income steady state would for instance entail an increase of 0.1 percentage points in the per capita income growth rate of the economy.

#### IV. Hypotheses, Simulations, and Results

We use the model to simulate two policy shocks, trade liberalization (through tariff reduction) on the one hand, and increased domestic competition (through mark-up reduction), on the other hand.

Tariff reduction would naturally result from the full implementation of the EuroMed and GAFTA agreements. As these two blocks account for approximately 50 percent of total imports, one could consider that these two agreements would broadly entail halving tariff protection<sup>16</sup>, except in agriculture and processed food sectors. And as Lebanon is keenly pursuing WTO accession, it is likely that granting MFN treatment to all its members would leave in the long term little tariff protection. Hence it is in our view a conservative assumption to consider that Lebanon will halve its tariffs in the long run and we simulate such a policy, leaving on the other hand unchanged excise and value added taxes collected on imports.

Increased domestic competition could be the result of various policies, whose direct effects on concentration indexes and mark-ups are nevertheless difficult to quantify: reduced regulatory entry and exit costs, privatization of several utilities with establishment of regulatory authorities and opening to competition of competitive market segments, cancellation of exclusive import agencies, etc. Further trade liberalization (tariff and non-tariff barriers) would also help improving domestic competition pressures, but is left unchanged at this stage for the sake of clarity. In the absence of clear measures

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<sup>16</sup> Not accounting potential trade diversion effects, which could actually result in a higher drop in collected tariffs and lower welfare gains than those reported in this paper.

of the impact of these various policies on mark-ups, and with a view to compare this set of policies with that of tariff reduction mentioned above, we decide to arbitrarily reduce mark-ups by a macro amount similar to that of tariff reduction, i.e. 1.1 percent of GDP. As markups represent in our model 16.6 percent of GDP, this means that mark-ups in all sectors are reduced by 6 percent (1.1/16.6). This can be considered again as a conservative estimate of the potential increase in competition in the long run. For instance, doubling the number of firms intervening in the energy, water and communication sectors would already permit to reduce Lebanon's mark-ups by 8 percent.

### **Scenario A: reduced tariffs**

We simulate a reduction in tariffs by half across all sectors (Scenario A).

As a mechanical result, imports become cheaper on the domestic market compared with domestic products. They grow 1.4 percent in volume compared with the benchmark scenario. Additional imports are financed by a drop in the real exchange rate (-1.2 percent, as measured with the price of value-added), made necessary to increase exports volumes (+5.1 percent) and maintain the balance of payments. The increase in import volumes is also insufficient to maintain tariff receipts, and, as a result, the Government must raise its taxation of households by the equivalent of 1.1 percent of GDP to finance the same outlays than before the reform.

Reallocation gains are moderately positive (in the face of limited capital flexibility), but growth is supported by slightly higher investments and labor force participation. One factor permits to raise real investment, the decline in its price (-1.8 percent), with greater external competition and reduced tariffs on equipment goods, metallic products and furniture in particular. Labor participation also grows (+0.2 percent), as the consumer price index declines more rapidly than nominal wages, -1.8 percent against -1.4 percent.

As far as sectors are concerned, those initially the most protected suffer the largest output declines (furniture, food, agriculture), except textiles, which benefit more from cheaper imported and domestic inputs. At the other end of the spectrum, other manufactures and metallic products sectors greatly benefit from tariff reduction, in particular to increase their exports outlets.

### **Scenario B: reduced mark-ups**

We simulate here a 6 percent decline in markups across all sectors (scenario B). This scenario is associated with greater capital mobility across sectors, as barriers to entry tend to diminish.

As a first mechanical result, rents accruing to exporters to Lebanon decline (from 3.6 percent of GDP before the reform to 3.4 percent after), which relaxes the balance of payments constraint. Import and exports grow (+2.9 and +8.5 percent respectively), the result of greater external competitiveness, but in a proportion more favorable to imports than in the previous scenario. Fiscal accounts also improve with greater economic

activity (the equivalent of a 0.1 percent of GDP transfer to households), and the economy witnesses an appreciation of its real exchange rate (+0.8 percent), reflecting higher productivity levels.

The impact of reduced markups on investment is highly significant, as the latter grows by 3.9 percent. Three elements concur to contribute to this large effect: a decline in the price of investment (-1.5 percent, notably the result of lower markups in the construction sector), an increase in households' savings (+1.8 percent, with higher disposable income) and an increase in foreign savings (+0.5 percent, as rents transferred abroad decline). The induced expansion in capital stock raises the demand for labor and its price (nominal wages, +1.9 percent) above consumer prices (-0.1 percent), and accordingly labor participation (+1.0 percent). The reform is consequently primarily beneficial to Lebanese workers, as the share of labor income in GDP goes up from 39.8 percent before the reform to 40.1 percent after the reform. Capital income hence declines symmetrically in proportion of GDP, the result of lower rents (-3.6 percent) not fully compensated with higher marginal productivity of capital (+0.3 percent) and capital stock (+3.9 percent).

With reduced mark-ups and greater capital mobility, factor allocation gets closer to its optimal one, determined by the equalization of marginal productivities. Significant gains of allocation are obtained. Along with higher productive resources, the impact on economic activity is very substantial, as real GDP increases by 2.5 percent in the long run. From a GDP per capita growth rate perspective, this would correspond to a 0.10-0.15 percentage point annual gain.

From a sectoral perspective, it is interesting to notice that first order effects (from which one could expect that sectors with the highest initial markups should witness the greatest demand after the reform) are sometimes dominated by second order effects, whereas the revelation of new comparative advantages influences the demand addressed to the various sectors of economic activity. Thus, other manufactures and metallic products tend to gain the most from the reform, while the non metallic products sector stands to lose from it.

**Table 3. Macro economic results (deviation w.r.t. to the benchmark scenario)**

<b>Scenarios</b>	<b>A</b>	<b>B</b>
GDP, real	0.2%	2.5%
Private consumption, real	0.2%	1.8%
Investment, real	0.2%	3.9%
Exports, real	5.1%	8.5%
Imports, real	1.4%	2.9%
Real per capita disposable income	0.2%	1.8%
Real exchange rate	-1.2%	0.8%
Capital stock	0.2%	3.9%
Labor participation	0.2%	1.0%
Fiscal adjustment (% of GDP)	1.1%	-0.1%
Growth rate gain	0.0%	0.1%

**Table 4. Sectoral results (deviation of real output w.r.t. to the benchmark scenario)**

<b>Scenarios</b>	<b>A</b>	<b>B</b>
Agriculture	-0.1%	3.1%
Livestock	0.3%	1.4%
Energy	0.6%	1.9%
Food	-0.3%	2.6%
Textiles	0.6%	4.9%
Non Metallic products	0.5%	-6.1%
Metallic products	0.9%	9.0%
Wood & Chemical products	0.5%	6.4%
Furniture	-0.9%	3.9%
Other Manufactures	1.6%	14.1%
Construction	0.2%	4.0%
Transport and communication	0.4%	-0.9%
Other services	0.1%	1.0%
Trade services	0.6%	6.3%
Public services	0.0%	0.0%

## **V. Conclusion**

Policy-makers, researchers, and the public at large continue to ask the question whether Lebanon can afford tariff dismantlement in light of the fiscal adjustment policy adopted by the government to reverse the alarming public debt dynamics. The CGE model developed in this paper suggests that a simple tariff reduction measure, given the Lebanese current context, is detrimental fiscally and does not entail large welfare or trade gains. The increase in the import base is not sufficient to maintain a fiscal balance and sectors benefiting from cheaper imported inputs do not generate enough activity to compensate fiscal losses. The allocative efficiency is improved, but at large fiscal and external costs, which leaves little savings available to meet new investment opportunities.

Lack of competition, in terms of domestic entry or the import activity, creates a price mark up that leads to a distortion in the allocation of resources between sectors. Furthermore, a significant share of the rents accruing from monopolistic positions leaves Lebanon, hence affecting the balance of payments. In turn, reducing the rents generated from the mark-ups on foreign goods has positive implications on the balance of payments while reducing the markup on domestic goods increases factor remuneration, thus suggesting that imperfect market structures undermine allocative efficiency and lead to an inward shift in the production possibility frontier.

These results should nevertheless not be misunderstood as arguing against any tariff reduction in the future in Lebanon. Given their level and dispersion, tariffs still create a significant anti-export bias, and successful integration of Lebanon into world markets will inevitably require a progressive tariff reduction (as notably scheduled in the Euro Med agreement). But the size of rents (more than eight times higher than tariffs as a

percentage of GDP), and the unsuccessful experience of 2000-2002 (during which tariff reduction and the introduction of VAT were not fully reflected into retail prices, reflecting mark up pricing behaviors) argue both for a sequential approach - whereas domestic competition would be first enhanced - as it would provide Lebanon greater chances to successfully address its macroeconomic imbalances. Tariff reduction, once the fiscal situation is improved and domestic competition becomes the norm in Lebanon, would then play a much greater role, in its capacity to reallocate resources according to Lebanon's comparative advantages.

From an implementation perspective, such a policy recommendation would warrant getting a better appraisal of the set of instruments Lebanon could mobilize to reduce concentrations, and their likely impacts. While the removal of exclusive agencies, the reduction of capital requirements and the enforcement of a competition law are obvious candidates, their impact on competition remains unknown. The privatization of competitive segments could also promote competition, but its impact is also unknown given the possible existence of economies of scale and fixed costs. Finally, the fiscal impact of enhanced competition should also be looked at from its consequences (i) on (lower) registrations fees and rents captured by the public sector and (ii) government's ability to tax a broader base of economic activity. Indeed, it is very possible that governments with inefficient fiscal systems (from a tax collection perspective) are making the strategic choice to promote monopolies in order to capture directly or indirectly their rents (Auriol and Warlters, 2005).

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### Annex 1. The Macroeconomic Social Accounting Matrix

Estimated Macroeconomic SAM, LL billions, 1997, accounting for mark-ups and the introduction of VAT and excises

	Commodity	Activity	Capital	Labor	Household	Government	Savings	Markups	Tariffs	World
Commodity	0	15,629	0	0	22,078	3,978	7,427	0	0	2,773
Activity	34,590	0	0	0	0	0	0	0	0	0
Capital	0	9,668	0	0	0	0	0	4,319	0	0
Labor	0	9,293	0	0	0	0	0	0	0	0
Household	0	0	13,704	9,293	0	3,019	5	0	0	6,884
Government	2,206	0	283	0	817	0	0	0	552	0
Savings	0	0	0	0	9,069	-3,864	0	0	0	2,227
Markups	4,319	0	0	0	0	0	0	0	0	0
Tariffs	552	0	0	0	0	0	0	0	0	0
World	10,218	0	0	0	941	725	0	0	0	0

Source: Authors' calculations.

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