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Assessing Non-Tariff Barriers in Syria

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Abstract. Non-tariff barriers (NTBs) are supposedly high in Syria. Comparing world and domestic prices of imports indeed suggests that non-tariff barriers raise on average by 22 percent the domestic price of imported goods, against only 8 percent for tariffs. Their costs for the Syrian economy is in turn assessed in this paper using a computable general equilibrium model (CGE). Quantitative simulations indicate that welfare gains resulting from a complete removal of NTBs could range between 0.4 and 4.8 percent of GDP, depending on the extent of technological upgrading triggered by greater competition and access to foreign markets and technology.

1. Introduction

According to the International Monetary Fund, Syria is the less open MENA (Middle East and North Africa) country to trade (Nashashibi (2002) – the MENA region being itself the region whose speed of integration into world markets has been the slowest in the world since 1985 (World Bank 2003a). But tariffs, one of the main policy instruments to regulate trade flows, are, conversely, low on average (and in terms of dispersion) in Syria compared to most of the other MENA countries (Lucke 2002). Supposedly, non-tariff barriers (NTBs), through the imposition of cumbersome procedure and quantitative restrictions, are hence believed to be considerable.[1]

There is widespread recognition in Syria that economic reform is needed (Sukkar, 2001). In particular, the large number of unemployed entrants to the labor force is seen as a clear threat to social stability and welfare that needs to be addressed by adequate job creation in the private sector. The promotion of trade links with the rest of the World, through regional agreements with the EU and the Arab League Members for instance, is seen in this regard as a powerful engine of growth, investment and dynamism. But if limited simply to a progressive dismantling of tariffs - already low by international standards, such a shallow type of trade liberalization might prove to be poorly effective to generate static and dynamic gains of trade. Symmetrically, the elimination of non-tariff trade barriers, given their supposed importance, could have a much greater leverage on Syrian economic activity, and would represent an important and critical aspect of a more broader reform agenda.

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[1] Technical barriers to trade, or transaction costs, which relate to contracts, protection of property rights, finance for trade and the logistics of trade, are also believed to be significant (World Bank, 2003b).

But in the absence of a sound and open advocacy on the likely gains of alleviating NTBs, the political economy of Syria likely means that the overall process of reform – and trade reform in particular - could be slower and more deliberate than elsewhere. For instance, the exposure to foreign competition of state-owned enterprises is still considered too sensitive a subject for public discussion. And the restructuring of the Syrian industry – and its implied transition costs - following a realignment of domestic prices with world prices might be fiercely opposed by insiders and losers of the reform.

This paper tries in this regard to estimate the magnitude of the non-tariff barriers in Syria, and to assess the economic consequences of their removal. Results obtained using quantitative simulation techniques show that the removal of NTBs could have sizeable consequences on trade volumes, domestic activity and households welfare. The paper also suggests that State Owned Syrian Enterprises could also benefit from the reform, the extent of the gain depending on their ability to restructure themselves and to benefit from a greater access to foreign technologies and know-how to modernize their production processes.

The paper is organized as follows: Section 2 describes Syrian Trade patterns and main trade policies; Section 3 presents the methodology use to estimate non-tariff barriers; Section 4 simulates the removal of non-tariff barriers using a static computable general equilibrium for Syria. Section 5 concludes.

2. Syrian Trade Patterns and Policies

Balance. International trade is important for Syria. Imports of goods and services represented 36 percent of GDP in 1999, and exports 35 percent. It is hence balanced, exports receipts covering almost entirely imports.

Products. Syrian exports are highly concentrated, with exports of crude oil and related products accounting for almost two thirds of total exports receipts (63 percent in 1999). Textiles, clothing and leather products represented another 17 percent of exports in 1999, and agricultural products 14 percent. Thus, three products only account for almost 95 percent of total exports receipts. Syrian imports, on the other hand, are much more diversified in terms of products - agricultural products, textiles, metals and metals products, and machinery and equipment being the most important ones. More than half of imports (60 percent in 1999) are raw or semi-manufactured products which are typically used for intermediate consumption, thereby reflecting the importance of imports in Syrian production.

Ownership. Exports from State Owned Enterprises (SOE) represented in 1999 some 74 percent of total exports. Once removed the oil industry, SOE's exports still accounted for 39 percent of non oil exports in 1999. Reflecting the predominance of oil in SOEs exports, 93 percent of public exports were exports of raw products in 1999, against 56 percent for the private sector. SOE's imports, on the other hand, only represented in 1999 some 19 percent of total imports. 61 percent of SOEs imports were constituted of manufactured products, against 36 percent for private enterprises, reflecting the relative importance of public agencies in the

supply of finished imported goods: while only importing 19 percent of total imports, SOEs are importing 29 percent of manufactured products.

Trade Partners. Syrian exports are mainly destined to the European Union, which absorbed 61 percent of Syrian exports in 1999. Arab countries, and in particular Iraq and the Gulf countries are the second largest clients for Syrian products (21 percent of Syrian exports in 1999). Formerly Socialist Countries have on the other hand seen their relative importance for Syrian trade declining over the last decades, and now import 2 percent of total Syrian exports. Turkey, the largest neighboring market for Syria, represents 9 percent of Syrian exports outlets. As far as imports are concerned, 31 percent of total imports in 1999 originated from EU, 17 percent from Formerly Socialist Countries, 8 percent from Arab countries, 5 percent from Turkey and 39 percent from the rest of the world.

General tariff policy. The law n25 of 1989 defines the general Syrian tariff policy. Under this law, 10 different lines of tariffs are considered, from total exemption to a high 200 percent tariff on luxury goods. Tariffs applied on intermediate products and raw materials are generally low, and on the contrary high on finished products for protective purposes. For each tariff line, a unified duty is applied on top. The unified duty vary between 6 and 35 percent, and is increasing with the tariff. The table below reports the unified duty corresponding to each tariff line, as well as the resulting combined rate.

Syrian Tariffs

Tariff Rate	Unified Duty on Imports	Combined rate
0%	6%	6%
1%	6%	7%
7%	13%	20%
15%	14%	29%
30%	17%	47%
50%	21%	71%
75%	27%	102%
100%	32%	132%
150%	35%	185%
200%	35%	235%

Source: Ministry of Finance, 2001

Geographical Exemptions. All Products imported from GAFTA countries (but Iraq, Jordan and Lebanon) were benefiting (as of end-2002) from a 50 percent drawback on tariffs (but not on unified duties). GAFTA agreements foresee a complete elimination of tariff in 2007. Since 1998, tariffs are gradually reduced by 10 percentage points each year. All products from Iraq, Jordan and Lebanon are already benefiting from full tariff exemption. Besides, products forbidden for importations for protective purposes (see below – quantitative restrictions) can be imported from all GAFTA countries.

Valuation. At the customs, imports were valued until recently using three different exchange rates (SP/US$: 11.25, 23 and 46.5) in the calculation of import taxes (tariffs plus unified duties). Exchanges rates have been very recently harmonized (all imports valued at 46.5

SP/US$), but effective taxes on imports expressed in Syrian pounds remain exactly the same, as tariffs have been adjusted downwards to compensate for the higher valuation of imports in categories 11 and 23. Tariffs on products initially valued at 11.25 percent were cut by 75 percent (11.25/46.5); Tariffs on products initially valued at 23 percent were cut by 50 percent (23/46.5). (Source: official Journal for Syrian Arab Republic, 2002).

Effective Tariff protection. The actual structure of Syrian imports (by origin and products) entails a relatively low level of effective tariff protection compared to other MENA countries. Import duties represent only 2% of GDP and 15% of tax revenue compared to Lebanon (7.5% and 61%) as the most dependent of import duties and Egypt (2.8% and 17.5%) and Tunisia (3% and 11.5%) as the countries less dependent of import duties.

Effective Tariffs in some MENA Countries, 1999-2000

	Total Government Revenue as % of GDP	Tax Revenue as % of GDP	Import Duties as % of GDP	Import Duties as % of Tax Revenue
Algeria	29.9	11.5	2.5	21.7
Morocco	28.2	26.1	4.7	18.0
Tunisia	29.1	26.0	3.0	11.5
Jordan	26.7	15.9	4.7	29.6
Egypt	22.8	16.0	2.8	17.5
Lebanon	18.3	12.3	7.5	61.0
Syria	24.4	13.6	2.0	14.7

Source: Nashashibi (2002) and authors' calculation

Although Syria's average most-favored nations (MFN) compared with other MENA countries in 1999-2000 (see table below – Syria's average MFN tariff is 35 percent compared to 36 percent in Tunisia, 34 percent in Morocco and 30 percent in Egypt), effective tariffs were actually much lower because of the valuation mechanism (see above) used to reduce effective rates. Besides, when compared with tariffs applied in MENA countries before joining WTO or signing Euro-Med agreement, Syrian tariffs can be considered low.

Import Taxation in Selected MENA Countries (1999-2000)

	Trade Restrictiveness Rating (1)	Average MFN Tariff (2)	Effective Imports Tariff (3)
Algeria	7	23.7	13.5
Morocco	8	34	15
Tunisia	8	35.9	10.1
Egypt	8	30.2	15.1
Jordan	6	16	5.3
Lebanon	7	21	21.4
Syria	10	35	7.2

Source: Nashashibi (2002). Notes : (1) IMF's restrictiveness rating, with 10 being the most restrictive, (2). Includes other duties and import surcharges. (3). Customs duties on imports divided by the value of imports

Nevertheless, of all MENA countries considered, Syria is ranked the worst by IMF when it comes to trade restrictiveness. This, undoubtedly in reason of the prevalence of important non-tariff barriers to trade.

Quantitative restrictions. Trade policy in Syria is officially meant to shield local production from foreign competition. As such, many products are still not allowed to be imported in Syria, or restricted to a certain type of end-users. In conformity with these regulations, all import operations require a license delivered by the Ministry of Economy and External Trade. The import license is temporary, and needs to be revalidated every six months. Imports are regrouped into different lists:

A first list comprises all products forbidden for importation, for environmental, security or sanitary reasons. The list was not shared with the World Bank, but officials indicated that such list compare with similar ones in OECD countries.

A second list encompasses all products forbidden for importation (but from GAFTA countries), for their negative impact on the Syrian industry. Products under this list have all an equivalent produced in Syria. This list covers a large list of agricultural and industrial products : flowers, animals products, forestry products, vegetable oils, sugar based products, quarrying products, plastic and rubber products, leather and leather products, wood products, paper products, silk, textiles and clothing, craft products, glass products, electrical machinery and materials, etc.

A third list contains the products which can only be imported by the public sector. This list includes notably oil and oil related products, alcohol and beers, arms, cotton, some cereal products, tobacco, pharmaceutical products, salt, black cement, fish, fruits, olive oils, TVs and TV components, aliments for animals, and phosphates**.**

A fourth list contains products which were previously imported only by particular public entities, and which can now be imported by anyone, provided the payment of a commission to these public entities. This commission generally represents 3 to 5 percent of the imports' value before tax. The most important products under this list are cars and transport machinery, steel and steel products, wood, white cement, yarn for textiles industry, coffee, tea, rice, canned fish and meat, raw sugar, fertilizers, raw leather, and paper**.**

All other products not included in the previous lists can be theoretically imported by both public entities and private agents. According to Syrian officials, there is therefore no positive list of imports allowed in Syria. No mention was made either by Syrian officials of the existence of quotas, tariff quotas, calendar restrictions or the need to comply with particular standards.

Foreign transactions. Imports and exports from the public sector are valued at the administrated exchange rate of 46.5 SP/US$. Compared to the market exchange rate (approximately 53 SP/US$ as of end-2002), this corresponds to an ad-valorem import and export subvention of approximately 10 percent (36.1 percent of all foreign transactions in 2001). Imports from the private sector can be financed by export proceeds, at the market exchange rate (12.8 percent of all foreign transactions). Non commercial transactions with the rest of the world (tourism, transfers), as well as imports of raw materials benefit from an administrated exchange rate of 51 SP/US$ (50.9 percent of all foreign transactions).

3. Measuring Non-Tariffs Barriers

Given the relative importance of quantitative restrictions in the Syrian trade policy as discussed in the precedent section, the estimation of tariff-equivalents (of non-tariff barriers) is required for any comprehensive analysis of trade reform in Syria.

The tariff-equivalent measure, also known as the price-gap or price-impact measure relies on information on world and domestic prices. In brief, the percentage by which the domestic price exceeds the world price, inclusive of shipping costs and any tariffs imposed by the importing country is the tariff equivalent of the non-tariff barrier (Stanton, 1994). The inclusion of tariffs in the specification of the import price implies that the tariff equivalent associated with an import barrier is in addition to existing tariffs, rather than an all-inclusive tariff that replaces the existing tariff. Equation (1) defines the tariff equivalent, *t*, where *Pd* is the domestic price of the imported good, and *Pw* is the price prevailing on world markets inclusive of shipping costs and any tariffs imposed by the importing country.

$$t = 100*(Pd - Pw)/Pw \quad (1)$$

We have used this approach for all products included in the Syrian Social Accounting Matrix (SAM) which was specially developed for this study, based on the SAM developed by Lucke (2002). Compared with the former, we have further disaggregated activities and commodities accounts. In fact, the actual SAM includes 23 activities and 18 commodities compared to 11 activities and 9 commodities in the original SAM developed by Lucke. The choice of disaggregation was mainly made in order to match as closely as possible the different lists of products, as distinguished by the Syrian trade policy. Besides, based on information received from the Syrian Statistical Bureau on intermediate consumption and value added, we have chosen to disaggregate the sectors of activity according to their relative importance, and ownership when the public and private sectors share the same activity.

While some groups of commodities are relatively homogenous in terms of composition (e.g, fertilizers), others are less (e.g commodities not classified elsewhere). Thus, the estimation of a weighted average tariff equivalent for the latter is rendered more difficult, given the important requirement in terms of data regarding prices (international and domestic), transport and insurance (CIF) costs, tariffs, and quantities imported. In most cases, the estimated average tariff equivalent relies on a subset of products, the most important ones in terms of import values in each group of products. The following table reports the share of imports actually covered by our estimates in each group – and hence its effective degree of representativeness. By default, we assume that the uncovered share of imports in each group face the same tariff equivalent than the share of imports covered by our estimates.

Representativeness of Tariffs Equivalent Estimates of Non-Tariff Barriers

Group of products	Share of import value covered
1. Fish Products (SITC-03)	70
2. Fruits and Nuts (SITC-057)	65
3. Other food, live animals, oils, fats, and waxes (rest of SITC-0-4)	55
4. Tobacco and beverages (SITC-1)	53
5. Textile fibers (SITC-26)	67
6. Other crude materials and inedible, except fuels (SITC-2)	52
7. Mineral fuels, lubricants and related materials (SITC-3)	52
8. Fertilizers (SITC-56)	75
9. Plastics (SITC-58)	59
10. Other chemicals and related products (rest of SITC-5)	56
11. Steel (SITC-67)	71
12. Textile (SITC-65)	76
13. Leather and manufacture of leather (SITC-61)	55
14. Other manufactured goods (rest of SITC-6)	67
15. Transport equipments (SITC-79)	53
16. Other machinery (rest of SITC-7)	43
17. Miscellaneous and manufactured articles (SITC-8)	56
18. Commodities and transactions not classified elsewhere (SITC-9)	35

Source: Authors' calculation.

Various sources of information were used to estimate the tariff equivalent of non-tariff barriers. Information on international prices for agricultural and food products (the first four groups of products in our list) were extracted from the Food and Agriculture Organization (FAO) database. Domestic prices for the same products originate from the Syrian Bureau of Statistics. Insurance and freight costs for these products were given by the General Organization for Trade and Distribution. All information necessary to the estimation of non-tariff barriers for textile products (the 5^{th}, 6^{th} and 13^{th} groups of products in our list above) were given by the General Foreign Trade Organization for Textile Industries. Similarly, the information needed for equipment goods (the 15^{th} and 16^{th} groups of products in our list above) were given by the General Foreign Trade Organization for Machinery and Equipment. The General Foreign Trade Organisation for Metals and Building Materials provided the information for the 11^{th}, 14^{th} and 17^{th} groups, while the remaining required information was extracted from the The General Organisation for pharmaceutical Trade and the General Organisation for Trade and Distribution.

The following table reports the estimated average tariff equivalent of non-tariff barriers by groups of products in 1999. By way of comparison, average estimated tariffs are also reported. On average, non-tariff barriers add a 22.1 percent premium on world prices, against 8.2 percent for tariffs. The dispersion of non-tariff barriers across products looks also greater than that of tariffs, suggesting greater distortions created by the former compared to the latter. Finally, our estimates suggests that the price gap between world and domestic prices resulting from the imposition of non-tariff barriers represented the equivalent of 6.0 percent of the Syrian GDP in 1999. By comparison, tariff receipts represented 2.4 percent of GDP the same year.

Estimated Non-Tariff Barriers and Tariffs in 1999 by Groups of Products

Group of products	Tariff Equivalent of NTBs	Tariffs
1. Fish Products (SITC-03)	18.8%	22.7%
2. Fruits and Nuts (SITC-057)	36.8%	58.8%
3. Other food, live animals, oils, fats, and waxes (rest of SITC-0-4)	31.8%	8.7%
4. Tobacco and beverages (SITC-1)	329.6%	116.0%
5. Textile fibers (SITC-26)	8.3%	2.5%
6. Other crude materials and inedible, except fuels (SITC-2)	4.9%	5.7%
7. Mineral fuels, lubricants and related materials (SITC-3)	17.7%	7.8%
8. Fertilizers (SITC-56)	6.3%	27.0%
9. Plastics (SITC-58)	164.2%	56.0%
10. Other chemicals and related products (rest of SITC-5)	35.1%	6.6%
11. Steel (SITC-67)	9.2%	9.4%
12. Textile (SITC-65)	137.5%	112.5%
13. Leather and manufacture of leather (SITC-61)	7.7%	111.5%
14. Other manufactured goods (rest of SITC-6)	67.0%	12.5%
15. Transport equipments (SITC-79)	55.5%	25.3%
16. Other machinery (rest of SITC-7)	124.2%	36.3%
17. Miscellaneous and manufactured articles (SITC-8)	6.7%	11.1%
18. Commodities and transactions not classified elsewhere (SITC-9)	0.8%	3.3%
Weighted average	22.1%	8.2%
Standard deviation / average	1.4	1.1
Trade barriers as percentage of GDP	6.0%	2.4%

Source: Authors' calculation.

4. Costing Syrian Non-Tariff Barriers

One immediate way of thinking about NTBs in Syria is to consider them similar to import taxes: the artificial scarcity resulting from quantitative restriction creates a wedge between world and domestic prices of imports, as discussed in the previous section. Thinking of NTBs as instruments altering relative prices through excess demand entails looking at them from a static point of view, where gains from trade would come from a better allocation of existing resources following a realignment of domestic and world prices. In turn, the extent to which the removal of NTBs will be ultimately trade-creating or not (and hence welfare-enhancing or not) will then give some indication of their current cost / benefit for the society.

Estimating such costs is a complex undertaking, not only because it requires some knowledge on households' demand behavior in response to relative price changes (between imports and domestic products, between various products), but also because the impact on producers' marginal costs (and hence on factors incomes, wages and the remuneration of capital) should be accounted for. Removing NTBs on certain imported inputs could actually increase the relative competitiveness of some Syrian sectors, notably those that are highly depending on imported inputs in their production process. But it could also threaten the viability of other sectors unable to compete with cheaper imported products. A third theoretical complexity stems from the fact that - unlike import tariffs whose proceeds accrue directly to the government treasury – rents created by quantitative restrictions can be captured

by private agents (exclusive importers for instance). As a result, abolishing these restrictions could directly affect their incomes, thereby further complicating the political economy of the reform.

A second way to think about NTBs is to consider that the observed price wedge is a reflection of higher producers costs in Syria than in the rest of the World. In most cases, insulation from international competition is a source of poor economic efficiency: marginal costs in a regulated environment may be excessively high as low cost foreign suppliers are excluded from the market; and quantitative and administrative trade barriers tend to reduce the contestability of markets far more than do tariffs, suggesting that protected firms can operate well below the international production frontier. If so, NTBs not only affect the allocation of existing resources, but can also generate pure economic waste. Estimating the induced cost for the society is also here a complex undertaking, because second-order effects might offsets first-order ones. At the sectoral level, a productivity increase (resulting from a shift towards the international production frontier) should mechanically reduce the demand for labor and capital; but final and intermediate demand will be impacted too, as well as the structure of comparative advantages. As a result, productivity gains might lead in some sectors to dramatically increase their output and factors demand.

The Model. To address these various interrelated issues, the use of a comprehensive analytical tool – here a computable general equilibrium (CGE) model - is needed. Such type of model has become a standard tool for integrated assessment of trade policies for small economies.[2] Its main advantage lies in the possibility of combining detailed and consistent databases with a theoretically sound framework, able to capture feedback effects and market interdependencies, that may either mute or accentuate first-order effects.

The CGE it is a standard neoclassical static model with imperfect substitution between domestic and foreign goods. Prices are endogenous on each market (goods and factors) and equalize supplies (imports; Syrian 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. For instance, a decrease in NTBs will affect the demand for imports of both final and intermediate goods. This will in turn affect the supply of domestic goods, and the demand of factors in each activity. This will equally affect the price of goods and the income of households, which will in turn affect their demand, etc.

The model uses the information contained in the Social Accounting Matrix built by the authors for the year 1999, extending previous work from Lucke (2002). It considers one representative Syrian household, 23 economic sectors and 18 products. Each product can be produced by more than one sector, and each sector can produce more than one product.[3] The model also distinguishes 5 different trading partners.

[2] See for instance Rutherford, Rustrom and Tarr (1997), for Morocco, or Dessus and Suwa (2000), for Egypt and Tunisia.

[3] We assume full substitutability between similar products from different sectors, and imperfect transformation possibility between different products within a given sector (the elasticity of transformation between products is

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. The value-added is then decomposed in two substitutable parts: labor and capital, which are both fully employed and perfectly mobile across sectors.[4]

Income from labor and capital accrue to the representative household, as well as all rents created by NTBs accrue to the same representative household. In the absence of more specific information, this last assumption insures the greatest neutrality of results. Household total 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, with income elasticity for each product being set to unity. 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 function. Producers decide to allocate their output to domestic or foreign markets responding to relative prices. At the second stage, importers (exporters) choose the optimal choice of demand (supply) across regions, again as a function of the relative imports (exports) prices and the degree of substitution across regions. Substitution elasticity between domestic and imported products is set at 2.2, and at 5.0 between imported products according to origin. The elasticity of transformation between products intended for the domestic market and products for export is 5.0, and 8.0 between the different destinations for export products.[5]

Finally, several macro-economic constraints are introduced in this model. First, the small country assumption holds, the Syrian economy being unable to change world prices; thus, its imports and exports prices 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 a fixed real government deficit, and fixed real public expenditures. Public receipts thus adjust endogenously in order to achieve the predetermined

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set at 0.5).

[4] Even if static, this model is therefore intended to capture long term allocative effects of various trade policies, since transition costs of reallocating labor and capital are ignored. However, it does not incorporate some of the expected dynamic effects of trade policies, notably on productivity, since factors availability and their average efficiency are fixed in this version of the model. These constraints are partly relaxed in the next section, where we look at the impact of NTBs removal on capital productivity.

[5] Trade elasticities come from the empirical literature devoted to CGE models. They are not specific to Syria. See for instance Burniaux, Nicoletti and Oliveira-Martins (1992), Konan and Maskus (1997) or more recently Gallaway, McDaniel and Rivera (2000). Devarajan, Go and Li (1999) estimate econometrically substitution elasticities for Syria, and obtain results close to 0.1 for both Armington and CET elasticities. These elasticities are not distinguished by product, which explain to a large extent their low levels. They are not either statistically significant.

net government position, by shifting households' income tax.[6] Third, investment is determined by the availability of savings, from households, government and abroad. Since government and foreign savings are exogenous in this model, changes in investment volumes reflect changes in household savings and changes in the price of investment.

Policy impacts are compared to the situation observed in 1999, in terms of macro-economic aggregates, trade volumes, sectoral outputs and households' welfare. The chosen yardstick for welfare is the assessment of equivalent variation, which is the sum of two terms. The first one measures the gain (or the loss) of disposable income caused by the reform (producers surplus), and the second one measures the income needed after the reform to obtain the same level of utility as before the reform (consumers surplus).

Static Effects. We simulate first the complete abolition of non-tariff barriers, that we consider similar to regular import taxes. By way of comparison, we simulate also separately the impact of canceling tariff barriers. The table below summarizes the main results of the two simulations. Figures reported are relative deviations with respect to the 1999 situation, which provides the benchmark.

Several striking features emerge from this first set of simulations. First, the amplitude of changes resulting from the cancellation of NTBs far exceeds that of tariff barriers, which is not so surprising given the estimated size of NTBs (6.0 percent of GDP) compared to tariffs (2.4 percent of GDP) in 1999. Second, it is interesting to notice that tariff and non-tariff barriers are in most cases consistent in terms of sectoral protection. In all goods sectors but one - the public textile industry, canceling NTBs has a relative impact on outputs of the same sign (positive or negative) than that of canceling tariffs. But, while tariff and non-tariff trade policies go hand in hand at the sectoral level, their relative impact differ widely across sectors. This is revealed by comparing output changes (reflecting factors reallocation) across sectors in the two cases. Removing NTBs entail a large restructuration of the manufacturing sectors through gains of specialization. While total output grows by 1.8 percent, the average relative change is plus or minus 7.3 percent in each sector. Some sectors, like private textiles, tremendously benefit from a greater alignment of domestic prices with world prices. Others, like wood products in the public and private sectors, do suffer, with outputs declining by more than 10 percent. On the contrary, removing tariff barriers only entail small factors reallocation. On average, the relative change is plus or minus 1.1 percent, with only one sector – private textiles, seeing its output varying by more than 3 percent. In total, small gains of specialization are achieved through tariff abatement, with a mere +0.2 percent in total output. This comparison between two policy outcomes suggests that non-tariff barriers entail much greater price distortions than do tariff barriers in Syria. This, not only because the magnitude of NTBs is greater than that of tariffs, but also because the distribution of NTBs across sectors is less equitably spread across sectors.

[6] This closure policy can be understood as a net transfer from households to government (or the reverse). With one representative household, it is considered the most neutral way to assess trade reform. Other closures could be tested (e.g. adjusting indirect taxes for instance) but would bear the risk to introduce new distortions, thereby making more difficult to conceptually isolate the impact of the trade policy.

From this observation can be understood the differentiated impact of both policies at the macro-economic level. Removing tariffs does not permit to generate important gains of specialization. Trade volumes augment (as a result of cheaper imports), but the impact on total real private consumption is minimal, given the low level of initial distortions. In turn, households' welfare gains are also marginal. Households see the price of their consumption decreasing (hence a positive consumer surplus, equivalent to 3.3 percent of GDP), but this effect is offset by a decline in their net disposable income, stemming from increased transfers to the government to compensate for tariff revenue loss. On the contrary, removing NTBs generate positive welfare gains (+0.4 percent of GDP). Gains of specialization more than offset households' loss of rents, and private consumption significantly increases (+1.2 percent).

Two last results warrant particular attention. First, private manufacturing sectors are disfavored by both tariffs and NTBS compared with public manufacturing sectors, as the former benefit more from their removal than the latter. In the case of NTBs, though, both the public and the private sector benefit from their removal. Second, investment greatly benefit from trade liberalization, the domestic price of imported equipments being particularly distorted by tariff and non-tariff barriers.

Static Effects of Trade Barriers Dismantling	Non-Tariff Barriers	Tariffs
Gross Domestic Product	1.7%	0.4%
Private consumption	1.2%	0.1%
Investment	5.4%	2.3%
Exports	12.3%	4.1%
Imports	15.0%	5.0%
Welfare Changes (as % GDP)	0.4%	0.0%
Consumer surplus	5.7%	3.3%
Producer surplus	-5.3%	-3.3%
Total Output	1.8%	0.2%
Agriculture	-1.4%	-0.3%
Mining	-8.1%	-0.9%
State Owned Manufacturing Sectors	3.9%	-0.1%
Textiles	-0.3%	1.1%
Wood Products	-15.4%	-1.5%
Food Products	-2.6%	-1.0%
Chemicals	9.0%	0.1%
Non Metallic Products	3.0%	0.9%
Metallic Products	-0.3%	-0.6%
Other Manufactured Products	4.5%	0.3%
Private Manufacturing Sectors	11.8%	1.3%
Textiles	60.2%	7.7%
Wood Products	-10.4%	-2.1%
Food Products	-1.4%	-0.5%
Chemicals	4.5%	0.2%
Non Metallic Products	1.5%	0.3%
Metallic Products	-1.5%	-0.4%
Other Manufactured Products	-3.8%	-0.9%
Services (*)	1.7%	0.3%

Source: Authors' calculation. (*) The service sector is actually disaggregated into seven different sectors in the model: Energy and Water, Construction, Commerce, Transport and Communication, Finance, Social Services, Public Services. Detailed results are available upon request from the authors.

In both cases (tariffs and non-tariff barriers), consumers win at the expense of producers, who face fiercer competition, lose their rents, or have to compensate for the cancellation of government's tariff revenue. While consumers and producers end up to represent the same group of interest at the macro-economic level, they do not necessarily coincide at a more disaggregated level, and losers my hence oppose to trade reform. As widely discussed in the trade literature, the political feasibility of abating tariffs can be facilitated by compensating losers through direct tax mechanisms. But this is probably more challenging to achieve when removing NTBs. In this case, losers and winners are less easy to identify, given the difficulty to appraise *ex-ante* levels of effective protection in each sector. But the impact of removing NTBs on producers might actually be overestimated when only considering these barriers as pure rents, deriving from profit maximization behavior. In most cases, the insulation from international competition is also a source of poor economic efficiency. This effect is explored in the next paragraphs.

Dynamic Effects. We consider now the observed price wedge for each product as a direct expression of higher marginal costs in Syria compared with World's best practices. This is obviously an extreme assumption, as it entails that removing quantitative and administrative trade barriers will necessarily induce a complete technological catch up with the rest of the world. As such, simulation results can probably be understood as upper bound estimates of gains from canceling non-tariff barriers.

Removing NTBs in this case produces very different outcomes, as suggested by the results of simulating an increase in sectors' average capital productivity exactly offsetting the initial price wedge.[7] In this case, domestic producers become the main beneficiary of the reform, as the remuneration of factors increases[8] and output grows even faster (see Column "Full" in the next table). As a result, domestic goods become more competitive and their unit price drop. Hence, consumers also benefit from the reform (although to a lesser extent than producers).

The increase in trade volume is here mainly encouraged by greater export competitiveness, unlike the previous simulations where the dismantling of trade barriers had the primary effect of making imported goods (and imported machinery equipment in particular) much cheaper. Here on the contrary, productivity gains make Syrian exports more competitive on international markets, in turn allowing Syria to import more, but without changing dramatically its structure by products.

Benefiting directly (through increased capital productivity) or indirectly (through cheaper domestic intermediate inputs), all manufacturing sectors benefit from the elimination of this source of economic waste. Although different from one sector to another, it is interesting to notice that public and private manufacturing sectors see their total outputs growing similarly (+27 and +26 percent respectively).

[7] Factors are remunerated at their marginal costs, but quantitative restrictions allow Syrian firms to operate below the world production frontier. We assume here that trade restrictions only impact the remuneration of capital (and not labour) in each sector. A technological catch up would imply that the marginal cost of capital decrease, by an amount equivalent to the excess capital remuneration created by trade restrictions. Given the Cobb Douglas form of the production functions retained, this effect can be captured by an increase in average capital productivity in each sector exactly offsetting the initial price wedge.

[8] Labour obviously greatly benefit from the increased capital productivity, with wages rising 6 percent compared to the benchmark situation. But it is interesting to note that capital, in spite of decreasing marginal costs, also benefit from the reform (with a 2 percent increase in its remuneration) as a result of a much greater demand for Syrian products.

Dynamic Effects of Trade Barriers Dismantling	**Full**	**Half**
Gross Domestic Product	4.8%	3.2%
Private consumption	6.2%	3.6%
Investment	3.8%	4.6%
Exports	3.9%	9.3%
Imports	4.7%	11.3%
Welfare Changes (as % GDP)	4.4%	2.4%
Consumer surplus	0.4%	3.2%
Producer surplus	4.0%	-0.8%
Total Output	8.8%	5.2%
Agriculture	-0.2%	-0.8%
Mining	-4.9%	-4.5%
State Owned Manufacturing Sectors	26.9%	14.3%
Textiles	68.1%	32.5%
Wood Products	46.9%	14.7%
Food Products	5.8%	1.9%
Chemicals	27.2%	18.4%
Non Metallic Products	8.5%	5.9%
Metallic Products	39.9%	12.8%
Other Manufactured Products	20.4%	12.3%
Private Manufacturing Sectors	26.4%	16.8%
Textiles	33.1%	40.9%
Wood Products	36.4%	11.7%
Food Products	7.0%	3.2%
Chemicals	28.3%	16.9%
Non Metallic Products	10.2%	6.1%
Metallic Products	45.3%	19.0%
Other Manufactured Products	23.6%	9.9%
Services (*)	4.5%	3.7%

Source: Authors' calculation. . (*) The service sector is actually disaggregated into seven different sectors in the model: Energy and Water, Construction, Commerce, Transport and Communication, Finance, Social Services, Public Services. Detailed results are available upon request from the authors.

In real life, there is nevertheless no way to decompose empirically the price wedge into the two sources of distortion, the rent-generating effect on the one hand and the inefficiency effect on the other. For this reason, we combine in the last simulation (column "Half") the two effects, assuming that the price wedge is an equal combination of the rent-generating and inefficiency distortions. Thus in this case the welfare impact mix efficiency gains with rent losses for the representative household. Unsurprisingly, results are somewhere between the two previous simulations, "Full", and "Non-Tariff Barriers". Worth noticing that all manufacturing sectors see their output growing and that producers welfare loss does not exceed one point of GDP.

5. Conclusion

In this paper, we estimate the magnitude of non-tariff barriers in Syria, which result notably from a complex system of positive and negative import lists. Our approach, based on the comparison of world and domestic prices of imports, suggests that non-tariff trade barriers far exceed tariff barriers as a percentage of GDP (6.0 percent against 2.4 percent). Equivalently, non-tariff barriers raise on average by 22 percent the domestic price of imported goods, against 8 percent for tariffs. These estimates provide a useful indication of the potential fiscal gains of converting NTBs to tariffs.

A second part of the paper is devoted to analyzing the impact of removing NTBs, as a way to measure their current benefits/costs for the Syrian economy. Given the impossibility to identify precisely the reason of the price wedge between domestic and world prices, we follow two approaches, which set in our opinion the lower and upper bounds estimates of NTBs' impact. The first one considers NTBs as similar to taxes whose revenue accrue to Syrian households. Seen from this angle, NTBs alter relative prices (between domestic and imported goods) and prevent the exploitation of traditional gains from trade. Removing them in turn enables their exploitation and simulation results suggests that such static gains could be substantial, with an increase in household's welfare of about half a point of GDP.

Such a figure is in line with applied CGE modeling of the impact of trade liberalization (Rutherford and Tarr, 2000) and is typically believed to underestimate the actual gains of trade, as it does not capture dynamic ones. The latter stem from the possible exploitation of economies of scale, the consumers' access to a greater choice of goods, the use of a greater variety of inputs, the emergence of a more competitive structure and a greater access to knowledge and technical know-how.[9] Non-tariff barriers, typically, not only alter relative prices, but insulate producers from competition by segmenting markets, hence avoiding the exploitation of such dynamic gains of trade. Seen from this angle, which corresponds to our second approach, the removal of Syrian non-tariff barriers could be rewarded by substantial welfare gains – in the order of 3 to 5 percent of GDP for a given level of resources (labor, capital), and probably more in the medium term as it would definitely put Syria on a new and higher growth path, pulled by competition and the modernization of its productive capacities.

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[9] Most goods entail some fixed costs of production. The larger the market, the larger the possibility to produce at high scale, to develop and access to a greater variety of final products (for the welfare of consumers) and inputs (for the efficiency of producers), and to develop competition among suppliers.

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