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Politically Optimal Tariffs

An Application to Egypt

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Abstract

Egyptian economic history has been influenced by the import-substitution industrialization approach to development, dating back to Gamal Abdel Nasser's Pan-Arabic and socialist movement in the 1950s. Two major waves of liberalization have marked the government's efforts to rationalize and modernize the economy—the *Infitah* (opening) promoted by Anwar Sadat in the 1980s, and further trade and privatization efforts by Hosni Mubarak in the 1990s. Nonetheless, the extent of trade liberalization does not compare well with similar countries. Despite a decade of liberalization, the trade regime is characterized by deliberate and gradual reforms. By 1999 these reforms had led to average tariffs close to 30 percent, with high dispersion and escalation, well above those in comparable countries.

Dorsati and Olarreaga provide a political economy analysis of the difficulties of liberalizing tariffs in Egypt in general, and in its specific industries. They present the theoretical and empirical models and discuss the results. The authors also explore the potential effects of the Euro-Med agreement for Egypt.

The political economy analysis of the Egyptian tariff structure identifies two sets of highly protected sectors. Overprotected industries are defined as those with actual tariffs at least 25 percent higher than what is predicted by the political economy variables. The political determinants can be divided into two groups: the lobbying and counter-lobbying forces. First, the lobbying strength of specific capital in each sector is proxied by the degree of industry concentration, the labor-capital ratio, and the import penetration ratio. Second, counter-lobbying in factor or input markets is proxied by wage level, degree of processing in the industry, and degree of intra-industry trade. Using this methodology, the authors identify two sets of products: six products where tariff cuts will *not* be politically costly, and six where it will be politically costly, In both cases, lowering tariffs will improve resource allocation and efficiency in the industries involved.

The prospects of a free trade area with Europe should also help reduce tariffs in sectors where a high share of production is exported or imported from Europe. If products are exported to Europe, the potential free access to the European market should more than compensate for any tariff reductions in the local market. On the other hand, if products are heavily imported from Europe, the preferential access for European exporters will tend to significantly increase their presence in the Egyptian market. This in turn will reduce the "protective" aspect of external tariffs in sectors with large import penetration as competition will be coming from Europe.

The EU-Egypt agreement includes a lengthy (19 years) structure of tariff reduction. This structure will lead to increased effective rates of protection for the first eight years of its implementation, added economic distortions, and inefficient use of resources. The Egyptian authorities may want to consider speeding up the Euro-Med schedule of liberalization to mitigate an increase in effective rates of protection. Furthermore, special effort should be made to reduce external tariffs on semi-processed and processed goods to attenuate the expected negative effects of the rise in effective rates of protection.

More generally, to prevent the high potential for trade diversion associated with Egypt's high tariffs, a simultaneous reduction in Egypt's external tariffs should accompany the EU-Egypt agreement.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to understand the determinants of protection in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Flewitt, room MC3-333, telephone 202-473-2724, fax 202-522-1159, email address pflewitt@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at dmadani@worldbank.org or molarreaga@worldbank.org. September 2002. (38 pages)

Politically Optimal Tariffs: An application to Egypt

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Non-technical Summary

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Non-technical summary of " Politically Optimal Tariffs: An application to Egypt"
By Dorsati Madani (AFTP4), Marcelo Olarreaga (DECRG)

Egyptian economic history has been influenced by the import-substitution industrialization approach to development, dating back to Gamal Abdel Nasser's Pan-Arabic and socialist movement of the 1950s. Two major waves of liberalizations have marked the government's efforts to rationalize and modernize the economy - the Infitah (opening) promoted by Anwar Sadat in the 1980s and further trade and privatization efforts by Hosni Mubarak in the 1990s. Nonetheless, the extent of the trade liberalization does not compare well with similar countries. Despite a decade of liberalization, the trade regime is characterized by deliberate and gradual reforms. By 1999, these reforms had led to average tariffs close to 30 percent, with high dispersion and escalation, well above those in comparable countries.

This paper provides a political economy analysis of the difficulties of liberalizing tariffs in Egypt in general and in its specific industries. The theoretical and empirical models are presented and results are discussed. We also explore the potential effects of the Euro-Med agreement for Egypt.

The political economy analysis of the Egyptian tariff structure allows for the identification of two sets of highly protected sectors. Over-protected industries are defined as those with actual tariffs at least 25 percent higher than what is predicted by the political economy variables used in the analysis. The political determinants we use can be divided into two groups: the lobbying and counter-lobbying forces. First, the lobbying strength of specific capital in each sector is proxied by the degree of industry concentration, the labor-capital ratio, and the import penetration ratio. Second, counter-lobbying in factor or input markets is proxied by wage level, degree of processing in the industry, and degree of intra-industry trade. Using this political economy methodology, we identify two sets of products: six products where tariff cuts will <u>not</u> be politically

costly and six where it will be politically costly. In both cases, lowering tariffs will improve resource allocation and efficiency in the industries involved.

The prospects of a Free Trade Area (FTA) with Europe should also help reduce tariffs in sectors where a high share of production is exported or imported from Europe. If products are exported to Europe, the potential free access to the European market should more than compensate for any tariff reductions in the local market. On the other hand, if products are heavily imported from Europe, the preferential access for European exporters will tend to significantly increase their presence in the Egyptian market. This in turn will reduce the "protective" aspect of external tariffs in sectors with large import penetration as competition will be coming from Europe.

The EU-Egypt agreement includes a lengthy (19 years) structure of tariff reduction. This structure will lead to increased effective rates of protection (ERPs) for the first eight years of its implementation, added economic distortions and inefficient use of resources. The Egyptian Authorities may want to consider speeding up the Euro-Med schedule of liberalization to mitigate an increase in effective rates of protection. Furthermore, special effort should be made to reduce external tariffs on semi-processed and processed goods to attenuate the expected negative effects of the rise in effective rates of protection.

More generally, to prevent the high potential for trade diversion associated with Egypt's high tariffs, a simultaneous reduction in Egypt's external tariffs should accompany the EU-Egypt agreement.

Introduction

Egyptian economic history has been influenced by the import-substitution industrialization approach to development, dating back to Jamal Abdel Nasser's Pan-Arabic and socialist movement of the 1950s. Two major waves of liberalizations have marked the government's efforts to rationalize and modernize the economy - the Infitah (opening) promoted by Anwar Sadat in the 1980s and further trade and privatization efforts by Hosni Mubarak in the 1990s. Nonetheless, the trade liberalization does not compare well with similar countries. Despite a decade of liberalization the trade regime is characterized by deliberate and gradual reforms that have led in 1999 to average tariffs close to 30 percent, with high dispersion and escalation - well above those in comparable countries.

This paper provides a political economy analysis of the difficulties of liberalizing tariffs in the general economy and in specific industries. After a brief overview of the Egyptian past and present economic policy in section one, we discuss the theoretical basis for our analysis and present the empirical model and results in section two. Section three identifies over-protected and under-protected industries, including an analysis as to whether the EU-Egypt FTA agreement will help mitigate some of the resistance to liberalization. We discuss alternative liberalization scenarios in section four. Section five concludes.

I. Political economy of Egypt

A. History in brief

Egyptian economic history is characterized by import-substitution industrialization approach to development, dating back to Gamal Abdel Nasser's Pan-Arabic and socialist movement of the 1950s. Nasser gave a sense of populist entitlement to the people, while allowing for a large public sector, a command economy and strong unions. Anwar Sadat's *Infitah* (the opening) sought to roll back some of Nasser's legacy. The *Infitah* succeeded in fostering "a bourgeoisie thriving on international connections and tertiary activities, but it stimulated little investment in production industries or for export (Hinnebusch, 1993, pg. 160)".

In the early 1990s, Hosni Mubarak undertook structural adjustment – assisted by the IMF and World Bank – and went beyond the *Infitah* in an attempt to transform the institutional structure of the economy. In its economic rendition, deepening the *Infitah* was an attempt to integrate Egypt into the world market by unifying the exchange rate, raising interest rates to internationally competitive levels, and ending the import prohibitions and oil subsidies progressively. Trade liberalization would help free the local market from public sector dominance and partially correct economic incentives for production and exports.

The Egyptian bourgeoisie was ambivalent over the trade reforms. Private industrialists who benefited from privileged connections (trade monopolies, domestic market domination) with the public sector opposed reforms. Import agents and businessmen with an eye on public assets to be privatized supported them (Hinnebusch, 1993). Lengthy debates between the government, public manufactures, and the private sector contributed to a slow pace of reform. Furthermore, the government, still wanted to achieve promotion of production and export of semi-finished products by providing domestic machinery and intermediate goods. This policy duality slowed the pace of liberalization (Weiss & Wurzel, 1998).

Trade and stabilization policies launched in 1991 did not bring about the expected output response. While the economy was stabilized, growth remained sluggish. Majd (1995) notes that this may be due to a number of elements. In addition to macroeconomic stability, political stability and adequate institutional and infrastructural supports enhance trade reform credibility. Also, empirical evidence from developing countries suggests that governments need to ensure that market contestability is not affected by potential rent seeking, lobbying or vested interests.

B. As things stand

Springborg (1999) argues that Egypt's economy still has the remnants of its economic history. One interpretation is that some political and economic elites may have sought to keep their advantages by resisting reforms. This type of behavior may be revealed in their attempt at perpetuating tariff barriers to protect monopolized domestic markets or their lobbying efforts for over-valued currency in order to ensure continued access to cheap imports.[1]

Springborg's analysis seems to be supported by the developments of the last decade in trade. The Egyptian foreign trade trends are characterized by a heavy reliance on rentier, as opposed to productive, income. For instance, in 1998 rentier income totaled US $10-11 B, consisting of tolls on the Suez Canal (US $2 B); tourism (US$ 3 B); workers' remittances (US $ 2.5 B); foreign aid (US $1 B); and petroleum (US $1.5 B). In the same year non-oil commodity exports earnings summed up to some US $3B, equally divided between primary products and manufacturing[2].

[1] Springborg, 1999, pg. 27
[2] Information from Berger and Checchi consulting companies, January 2000, "Trade and Investment Trends and Prospects in Egypt". Report prepared for USAID.

B.1. Tariff Analysis

Egypt's trade liberalization has led to more than 50 percent decrease in tariffs. However, the trade regime still does not compare well with many countries that have undertaken sweeping trade reforms. Egypt's tariff regime is characterized by a high average tariff, an extremely high dispersion of tariff levels across tariff lines, and a significant amount of tariff escalation. In 1999, Egypt's nominal average tariff rates was 27.4 percent, including the 3-4 percent customs and other surcharge[3]. While generally comparable to the Moroccan and Tunisian average tariff rates (respectively 25 and 33.6 percent), the Egyptian rate largely surpasses that of Argentina (13.5 percent in 1998) and Chile (11 percent). It also compares poorly to the 14 percent average of all IMF members. Egypt's average import-weighted tariff is 13.8 percent, comparable to Argentina's (12.9%) but higher than Chile's (10.9%) , Malaysia's (9.4 %) and Philippines'(9.3%). These differences points to the relatively restrictive tariff structure in Egypt(see appendix A).

Table 1: Average nominal and import-weighted tariffs for selected countries

COUNTRY	1998 AVERAGE NOMINAL TARIFF (PERCENT)	1998 IMPORT-WEIGHTED AVERAGE TARIFF (PERCENT)
Argentina	13.5	12.9
Brasil	14.6	16.6
Chile	11.0	10.9
Colombia	11.7	10.6
Egypt	**27.4**	**13.8**
Korea	7.9	
Malaysia (1997)	8.7	9.4
Mexico	13:3	
Morroco	25.0	11.9[a]
Philippines	11.2	9.3
Tunisia (1997)	33.6	
Venezuela	12.0	10.9

[a] Excludes 15 percent surcharge applied to most imports.

[3] Egypt high average nominal level is partly influenced by the excessive tariffs in alcoholic beverages, where tariffs can reach levels as high as 2600 percent (well above the 40 percent upper bound of the tariff

The standard deviation of Egyptian tariffs in 1999 is 127 percentage points, which indicates a high degree of dispersion in its tariff structure (the coefficient of variation is equal to 4.5 compared to the traditional 0.5 level).[4] The most salient feature of Egypt's tariff structure is the degree of tariff escalation, i.e., tariffs are higher for fully-processed products than raw materials or semi-processed products. In 1999, the average tariff on products in the first stage of processing was 14.3 percent; in the second stage 21.4 percent and in the third stage 35.6 percent[5]. Tariff escalation can be found across all Egyptian industries, with the exception of Fabricated Metal and Machinery (see Figure 3 in Appendix A). While not particular to specific industries, tariff escalation is rather significant in Textile and Leather, Wood and Wooden Furniture and Basic Metal. Given the discussion above, it is not surprising that most distorting tariffs (Table 2) are found in the manufacturing sectors, where the tariff range is between 0-3000 (0-135 excluding alcoholic beverages).

Table 2: Applied MFN tariff, 1999

	Per cent of all lines (6,032)	Average (Per cent)	Average including service fee and surcharge[a]	Range (Per cent)
Total	100.0	27.4	30.4	0-3,000
- agriculture and fisheries	5.2	17.9	20.9	1-40
- mining	1 9	11.0	14.0	3-40
- manufacturing	93.0	28.9	31 9	0-3,000
Total (excluding tobacco and alcoholic beverages)	100.0	21.5	24.5	0-135
- agriculture and fisheries	5.2	17.9	20.9	1-40
- mining	1.9	11.0	14.0	3-40
- manufacturing	93.0	21.8	24.8	0-135

[a] A 3 percent surcharge is added across the board. Source: Applied 1999 tariffs were provided by the Egyptian authorities.

schedule). However excluding alcoholic beverages, the average tariff remains at a high of 21.5 percent. Including the 2-3 percent surcharge, the average tariff is close to 25 percent.

[4] Again, this is partly influenced by the tariff peaks for alcoholic beverages; but as shown in Table 4, there are several other sectors where the within sector coefficient of variation is above the traditional 0.5 level.

[5] The classification of different stages of production was calculated according to WTO filter used in Trade Policy Reviews.

II. Political economy of tariffs: determining politically optimal tariffs

High tariffs appear consistent with the political economy equilibrium in Egypt. To assess the "political" cost that tariff reductions may induce, one first needs to understand what determines the Egyptian tariff structure. We follow the empirical literature on endogenous tariff formation through industry lobbying.

The theory of endogenous protection describes how a combination of agents' preferences over trade policy and the weight given to different groups' preferences may translate into deviations from first-best trade policies. Here we briefly summarize the main results of the theoretical and empirical literature[6]. We then use this framework to identify sectors in which tariffs are above their political optimum, which in turn indicates that tariff reductions should not be costly[7].

General predictions

The predictions of the correlates of expected cross-sectoral variations in tariff protection are presented below. Other things equal, the level of *protection* received by an industry *is higher*[8]:

- *the higher the level of industry concentration.*[9] This captures free-riding incentives à la Olson.

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[6] For a recent review of the empirical and theoretical literature, see Rodrik (1995). For recent empirical literature applied to the region see Rama (1994). For alternative approaches to the theory of endogenous protection, based on "social insurance" for example, see Hillman (1989).

[7] Due to data constraint, the analysis focuses on manufacturing exclusively.

[8] All these results are also well documented in the empirical literature on endogenous tariff formation, see Rodrik (1995). However, both the theoretical and empirical results are somewhat partial equilibrium, since they do not necessarily account for the simultaneity bias. For an empirical study that accounts for the simultaneity bias between imports and tariffs, see Trefler (1993). This aspect is neglected in the empirical section.

[9] see Rodrik, 1987 for a theoretical justification and Trefler, 1993 or Marvel and Ray, 1983 for empirical examples. Note that there is both empirical and theoretical evidence that this need not be the case. On one hand, industry concentration allows to solve the free-riding problem. On the other hand, an increase in group size may result in higher group contributions (see Cornes and Sandler, 1996). Moreover, the theory is

- *the lower the import penetration ratio.*[10] The rationale for this is that the lower the import penetration ratio, the lower the relative weight of consumers compared to producers in the government's objective function.[11]

- *the higher the degree of processing of the product*[12] . Here we capture lobbying rivalry. If sector j purchases goods from sector i then sector j will counter-lobby any increase in sector i's level of protection. Thus, the higher the share of sector i production that is purchased by other sectors the smaller the endogenous tariff. Therefore, as long as consumers are not organized, consumer goods receive *ceteris paribus* higher levels of protection than intermediate goods.

- *the higher the labor/capital ratio*[13]. Cadot et al. (1997) show that tariffs are higher in sectors where the share of capital remuneration in value added is large, after introducing lobbying rivalry on the labor market. A higher labor/capital ratio *ceteris paribus* has two opposing effects on the share of capital remuneration in value added. On one hand, the direct effect tends to reduce it, as a higher labor/capital ratio obviously implies a smaller capital/labor ratio. On the other hand, a higher labor/capital ratio implies a higher marginal productivity of capital relatively to labor which in turn raises the share of capital remuneration in value added. Under suitably general conditions, it can then be shown that the latter effect dominates the former if

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not well-founded in empirical measures of industry concentration as shown by Hillman (1991) and Long and Soubeyran (1996). For ambiguous evidence on the relation between protection and industry concentration see Baldwin (1984). For a review of the literature on seller concentration and protection, see Bilal (1995). However, there is a general presumption that industry concentration leads to higher levels of protection and this is confirmed in the empirical section.

[10] see Grossman and Helpman, 1994 for a theoretical justification. This result has been generally challenged on empirical grounds, as discussed by Rodrik (1995). For empirical examples, see Anderson (1980) or Finger and Harrison (1994).

[11] To see this, note that $m/y = (c - y)/y = c/y - 1$ where m are imports (or net imports), c is consumption and y the level of production.

[12] see Cadot et al., 1997 for a theoretical justification and Ray, 1991 or Marvel and Ray, 1983 for empirical examples.

[13] for empirical evidence, see e.g., Finger and Harrison, 1994 and Rodrik, 1995

the elasticity of substitution between capital and labor is smaller than 1 (which is a generally accepted value in the empirical literature).[14]

- *the smaller the share of intra-industry trade*[15]. Cadot et al. (1997) argue that the larger the share of intra-industry trade in total trade, the larger the elasticity of import demand for goods produced in the domestic economy, and thus following Ramsey pricing rule, the lower the tariff (since the efficiency costs of a tariff is relatively large compared to the producers gain in that case). Marvel and Ray (1987) suggest an alternative explanation based on intermediate inputs counter-lobbying: they argue that intra-industry trade essentially arises among producers (purchase of intermediate goods), and as producers are more concentrated than consumers, they tend to be more efficient in combating protectionist pressures. Finally, Levy (1997) argues that an increase in intra-industry trade benefits all agents whereas an increase in inter-industry trade has the usual Stolper-Samuelson redistributive effects and therefore are subject to more conflict and higher lobbying pressures.

If one assumes that labor markets are segmented in the sense that labor is better conceived as being mobile across a particular group of industries rather than across the economy as a whole, then it can be shown that the level of *protection* received by an industry is *higher*:

- *the lower the equilibrium wage in this sector* [16]. Cadot et al. (1997) show that the optimal endogenous tariff of each sector is positively related to the share of specific capital in total sales. Then, the larger the wage in sector *I* (once we control for output

[14] In a two factor sector, the share of capital remuneration in value added is given by: $\beta = rk/[w\ell + rk] = 1/[w\ell/rk + 1]$, where r is capital wage, k is the amount of capital, w is labor wage and ℓ is the amount of labor. Then $\partial\beta/\partial(\ell/k) = 1/[w\ell/(rk) + 1]^2 \; w/r(1+\sigma)$ where σ is the elasticity of substitution between labor and capital. And the right hand side is larger than zero if $|\sigma| < 1$. Note that the empirical estimation of the elasticities of substitution between labor and capital generally yield values below one.

[15] for theoretical explanations see Cadot et al., 1997, Levy, 1997 and Marvel and Ray, 1987; for an empirical example, see Marvel and Ray, 1987.

and labor/capital ratios), the smaller the share of capital in total sales, and therefore the smaller the incentives to lobby in the political game.

Empirical specification

The Egyptian tariff equation is given by:

$$\log T_i = \alpha_0 + \sum_{k=1}^{n} \alpha_k \log PV_{i,k} + \mu_i$$

where subscript i refers to the 81 industry aggregation of the ISIC-4 digit manufacturing classification; T_i is tariff in sector i, α s are parameters, $PV_{i,k}$ is the political economy variable k in sector i, μ_i is the error term. The political-economy variables were listed above. The construction and expected signs of these variables are given in the annex.

We face a potential heteroscedasticity problem as we use grouped data where the number of elements per line differ from 1 line to 524 (see table 3). This is due to the fact that tariffs are generally set at the tariff line level (8-digit of the HS system) and that the political-economy analysis is carried out at the industry level. To correct this potential heteroscedasticity we weight each observation by the square root of the number of tariff lines in each industry (Dickens, 1990). The estimation method is OLS with a White correction to obtain robust standard errors.

Estimation results for the above equation for Egypt's manufacturing sector are reported in the table 3 below. The overall fit of the equation is relatively good and variables tend to have the expected sign except for intra-industry trade and labor-capital ratio. The reason for this is probably due to the fact that Egypt tariff structure tends to highly protect capital intensive sectors.

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[16] see Cadot et al., 1997 for a theoretical justification and Anderson and Ray, 1987 and Ray, 1991 for empirical examples.

Table 3: Determining Egypt's tariff[a]

	4-digit ISIC
Counter-lobbying in factor or input markets	
Wage	-.28*
	(.13)
Degree of processing	.22
	(0.28)
Intra-industry trade	.19**
	(.06)
Capital Owners Lobbying	
Labour-capital ratio	-0.04*
	(0.02)
Industry concentration	0.10*
	(0.05)
Import/output ratio	-.13**
	(0.02)
Constant	3.68**
	(.39)
R^2	0.55
number of obs.	81

[a]Estimation is done using OLS. Figures in parenthesis are White robust standard errors. ** denotes significance at the 1 percent level; * at the 5 percent level.

III. Identification of over-protected and under-protected industries

The political-economy analysis also allows us to identify over-protected and under-protected industries. The Indicator of over-protection (I_i) determined by the ratio of the actual tariff level (t_i) the fitted value ($\hat{t}_i$) from the above estimation: [17]

[17] More correctly, the exponential of the fitted value.

$$I_i = \frac{t_i}{\hat{t}_i}$$

If the ratio is larger than 1 then this indicates that the sector has a higher tariff level than what would have been predicted from the above estimation.[18]

We identify over-protected industries is those where the value of the actual tariff is 25 percent higher than the value predicted by the political economy variables described. This corresponds to all industries for which the Indicator in the third column of table 3 is above 1.25. This is the case for 27 of the 81 sectors (or 33 percent of all sectors) of the ISIC 4-digit manufacturing classification.

The top six over-protected industries (excluding Alcoholic beverages) are: Motor Vehicles (3843), Soft drinks (3134), Tobacco (3140), Musical Instruments (3902), Tyres and Tubes (3551) and Electrical appliances and housewares (3833). These are all industries where the average tariff is above 30 percent. Given that they tend to be relatively over-protected, as suggested by the political economy variables, tariff reductions should not be politically costly.[19] Moreover, all these sectors consist of fully-processed products (and some semi-processed in Motor vehicles), which implies that tariff reductions will also reduce the extent of tariff escalation in Egypt's tariff structure (see Table 4), contributing to efficiency gains due to resource reallocation.

With the exception of Tyres and Tubes, these over-protected sectors are not involved in export activities[20] (see Table 4). The high levels of protection are distorting the allocation of resources to these activities in which Egypt has apparently a low comparative advantage. Reallocating resources from these sectors to the rest of the economy by lowering tariffs in these over-protected sectors should therefore, not only have a low political cost, but also provide a boost on exports of products in which Egypt has a comparative advantage.

[18] Other political-economy variables, such as the share of public ownership were excluded of the analysis, but could be introduced if data was available at the industry level.

[19] This statement relies on the assumption that non crucial political economy variable for any of these sectors has been ignored.

A. Where will the tariff reform hurt?

The political-economy analysis also allows us to identify industries where tariffs are close to or below their political optimum. We define these industries as those where the tariff fitted value obtained (see appendix) is not larger than the actual applied tariff (i.e., the indicator in the first column of Table 4 is smaller than 1).

The more under-protected sectors (i.e., those for which the indicator in Table 4 has the lowest values) are Grain mill products (3116), Agriculture machinery and equipment (3822), Railroad equipment (3842), Engines and Turbines (3821) and Aircraft (3845). These are all sectors in which the applied average tariff is below 10 percent and therefore should not be affected by a tariff reduction that reduces the highest tariffs.

However, there are eight sectors that have applied average tariffs above 30 percent and for which the value of the political indicator in Table 4 is below 1. These are: Bakery products (3117), Cocoa, chocolate and sugar confectionery (3119), Knitting mills (3213), Leather products (3233), Footwear (3240), Wooden and cane containers (3312), Soap, cleaning preparations, perfumes (3523), Pottery, china, earthenware (3610). These are sectors in which tariff reduction will be politically costly and where a longer adjustment period may be necessary. Note that all these sectors consist of fully-processed products with the exception of Cocoa, chocolate and sugar confectionery which also includes semi-processed products (see Table 5).

However, two of these sectors export a significant amount of their domestic production (Leather, 81 percent and Pottery 67 percent). Tariff reductions in these sectors will probably lead to within industry reallocation of resources from inefficient producers that sell within the domestic market to more efficient producers that aim towards foreign markets. Given that within industry reallocation implies relatively low adjustment costs, the adjustment period for these sectors could be shorter.

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[20] where 15 percent of domestic production is exported. Also see table 5.

The remaining six sectors show little export activities (with the exception perhaps of Wooden and Cane containers). Reducing tariffs in these sectors (in the medium run to allow for costly adjustment) will lead to reallocation of resources into more efficient sectors with a more outward oriented production structure.

B. Can the EU-Med agreement help ease the pain?

B.1 The EU-Egypt Agreement - General Description

The full EU-Egypt agreement was not available for a review at the time of this analysis, but available information suggests that it emulates the recent Tunisia and Morocco agreements in tariff reduction schedule and preferential access.[21] The new EU-Egypt agreement is to achieve a free trade area by 2010. It will ensure a deepening of the trade liberalization beyond Egypt's Uruguay Round commitments, albeit on a preferential basis. It will also provide improved market access for Egyptian exporters to its largest trade partner.

The agreement will provide preferential access to the EU market for *most* Egyptian industrial exports (these later constitute 60% of the Egyptian exports to the EU). The EU *may* provide duty free access to some industrial exports while duties on EU exports of most industrial products to Egypt are expected to be phased out over 12 years.

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[21] Both Tunisia's and Morocco's EU agreement only covers industrial products[21]. Tunisia already has free access for most of its industrial exports to the EU since a 1976 agreement – except for textile in which it has not filled its quota anyway.

The Tunisian agreement opens up, over 12 years, all tariffs and non-tariff barriers to industrial imports from EU, subject to a measure of safeguard. QRs and tariffs were immediately removed for intermediate inputs and capital goods (equipment goods). There is a delayed liberalization of the consumer goods imports. This has caused increased ERP, leading to further distortions in the economy. In light of this development, The IMF has suggested advancing the remaining phases of trade tariff dismantling. This is to avert any further mis-allocation of resources that later would need to be re-deployed at economic and political cost.

The first phase of trade liberalization (tariff reduction) in line with the EU-Moroccan agreement went into effect on July 1, 1999. This first stage, as in the Tunisian case, involves reducing tariffs on industrial and intermediate goods. Tariffs will be eliminated on raw material and capital goods within the first 5 years of the implementation of the agreement. This liberalization pattern will imply an increase in effective protection at first.

Tariff concessions on a seasonal basis are accorded on some agricultural products, based on reference prices and quotas. The concessions range between 40-80 percent of the EU CET for mainly complementary products to EU agricultural production: dates, mangoes, onions, potatoes, citrus fruits. The agreement is non-reciprocal. EU exports face MFN tariffs.

The schedule of tariff reductions is launched three years after the agreement goes into effect. It will take 20 years after signature to be fully implemented. The tariff reduction schedule, especially as it applies to industrial products, is geared to remove tariff on raw and intermediate inputs and capital goods, but delay liberalization of consumer goods imports.

More specifically, the schedule of tariff reduction consists of three broad lists:

(i) agricultural commodities, for which the two parties have agreed to quotas.

(ii) Ago-Processed Products, which were not considered as industrial goods and for which the EU currently apply tariffs.

(a) Products presently subject to tariffs of 1-5 percent (i.e. bones, bird skin and feather, maltose, cocoa, etc.) will have face zero tariffs starting in the first year the agreement goes into effect.

(b) Products presently subject to 20-30 percent tariffs (i.e. milk, vegetable extracts, etc.) will see the maximum rates reduced by 15 percent to 22.5 percent from year 3 and within 3 years.

(c) Finally, products presently subject to 30-40 percent tariffs (i.e. biscuits, based items, preserved vegetables and fruits, etc.), will see the maximum rates reduced by 25 percent to 30 percent from year 3 and within 3 years.

(ii) Industrial imports which are grouped into four categories: primary, intermediate and final (consumer) goods, and a last category deals with cars only.

(a) Primary and industrial commodities are currently subject to 5-20 percent tariff. Tariff reductions will start after the initial three years of implementation and tariffs will be eliminated in four years (in 25 percent tranches), so that by the 7th year these products will have zero tariffs.

(b) Intermediate commodities are currently subject to 10-20 percent tariffs. Tariff reductions will start on the 7th year after the agreement is signed and will reach zero percent in the 13th year.

(c) Finished consumer goods liberalization will be launched in 10th year the agreement's implementation and tariffs will reach zero on the 19th year.

(d) Reductions in car tariffs will start on the 10th year of the agreement's implementation and tariffs will reach zero on the 19th year.

B.2 Implications of Egypt-EU Agreement for Egypt's External Tariffs

This agreement will have important consequences for Egypt as the EU represents 42 percent of its export market and 39 percent of its imports.[22] The EU-Egypt tariff reduction schedule discussed above, similar to the Tunisian and Moroccan agreements, is expected to increase the effective rates of protection, peaking during the eighth year after signing of the agreement, and then declining to zero by the 19th year. This will lead to inefficient re-deployment of economic resources towards more protected final industries in the medium term. It may also make liberalization in the later years more politically difficult for the Egyptian government as some industries become accustomed to higher medirum term rates of effective protection.

More worrisome, given Egypt's existing high tariff level, dispersion, and escalation, the EU-Egypt agreement is expected to create trade diversion if not accompanied by external tariff liberalization. Egyptian tariff will no longer protect Egyptian producers exclusively, but also European exporters to the Egyptian market. This will induce income redistribution from the government's tariff revenue to European exporters. To avoid trade

[22] The restrictiveness of the EU rules of origin will play be an important factor for this to hold true.

diversion, trade liberalization with Europe should be accompanied by external tariff reductions.[23]

Reductions of external tariffs will also enhance Egypt's export competitiveness as it decreases the anti-export bias embedded in the high tariffs. Duty-free access to the European market should compensate Egyptian exporters to Europe for any domestic loss of protection, especially in semi- and fully-processed goods. In 23 of the 96 sectors reported in table 4 exports to Europe represents more than 50 percent of total exports. Note that in 16 of these 23 sectors the product degree of processing is above 2 which indicates that these products are either semi- or fully- processed goods. These are also products in which Egypt tends to have high tariffs.

Duty free access to the Egyptian market granted to European exporters will intensify competition in Egypt as it reduces the level of "protection" granted to Egyptian importers.[24] In 38 of the 96 sectors reported in table 4, European imports represent more than 50 percent of total Egyptian imports. More importantly, in 33 of these 38 sectors the level of processing is above 2, which suggest that these goods are semi- or fully-processed products. In Egypt these products tend to have high tariffs.

To a small country, an important attraction of Free Trade Areas (FTA) with large partners is that its producers are protected by the large partners' tariffs within the FTA zone. If the small country also lowers its external tariffs, its consumers and users of imported intermediate products can enjoy lower price products at home. This logic is behind the lowering of external tariffs in Chile while the government was multiplying its preferential trade agreements with partners in the Western Hemisphere and beyond.

For the above reasons, the Euro-Med Agreement should help Egypt commit to further external trade liberalization. Trade-diversion and increased competition in the domestic

[23] See World Bank (2000), Trade blocs, Washington DC.
[24] For an exposition of this argument see Martin Richardson (1993), "Endogenous protection and trade diversion", Journal of international economics 34, 309-324.

market calls for lower tariffs, duty-free access to the European Union market should make tariff reductions easier to introduce[25].

Duty free access to the European market will make the reallocation of resources from highly protected sectors into export oriented sectors less costly (as long as the agreement accounts for Egypt's export interests and rules of origin that are not too restrictive). In the two sectors (Leather and Pottery), where tariff reductions may be politically costly, but where there is a strong outward orientation, duty free access to the European market will compensate for any tariff reductions in the domestic market. This is especially true for Pottery where almost 50 percent of domestic production is already exported to Europe.

Increased competition from European exporters in Egypt's market in some products will make any Egyptian external tariff irrelevant as European producers may flood the market with their products under the agreement. This is again true for Leather products where imports from Europe represented 63 percent of local production in 1998 and for Pottery where the corresponding figure is 35 percent.

IV. Other Regional Agreements and their Potential Impact

Traditionally, trade has not been very large with regional partners, though there are potential medium term gains from improved access to regional markets. Egypt has started to respond to this opportunity and has engaged in a multitude of regional and bilateral agreements in the late 90s. The two most notable regional ones – aside from the EU-Med – are Greater Arab Free-Trade Area (GAFTA) and Common Market of the Eastern and Southern Africa (COMESA).

By joining COMESA and GAFTA, Egypt has committed itself to greater regional trade liberalization. GAFTA was signed in 1997 and aims to expand intra-regional trade by

[25] The previous Minister of Industry in Morocco, Hasan Abouyoub, has mentioned that external trade liberalization would not have been feasible without first entering into a free trade agreement with the

reducing customs duties by 10 percent annually starting in January 1998. Seasonal quotas on agricultural exports will be applied until all tariffs are phased out. COMESA was created in 1993. Egypt joined in June 1998. COMESA's goal is to have a common external tariff (CET) by 2004, with zero percent tariff for capital goods, five for raw material, 15 for intermediate inputs and 30 for final goods. Egypt will need to undertake further liberalization to fit within this framework as its present tariff schedule shows peaks beyond the proposed CET, even after excluding "sensitive" products such as beverages and motor vehicles. There are opportunities for Egyptian exporters, especially to COMESA countries.

21. The bevy of bilateral agreements, such as the one recently signed with a number of Arab countries and the ones being negotiated with the US and Turkey will enhance trade liberalization while raising concerns regarding possible trade diversion and increased complexity of the Egyptian trade regime (i.e., the "spaghetti-bowl" phenomenon linked to overlapping regional trade agreements with different regimes regarding rules of origin).

V. Conclusions

The political economy analysis of the Egyptian tariff structure allows the identification of two set of highly protected sectors: those in which tariff reductions are going to be politically difficult (bakery products, cocoa, chocolate and sugar confectionary, knitting mills, leather products, footwear, wooden and cane containers, soap, cleaning preparations, perfumes, pottery, china and earthenware) and those in which tariff cuts will not be politically costly (motor vehicles, soft drinks, tobacco, musical instruments, tyres and tubes, electrical appliances and Alcoholic beverages). The first group could be given a longer adjustment period. For the second group, tariffs cuts could be more speedy. In both cases tariff cuts would improve resource allocation and efficiency within the industries.

European Union (see World Bank (2000), "Trade blocs", Washington DC).

The prospects of a Free Trade Area with Europe should also help reduce tariffs in sectors where a high share of production is exported or imported from Europe. If products are exported to Europe, the potential free access to the European market should more than compensate for any tariff reductions in the local market. On the other hand, if products are heavily imported from Europe, the preferential access for European exporters will tend to significantly increase their presence in the Egyptian market. This in turn will reduce the "protective" aspect of external tariffs in these sectors due to the added competition

The full implementation of the structure of tariff reductions embedded within the EU-Egypt agreement will take 19 years. This structure leads to increased effective rates of protection for the first eight years of its implementation, added economic distortions and inefficient use of resources. Egyptian Authorities may want to consider speeding up the Euro-Med schedule of liberalization to mitigate this increase in effective rates of protection. Furthermore, special effort should be made to reduce external tariffs on semi- and fully-processed goods to attenuate the expected negative effects of the rise in effective rates of protection.

More generally, to prevent the high potential for trade diversion associated with Egypt's high tariffs, a simultaneous reduction in the country's external tariffs should accompanied the EU-Egypt agreement. This will allow domestic producers to benefit from lower-priced intermediate inputs, originating from both European and non-European sources. This in turn will allow them to maximize their benefits from the duty free access to the European market. This type of rationale was behind recent demands by Chilean producers to cut Chile's external tariffs from its uniform level of 11 percent to 6 percent.

Table 4

Political economy of tariffs

ISIC Rev. 2	Description	Political Economy Indicator	Average tariff	% of Total Import	% of Total Export	% of Exports to EU	% of Imports from EU	Export/ Output	Import/ Output
3111	Slaughtering, preparing & preserving meat	1.585	26.592	0.025	0.003	0.343	0.644	0.041	2.413
3112	Dairy products	1.113	20.382	0.012	0.002	0.000	0.491	0.023	0.986
3113	Canning, preserving of fruits and vegetables	1.137	33.885	0.001	0.022	0.434	0.489	0.264	0.084
3114	Canning, preserving and processing of fish	1.598	22.237	0.005	0.000	0.000	0.186	0.010	3.881
3115	Vegetable and animal oils and fats	0.660	10.444	0.053	0.004	0.011	0.066	0.013	1.201
3116	Grain mill products	0.362	10.588	0.003	0.074	0.027	0.281	0.125	0.035
3117	Bakery products	0.822	35.115	0.002	0.003	0.013	0.947	0.009	0.035
3118	Sugar factories and refineries	1.105	16.833	0.016	0.006	0.417	0.345	0.015	0.281
3119	Cocoa, chocolate and sugar confectionery	0.971	33.846	0.001	0.002	0.015	0.572	0.024	0.044
3121	Other food products	0.978	27.353	0.004	0.004	0.027	0.673	0.018	0.136
3122	Prepared animal feeds	1.112	26.667	0.004	0.000	0.062	0.915	0.002	0.178
3131	Distilling rectifying and blending spirits	3.030	600.000	0.000	0.000	1.000	1.000	0.000	0.000
3132	Wine industries	57.732	2229.286	0.000	0.000	0.729	0.703	0.008	0.028
3133	Malt liquors and malt	10.254	420.000	0.000	0.000	0.020	1.000	0.010	0.000
3134	Soft drinks and carbonated waters	3.239	40.000	0.000	0.001	0.001	0.272	0.013	0.010
3140	Tobacco	2.597	47.389	0.006	0.000	0.081	0.008	0.000	0.138
3211	Spinning, weaving and finishing textiles	1.118	41.664	0.029	0.160	0.644	0.176	0.142	0.171
3212	Made-up textile goods excl. wearing apparel	1.128	37.500	0.001	0.048	0.727	0.437	1.731	0.337
3213	Knitting mills	0.922	54.000	0.000	0.002	0.257	0.394	0.030	0.024
3214	Carpets and rugs	1.429	38.519	0.000	0.029	0.244	0.184	0.411	0.025
3215	Cordage, rope and twine	0.602	27.917	0.000	0.002	0.678	0.204	0.284	0.229
3219	Other textiles	1.173	26.756	0.002	0.001	0.562	0.397	0.015	0.313
3220	Wearing apparel, except footwear	0.889	39.512	0.001	0.181	0.325	0.292	0.926	0.021
3231	Tanneries and leather finishing	0.505	24.087	0.000	0.007	0.542	0.665	0.577	0.012
3232	Fur dressing and dyeing industries	1.739	40.000	0.000	0.000	1.000	0.000	.	.
3233	Leather prods. exl. Wearing apparel	0.927	30.367	0.001	0.002	0.155	0.347	0.814	1.823
3240	Footwear, except rubber or plastic	0.713	40.000	0.001	0.003	0.187	0.249	0.170	0.276
3311	Sawmills, planing and other wood mills	1.268	21.373	0.054	0.001	0.098	0.502	0.017	7.508
3312	Wooden and cane containers	0.663	33.000	0.000	0.000	0.632	0.404	0.130	0.201
3319	Other wood and cork products	0.503	23.125	0.000	0.000	0.010	0.464	0.959	1.373
3320	Furniture and fixtures, excl. metal	1.143	39.783	0.002	0.007	0.288	0.644	0.154	0.233
3411	Pulp, paper, and paperboard articles	1.440	19.248	0.043	0.008	0.574	0.389	0.089	3.351
3412	Containers of paper and paperboard	1.350	34.375	0.001	0.000	0.026	0.481	0.004	0.060
ISIC Rev. 2	Description	Political Economy Indicator	Average tariff	% of Total Import	% of Total Export	% of Exports to EU	% of Imports from EU	Export/ Output	Import/ Output
3419	Other pulp, paper and paperboard articles	1.264	28.182	0.001	0.000	0.063	0.753	0.000	0.160
3420	Printing and publishing	0.872	19.890	0.002	0.007	0.086	0.591	0.036	0.080
3511	Basic chemicals excl. fertilizers	0.893	11.031	0.048	0.036	0.479	0.557	0.208	1.893
3512	Fertilizers and pesticides	0.909	17.222	0.008	0.024	0.339	0.413	0.102	0.244
3513	Synthetic resins and plastic materials	1.303	12.359	0.053	0.004	0.452	0.389	0.422	33.800
3521	Paints, varnishes and lacquers	1.173	25.000	0.003	0.001	0.073	0.690	0.009	0.255
3522	Drugs and medicines	0.451	6.411	0.029	0.039	0.025	0.753	0.103	0.519

3523	Soap, cleaning preps., perfumes, cosmetics	0.878	30.760	0.005	0.023	0.187	0.780	0.092	0.126
3529	Other chemical products	1.122	23.078	0.010	0.024	0.494	0.690	0.405	1.079
3530	Petroleum refineries	0.549	15.761	0.002	0.009	0.791	0.243	0 005	0.006
3540	Misc. petroleum and coal products	0.610	13.125	0.000	0.017	0.332	0.620	0.114	0.019
3551	Tyres and tubes	2.127	30.000	0.005	0.005	0.328	0.283	0.148	0.952
3559	Other rubber products	1.305	21.291	0.005	0.001	0.174	0.625	0.043	2.626
3560	Plastic products	1.195	29.782	0.009	0.015	0.738	0.470	0.086	0.334
3610	Pottery, china, earthenware	0.910	32.679	0.003	0.015	0.717	0.462	0.676	0 757
3620	Glass and products	1.304	27.391	0.008	0.014	0.209	0.419	0.183	0.655
3691	Structural clay products	0.850	24.405	0.003	0.005	0.104	0.723	0.062	0.235
3692	Cement, lime and plaster	1.426	20.625	0.011	0.001	0.041	0.114	0.003	0.168
3699	Other non-metallic mineral products	0.827	24.751	0.002	0.007	0.080	0.667	0.015	0.033
3710	Iron and steel	0.946	15.906	0.097	0.063	0.311	0.255	0.153	1 582
3720	Non-ferrous metals	0.802	15.315	0.022	0.076	0.859	0.285	0.223	0.433
3811	Cutlery, hand tools and general hardware	1.012	18.080	0.012	0.006	0.066	0.573	0.279	3.440
3812	Furniture and fixtures primarily of metal	1.785	36.667	0.000	0.000	0.129	0.663	0.003	0.064
3813	Structural metal products	0.803	16.014	0.006	0.003	0.178	0.665	0.039	0.551
3819	Other fabricated metal products	0.969	25.470	0.013	0.012	0.216	0.479	0.050	0.375
3821	Engines and turbines	0.389	7.083	0.002	0.000	0.000	0.332	0.004	0.846
3822	Agricultural machinery and equipment	0.363	6.717	0.005	0.000	0 042	0.320	0.117	18.783
3823	Metal and wood working machinery	0.661	7.796	0.010	0.001	0.119	0.629	0.354	17.405
3824	Other special industrial machinery	0.603	6.796	0.086	0.003	0.093	0.595	0.060	12.780
3825	Office, computing and accounting machinery	1.957	11.875	0.018	0.000	0.625	0.419	0.044	13.860
3829	Other non-electrical machinery and equipment	0.973	15.419	0.073	0.003	0.168	0.642	0.008	1.286
3831	Electrical industrial machinery	0.982	13.767	0.027	0.001	0.331	0.543	0.010	1.264
3832	Radio, television and communication equipt.	1.540	16.793	0.044	0.001	0.232	0.521	0.009	3.698
3833	Electrical appliances and housewares	1.891	38.420	0.003	0.000	0.272	0.391	0.007	0.376
3839	Other electrical apparatus and supplies	1.458	23.605	0.016	0.001	0.273	0.564	0.010	0.733
3841	Shipbuilding and repairing	0.821	14.635	0.003	0.001	0.111	0.826	0.013	0.341
3842	Railroad equipment	0.384	6.591	0.001	0.000	0.519	0.615	0.003	0.094
3843	Motor vehicles	3.767	56.571	0.054	0.001	0.426	0.423	0.004	0.961
3844	Motorcycles and bicycles	1.431	21.288	0.003	0.000	0.034	0.143	0.001	0.938
3845	Aircraft	0.389	5.000	0.000	0.000	1.000	0.416	.	.
3849	Other transportation equipment	0.888	20.000	0.000	0.000	1.000	0.093	0.000	2.969
3851	Prof. And scientific equipment n.e.c.	0.539	6.389	0.020	0.003	0.180	0.574	0.185	8.259
3852	Photographic and optical goods	1.239	18.135	0.004	0.000	0.764	0.427	0.015	4.917
3853	Watches and clocks	0.948	19.615	0.002	0.000	0.333	0.074	0.002	65.231
3901	Jewelery and related articles	0.431	23.333	0.000	0.000	0.156	0.258	0.101	0.083
3902	Musical instruments	2.485	30.000	0.000	0.000	0.185	0.361	.	.
ISIC Rev 2	Description	Political Economy Indicator	Average tariff	% of Total Import	% of Total Export	% of Exports to EU	% of Imports from EU	Export/ Output	Import/ Output
3903	Sporting and athletic goods	0.987	7.841	0.001	0.000	0.012	0.358	.	.
3909	Manufacturing industries, n.e.c.	1.598	31.185	0.007	0.003	0.377	0.288	0.160	2.463

Table 5

Tariff and trade description (ISIC 4-digit)

ISIC R.2	Description	lines	Applied Tariff, 1999	Import-weighted tariff	Tariff dispersion	Degree of process	Bound Rate	% exports to EU	% imports from EU
1110	Agricultural production	239	17.79	4.71	0.74	1.01	27.5	0.386	0.119
1130	Livestock	12	26.25	10.00	0.34	1.00	27.5	0 086	0.005
1210	Forestry products	19	16.93	17.87	0.62	1.00	27.9	0 455	0.573
1220	Logging	15	6.33	5.02	0.36	1.13	20	0.639	0.825
1301	Ocean and coastal fishing	90	17.67	5.37	0 88	1.13	30	0.671	0.799
1302	Fishing not elsewhere classified	1	20.00	20.00	0.00	1.00	30	0.815	0.000
2100	Coal mining	6	3.00	3.00	0.00	1.00	8.8	0.000	0.004
2200	Crude petroleum and natural gas	8	6.56	16.17	0.67	1.00	20	0.136	0.230
2301	Iron ore mining	2	3.00	3.00	0.00	1.00	20	0.000	0.121
2302	Non-ferrous ore mining	21	5.00	5.00	0.00	1.00	20	0.000	0 066
2901	Stone quarrying, clay and sand pits	33	17.42	20.82	0.59	1.00	22.9	0.305	0.711
2902	Chemical and fertilizer mineral mining	17	10.29	6.00	0.87	1.12	22.9	0.131	0.223
2903	Salt mining	1	16.67	16.67	0.00	1.00	22.9	0.228	0.914
2909	Mining and quarrying not elsewhere classified	27	8.06	5.63	0.44	1.00	22.9	0 620	0 376
3111	Slaughtering, preparing & preserving meat	87	26.59	8.60	0.93	2.56	37.8	0.343	0 644
3112	Dairy products	24	20.38	13.06	0.37	2.42	24.1	0.000	0.491
3113	Canning, preserving of fruits and vegetables	65	33.88	32.44	0.15	2.81	45	0.434	0 489
3114	Canning, preserving and processing of fish	19	22.24	10.98	0.62	2.89	25.7	0.000	0.186
3115	Vegetable and animal oils and fats	52	10.44	8.76	0.49	2.92	22.4	0.011	0.066
3116	Grain mill products	34	10.59	6.13	0.73	2.29	16.1	0.027	0.281
3117	Bakery products	13	35.12	8.85	0.34	3.00	60	0.013	0.947
ISIC R 2	Description	# lines	Applied Tariff, 1999	Import-weighted tariff	Tariff dispersion	Degree of process	Bound Rate	% exports to EU	% imports from EU
3118	Sugar factories and refineries	15	16.83	9.20	0.60	2.20	23.3	0.417	0.345
3119	Cocoa, chocolate and sugar confectionery	13	33 85	33.47	0.26	2 62	46.4	0.015	0.572
3121	Other food products	34	27.35	20.47	0.24	2.82	39.8	0.027	0.673
3122	Prepared animal feeds	2	26.67	23.36	0 18	3.00	20	0.062	0.915
3131	Distilling rectifying and blending spirits	1	600.00	0.00	0.00	3.00	2351	1.000	1.000
3132	Wine industries	7	2229.29	2526.24	0.51	3.00	2626	0.729	0.703
3133	Malt liquors and malt	3	420.00	782.14	1.61	3 00	430	0.020	1.000
3134	Soft drinks and carbonated waters	10	40.00	40.00	0.88	3.00	70	0.001	0.272
3140	Tobacco	6	47.39	12.42	0.87	3.00	72	0.081	0.008
3211	Spinning, weaving and finishing textiles	394	41.66	31.07	0.37	1.97	23.2	0.644	0.176
3212	Made-up textile goods excl. wearing apparel	66	37.50	24.99	0.26	3.00	35	0.727	0.437
3213	Knitting mills	18	54.00	54.00	0.00	2.00	38.7	0.257	0.394
3214	Carpets and rugs	27	38.52	39.45	0.09	3.00	60	0.244	0.184
3215	Cordage, rope and twine	12	27.92	22.28	0.12	3.00	30	0.678	0 204
3219	Other textiles	28	26.76	22.16	0.48	2.67	28	0.562	0.397
3220	Wearing apparel, except footwear	257	39.51	38.22	0.07	2.99	42	0.325	0.292
3231	Tanneries and leather finishing	21	24.09	27.77	0.28	2.00	50	0.542	0.665
3232	Fur dressing and dyeing industries	6	40.00	40.00	0.00	2.00	60	1.000	0.000

33	Leather prods. exl. wearing apparel	20	30.37	30.23	0.12	3.00	45 4	0 155	0.347
40	Footwear, except rubber or plastic	15	40.00	40.00	0.00	3.00	56.8	0.187	0.249
11	Sawmills, planing and other wood mills	34	21.37	8.87	0.59	2.26	35 2	0.098	0.502
12	Wooden and cane containers	5	33.00	35.53	0.14	3.00	40	0.632	0.404
19	Other wood and cork products	8	23.13	21 74	0.35	2.88	40	0 010	0 464
20	Furniture and fixtures, excl. metal	23	39.78	38.79	0.03	3.00	58.3	0.288	0 644
11	Pulp, paper, and paperboard articles	107	19 25	15.59	0.52	1.97	23.6	0.574	0 389
12	Containers of paper and paperboard	8	34.38	34 02	0.16	3.00	60	0.026	0 481
19	Other pulp, paper and paperboard articles	11	28.18	29.70	0.21	2.91	23.6	0.063	0.753
20	Printing and publishing	27	19.89	11 55	0.70	3.00	42.4	0 086	0 591
11	Basic chemicals excl. fertilizers	524	11.03	11.57	0.41	2.02	12.4	0.479	0.557
12	Fertilizers and pesticides	27	17.22	17.71	0.66	2.19	28.6	0 339	0.413
13	Synthetic resins and plastic materials	117	12.36	8.83	0.79	1.75	29.2	0.452	0.389
21	Paints, varnishes and lacquers	12	25.00	25.71	0.32	3.00	38.8	0.073	0.690
22	Drugs and medicines	64	6.41	5.26	0.64	3.00	12.9	0.025	0.753
23	Soap, cleaning preps., perfumes, cosmetics	34	30.76	25.40	0.18	3.00	51.8	0 187	0 780
29	Other chemical products	77	23.08	21.95	0.36	2.64	30	0.494	0.690
30	Petroleum refineries	23	15.76	15.78	0.29	2.00	21.7	0.791	0.243
40	Misc. petroleum and coal products	8	13.13	14.58	0.28	2.13	23.8	0 332	0 620
51	Tyres and tubes	13	30.00	30.00	0.00	3.00	39.3	0.328	0.283
59	Other rubber products	39	21.29	18.77	0.54	2.28	40	0.174	0.625
60	Plastic products	51	29.78	26.19	0.24	2.73	54.2	0.738	0 470
10	Pottery, china, earthenware	14	32.68	30.55	0.26	3.00	48.1	0 717	0.462
20	Glass and products	61	27.39	25.13	0.39	2.70	48.9	0.209	0.419
91	Structural clay products	14	24.40	16.88	0.39	2.93	31.3	0.104	0 723
92	Cement, lime and plaster	8	20.63	15.75	0.49	2.00	37.8	0 041	0 114
99	Other non-metallic mineral products	57	24.75	23.87	0.36	2.93	35.2	0.080	0.667
710	Iron and steel	242	15.91	14.22	0.55	2.06	24.5	0.311	0.255
IC R.2	Description	# lines	Applied Tariff, 1999	Import-weighted tariff	Tariff dispersion	Degree of process	Bound Rate	% exports to EU	% imports from EU
720	Non-ferrous metals	154	15.31	11.78	0.57	1.97	26.1	0.859	0.285
311	Cutlery, hand tools and general hardware	83	18.08	20.75	0.53	3.00	30.6	0.066	0.573
312	Furniture and fixtures primarily of metal	3	36.67	39.89	0.16	3.00	48	0.129	0.663
313	Structural metal products	23	16.01	21.70	0.68	3.00	41.9	0.178	0.665
319	Other fabricated metal products	133	25.47	26.71	0.39	2.89	40	0.216	0.479
321	Engines and turbines	18	7.08	8.67	0.74	3.00	11.1	0.000	0.332
822	Agricultural machinery and equipment	33	6.72	10.89	0.43	3.00	18.5	0.042	0.320
823	Metal and wood working machinery	93	7.80	7.42	0.31	3.00	14.1	0.119	0.629
824	Other special industrial machinery	138	6.80	8.37	0.75	3.00	10.9	0.093	0.595
825	Office, computing and accounting machinery	40	11.88	9.25	0.43	3.00	27.1	0.625	0.419
829	Other non-electrical machinery and equipment	194	15.42	17.14	0.95	3.00	20.2	0.168	0 642
831	Electrical industrial machinery	66	13.77	18.18	0.59	3.00	23.7	0.331	0.543
832	Radio, television and communication equipt.	99	16.79	12.24	0.80	3.00	34.6	0.232	0.521
833	Electrical appliances and housewares	25	38.42	36.65	0.10	3.00	54.8	0.272	0 391
839	Other electrical apparatus and supplies	43	23.60	24.09	0.34	3.00	34.8	0.273	0.564
841	Shipbuilding and repairing	20	14.64	16.35	0.60	3.00	32.3	0 111	0 826
842	Railroad equipment	22	6.59	5.34	0.36	3.00	19.7	0 519	0 615

3843	Motor vehicles	52	56 57	40.99	2.44	3.00	45.7	0.426	0.423
3844	Motorcycles and bicycles	22	21.29	22.50	0.43	3.00	39.2	0.034	0.143
3845	Aircraft	20	5.00	5.00	0.00	3.00	12.3	1.000	0.416
3849	Other transportation equipment	1	20.00	20.00	0.00	3.00	36	1.000	0.093
3851	Prof. And scientific equipment n.e.c.	81	6.39	5.77	0.60	3 00	13.1	0.180	0.574
3852	Photographic and optical goods	63	18.13	15.66	0.57	3.00	30 5	0.764	0.427
3853	Watches and clocks	52	19.62	22.49	0.43	3.00	34.7	0.333	0.074
3901	Jewelery and related articles	22	23.33	29 52	0.46	2 41	46.1	0.156	0.258
3902	Musical instruments	23	30.00	30.00	0.00	3.00	42.5	0.185	0.361
3903	Sporting and athletic goods	22	7.84	5.88	0.98	3.00	28.9	0.012	0.358
3909	Manufacturing industries, n.e.c.	102	31.18	23.02	0.36	3.00	29.8	0.377	0.288

Sources: UN Comtrade and Egypt's official tariff schedule.

Table 8

Applied tariffs before and after reform (ISIC 4-digit)

ISIC R.2	Description	lines	Applied Tariff, 1999	Applied Tariff After Reform	% Tariff change	Political Economy Indicator
1110	Agricultural production	239	17.79	13.624	0 23	N.A.
1130	Livestock	12	26.25	17 778	0.32	N.A.
1210	Forestry products	19	16.93	13.289	0.22	N.A.
1220	Logging	15	6.33	6.333	0.00	N.A.
1301	Ocean and coastal fishing	90	17.67	13.611	0.23	N.A.
1302	Fishing not elsewhere classified	1	20.00	15.000	0 25	N.A.
2100	Coal mining	6	3.00	3.000	0 00	N.A.
2200	Crude petroleum and natural gas	8	6.56	5.938	0.09	N.A.
2301	Iron ore mining	2	3.00	3.000	0.00	N.A.
2302	Non-ferrous ore mining	21	5.00	5.000	0.00	N.A
2901	Stone quarrying, clay and sand pits	33	17.42	14.167	0.19	N.A.
2902	Chemical and fertilizer mineral mining	17	10.29	8.529	0 17	N.A.
2903	Salt mining	1	16.67	13.333	0.20	N.A.
2909	Mining and quarrying not elsewhere classified	27	8.06	7.778	0.04	N.A
3111	Slaughtering, preparing & preserving meat	87	26.59	16.707	0.37	1.585
3112	Dairy products	24	20.38	15.087	0.26	1.113
3113	Canning, preserving of fruits and vegetables	65	33.88	23.962	0.29	1.137
3114	Canning, preserving and processing of fish	19	22.24	17.237	0.22	1.598
3115	Vegetable and animal oils and fats	52	10.44	8.673	0.17	0.660
3116	Grain mill products	34	10.59	9.706	0.08	0.362
3117	Bakery products	13	35.12	26.526	0.24	0.822
3118	Sugar factories and refineries	15	16.83	12.667	0.25	1.105
3119	Cocoa, chocolate and sugar confectionery	13	33.85	25.000	0.26	0.971
3121	Other food products	34	27.35	18.824	0.31	0 978
3122	Prepared animal feeds	2	26.67	18.333	0.31	1.112
3131	Distilling rectifying and blending spirits	1	600.00	30.000	0.95	3.030
3132	Wine industries	7	2229.29	26.429	0.99	57.732

ISIC R.2	Description	lines	Applied Tariff, 1999	Applied Tariff After Reform	% Tariff change	Political Economy Indicator
3133	Malt liquors and malt	3	420.00	23 333	0.94	10 254
3134	Soft drinks and carbonated waters	10	40.00	30.000	0 25	3 239
3140	Tobacco	6	47.39	19.611	0 59	2.597
3211	Spinning, weaving and finishing textiles	394	41.66	24.700	0 41	1 118
3212	Made-up textile goods excl. wearing apparel	66	37.50	27.361	0 27	1 128
3213	Knitting mills	18	54.00	30.000	0 44	0.922
3214	Carpets and rugs	27	38.52	28.519	0.26	1.429
3215	Cordage, rope and twine	12	27.92	19.583	0.30	0.602
3219	Other textiles	28	26.76	19.375	0.28	1.173
3220	Wearing apparel, except footwear	257	39.51	29.520	0.25	0.889
3231	Tanneries and leather finishing	21	24.09	16.825	0.30	0 505
3232	Fur dressing and dyeing industries	6	40.00	30.000	0.25	1.739
3233	Leather prods. exl. wearing apparel	20	30.37	20.750	0.32	0 927
3240	Footwear, except rubber or plastic	15	40.00	30.000	0.25	0.713
3311	Sawmills, planing and other wood mills	34	21.37	15.588	0.27	1.268
3312	Wooden and cane containers	5	33.00	23.000	0.30	0.663
3319	Other wood and cork products	8	23.13	17.500	0.24	0.503
3320	Furniture and fixtures, excl. metal	23	39.78	29.783	0 25	1 143
3411	Pulp, paper, and paperboard articles	107	19.25	15.100	0.22	1.440
3412	Containers of paper and paperboard	8	34.38	25.000	0.27	1.350
3419	Other pulp, paper and paperboard articles	11	28.18	19.091	0.32	1.264
3420	Printing and publishing	27	19.89	14.831	0.25	0.872
3511	Basic chemicals excl. fertilizers	524	11.03	10 440	0.05	0.893
3512	Fertilizers and pesticides	27	17.22	12.593	0.27	0.909
3513	Synthetic resins and plastic materials	117	12.36	10.111	0.18	1.303
3521	Paints, varnishes and lacquers	12	25.00	17.500	0.30	1.173
3522	Drugs and medicines	64	6.41	6.307	0.02	0 451
3523	Soap, cleaning preps., perfumes, cosmetics	34	30 76	21.667	0.30	0.878
3529	Other chemical products	77	23.08	16.438	0.29	1.122
3530	Petroleum refineries	23	15.76	12.663	0.20	0 549
3540	Misc. petroleum and coal products	8	13.13	12.500	0.05	0.610
3551	Tyres and tubes	13	30.00	20.000	0.33	2.127
3559	Other rubber products	39	21.29	15.598	0.27	1.305
3560	Plastic products	51	29.78	20.773	0.30	1.195
3610	Pottery, china, earthenware	14	32.68	23.393	0 28	0 910
3620	Glass and products	61	27.39	19.918	0.27	1.304
3691	Structural clay products	14	24.40	17.024	0.30	0.850
3692	Cement, lime and plaster	8	20.63	15.313	0.26	1.426
3699	Other non-metallic mineral products	57	24.75	18.297	0.26	0.827
3710	Iron and steel	242	15.91	12.563	0.21	0.946
3720	Non-ferrous metals	154	15.31	11.902	0.22	0.802
3811	Cutlery, hand tools and general hardware	83	18.08	14.141	0.22	1.012
3812	Furniture and fixtures primarily of metal	3	36.67	26.667	0.27	1.785
3813	Structural metal products	23	16.01	12 319	0.23	0.803

ISIC R.2	Description	lines	Applied Tariff, 1999	Applied Tariff After Reform	% Tariff change	Political Economy Indicator
3819	Other fabricated metal products	133	25.47	18.340	0.28	0.969
3821	Engines and turbines	18	7.08	6.618	0.07	0.389
3822	Agricultural machinery and equipment	33	6.72	6.616	0.02	0.363
3823	Metal and wood working machinery	93	7.80	7.796	0.00	0 661
3824	Other special industrial machinery	138	6.80	6.536	0.04	0.603
3825	Office, computing and accounting machinery	40	11.88	10.563	0.11	1.957
3829	Other non-electrical machinery and equipment	194	15.42	11.946	0.23	0.973
3831	Electrical industrial machinery	66	13.77	11.186	0.19	0.982
3832	Radio, television and communication equipt.	99	16.79	13.965	0.17	1.540
3833	Electrical appliances and housewares	25	38.42	28.600	0.26	1.891
3839	Other electrical apparatus and supplies	43	23.60	16.744	0 29	1.458
3841	Shipbuilding and repairing	20	14.64	12.760	0.13	0.821
3842	Railroad equipment	22	6.59	6.591	0.00	0 384
3843	Motor vehicles	52	56.57	19.583	0.65	3.767
3844	Motorcycles and bicycles	22	21.29	15 913	0.25	1.431
3845	Aircraft	20	5.00	5.000	0.00	0.389
3849	Other transportation equipment	1	20.00	15.000	0.25	0.888
3851	Prof. And scientific equipment n.e.c.	81	6.39	6.132	0.04	0 539
3852	Photographic and optical goods	63	18.13	13.226	0.27	1.239
3853	Watches and clocks	52	19.62	15.240	0.22	0.948
3901	Jewellery and related articles	22	23.33	17.841	0 24	0.431
3902	Musical instruments	23	30 00	20.000	0.33	2.485
3903	Sporting and athletic goods	22	7.84	6.705	0.14	0.987
3909	Manufacturing industries, n.e.c.	102	31.18	22.802	0.27	1.598

Sources: UN Comtrade and Egypt's official tariff schedule.

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Annex A: Detailed Tariff Analysis.

Egypt's tariff structure is characterized by a high average tariff, an extremely high dispersion of tariff levels across tariff lines, and a significant amount of tariff escalation.

In 1999, Egypt's average tariff, including the 1 percent customs and 2-3 percent surcharge, was the average level is close to 30 percent. While generally comparable to the Moroccan and Tunisian average tariff rates (respectively 25 and 33.6 percent), the Egyptian rate largely surpasses that of Argentina (13.5 percent in 1998) and Chile (11 percent). It also compares poorly to the 14 percent average of all IMF members. Egypt's average import-weighted tariff is 13.8 percent, comparable to Argentina's (12.9%) but higher than Chile (10.9%) , Malaysia (9.4 %) and Philippines (9.3%). It points to the relatively restrictiveness of the tariff structure.

Egypt's high average nominal level is partly influenced by the excessive tariffs in alcoholic beverages, where tariffs can reach levels as high as 2600 percent (well above the 40 percent upper bound of the tariff schedule). However excluding alcoholic beverages, the average tariff remains at a high of 21.5 percent. Including the 2-3 percent surcharge, the average tariff is close to 25 percent.

Exceptions to the maximum level of tariffs (40 percent) occur in 353 tariff lines (6 percent of total tariff lines).[26] At a more aggregate level, Table A.1 reports the highest and lowest (average) tariffs using the ISIC (revision 2) classification (96 sectors). The lowest tariff rates can be found in Mining, Logging and Aircrafts, whereas the highest tariff rates are in alcoholic beverages (Wine, Distilling and blending spirits, and Malt liquors), Footwear, Spinning Textiles, Tobacco, Knitting mills and Motor vehicles. Note that the import-weighted tariff for these high-tariff sectors tend to be below the simple average tariff, which gives and indication of how restrictive these tariffs are. As shown in Table 4 below,. the simple average tariff for Tobacco is 47.39 percent, whereas the import-weighted tariff is 12.42 indicating that high levels of tariffs heavily restrict tobacco imports.

[26] Tariff levels beyond 30 percent occur in 1223 tariff lines or 20 percent of tariff lines.

Table A.1 : Highest and Lowest tariffs

	ISIC Rev.2	Description	# lines	Applied Tariff, 1999
5 lowest tariffs	2100	Coal Mining	6	3.00
	2301	Iron ore mining	2	3.00
	2302	Non-ferrous ore mining	21	5.00
	3845	Aircraft	20	5.00
	1220	Logging	15	6.33
5 highest tariffs (excluding alcoholic beverages)	3240	Footwear, except rubber or plastic	15	40.00
	3211	Spinning, weaving and finishing textiles	394	41.66
	3140	Tobacco	6	47.39
	3213	Knitting mills	18	54.00
	3843	Motor vehicles	52	56.57
Alcoholic Beverages	3133	Malt liquors and malt	3	420.00
	3131	Distilling rectifying and blending spirits	1	600.00
	3132	Wine industries	7	2229.29

Source· Egypt 1999 tariff schedule and DECRG calculations.

Egypt has bound over 98 percent of its tariffs line during the Uruguay Round (100% in agriculture and 97% of its industrial tariff lines), with many well above the applied rates. For 12 percent of products applied tariffs exceed the WTO bounds and are sometimes above the Uruguay Round Base Rates (2 percent). However, on a number of products tariffs are applied in excess of WTO bounds (12 percent of tariff lines) and sometimes above the Uruguay Round base rates (2 percent). These products tend to be Chemicals, Textiles and Machinery (electrical and mechanical) as shown in Table 3. No specific tariffs are present except for Tobacco.[27]

Table A.2: Main items bound at levels below applied MFN tariff rate, 1999

HS Chapters	Description	No. of lines	Average applied rate (Per cent)	Average bound rate (Per cent)
28	Inorganic chemicals	144	11.1	7.0
29	Organic chemicals	108	11.0	7.2
52	Cotton	77	54.0	48.0
54	Man-made filaments	33	54.0	48.0
58	Special woven fabrics	37	54.0	48.0
59	Impregnated, coated, cover/laminated textile fabric	10	54.0	48.0
84	Machinery and mechanical appliances	77	10.3	5.0
85	Electrical machinery and equipment	21	11.1	5.2

Source: Secretariat estimates based on WTO Schedule LXIII and data provided by the Egyptian authorities.

I. High Dispersion

The standard deviation of Egyptian tariffs in 1999 is 127 percentage points, which indicates a high degree of dispersion in its tariff structure (the coefficient of variation is equal to 4.5). Again, this is partly influenced by the tariff peaks for alcoholic beverages; but as shown in Table 4, there are several other sectors where the within sector coefficient of variation is above the traditional 0.5 level. These include Motor Vehicles, Sporting and Athletic goods, Electric machinery and Slaughtering.

Table A.3: Industries with the highest and lowest tariff dispersion

	ISIC Rev.2	Description	# lines	Tariff dispersion
Low dispersion	1302	Fishing not elsewhere classified	1	0.00
	2100	Coal mining	6	0.00
	2301	Iron ore mining	2	0.00
	2302	Non-ferrous ore mining	21	0.00
	2903	Salt mining	1	0.00
High Dispersion	3111	Slaughtering, preparing & preserving meat	87	0.93
	3829	Other non-electrical machinery and equipment	194	0.95
	3903	Sporting and athletic goods	22	0.98
	3133	Malt liquors and malt	3	1.61
	3843	Motor vehicles	52	2.44

Source: Egypt 1999 tariff schedule and DECRG calculations.

Compared to similar countries in Latin America and Asia which have successfully integrated into world markets, the degree of tariff dispersion seem to be particularly important in Egypt. The distribution of the 1999 Egyptian tariff lines shows a large concentration on the higher (right end) tail. Furthermore, 42.1 percent of the lines lie above the 25 percent tariff rate. This is a very different structure than the one of other similar countries such as Argentina, where the maximum tariff is set at 30 percent and close to 50 percent of the lines are charged between 10-20 percent tariffs. Another 17.5 percent of the product lines are charged between 20-25 percent.

[27] According to WTO (1999), Egypt Trade Policy Review.

II. Tariff escalation

The most salient feature of Egypt's tariff structure is the degree of tariff escalation, i.e., tariffs are higher for fully-processed products whereas raw materials of semi-processed products have lower tariffs. In 1999, the average tariff on products in the first-stage of processing is 14.3 percent; in the second stage 21.4 percent and in the third stage 35.6 percent.[28]

Figure 1 gives the distribution of tariffs for products on the first stage of production. The distribution is skewed to the left, which suggests that most of the tariffs for products in the first-stage of processing are low. The median is at 6 percent (41 percent of tariff lines for products in the first-stage of processing have a tariff around 6 percent). On the other hand Figure 2, gives the distribution of tariffs for fully processed products, which is double peaked and has a median of 40 percent (23 percent of tariff lines of fully processed products have a tariff around 40 percent).[29]

Tariff escalation can be found across all Egyptian industries, with the exception of Fabricated Metal and Machinery. Figure 3 reports the average tariffs for fully-processed, semi-processed and first-stage of processing products for the 9 industries of the ISIC 2-digit classification. All but one, have a significant degree of tariff escalation with fully processed products having a much higher tariff than first-stage of processing products. While not particular to specific industries, tariff escalation is rather significant in Textile and Leather, Wood and Wooden Furniture and Basic Metal.

[28] The classification of different stages of production was calculated according to WTO filter used in Trade Policy Reviews.

[29] The median for the overall tariff distribution is at 12 percent (21 percent of tariff lines).

Figure 1: Distribution for first stage products

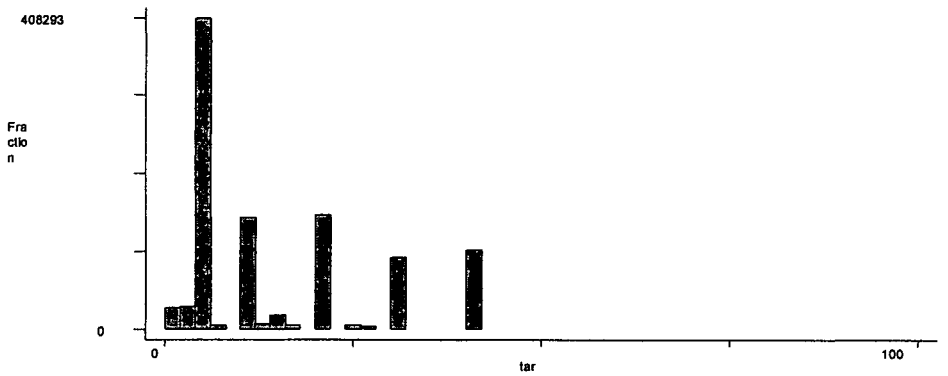


Figure 2: Distribution for fully processed products

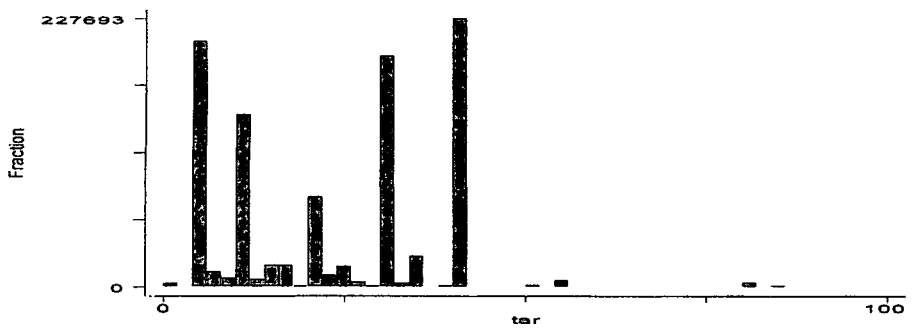
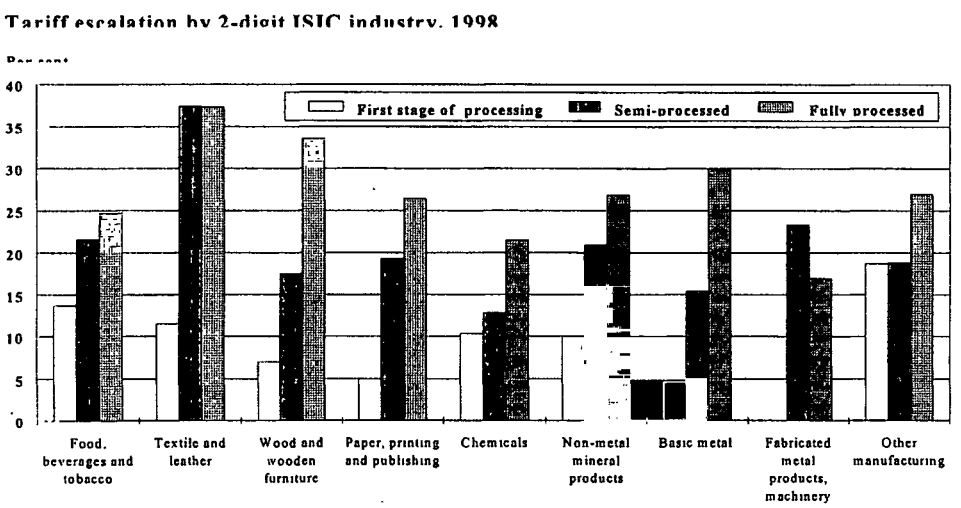


Figure 3: Egypt's Tariff Escalation by 2-digit ISIC industry



Note: Tariff escalation excluding alcoholic beverages, import surcharge and service fee.
Source: WTO Secretariat calculations based on data provided by the Egyptian authorities.

Annex B: Variable construction and notation

The construction of the variables used in the empirical section is discussed below. Notation to be employed is given in parenthesis and the expected signs of the exogenous variables is given in square brackets. The endogeneity problems can be important, as suggested in a study by Trefler (1993), as most of the exogenous variables may also be functions of tariffs. Due to data restrictions, the empirical section does not deal with endogeneity problems.

- *tariffs*, the endogenous variable corresponds in all equations to the simple average tariff for the 81 sectors of the ISIC 4-digit classification (results with import-weighted tariffs were consistent).
- *concentration index* was calculated as: (output of the whole economy/number of firms in the whole economy)/(output in sector *i*/number of firms in sector *i*). [+].
- *import penetration ratio* was calculated as: (imports)/(gross output). [-].
- *Level of processing* was calculated as the average of the level of processing determined by WTO TPR at the 6-digit level of the Harmonized system. The WTO classification gives a value of 1 to first stage of processing goods, a value of 2 to semi-processed goods and a value of 3 to fully-processed products. Given that the average is taken for the 81 sectors of the ISIC 4-digit classification, the variable becomes continuous in the range 1-3. [2] *labor/capital ratios* were calculated as: (number of employees)/(value added - labor costs).
- *intra-industry trade* was calculated as: $1/[(\text{imports-exports})^2/(\text{imports + exports})^2]^{0.5}$. [+].
- *wages* per sector were calculated as: (labor cost)/(number of employees). (noted *W*).

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