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Estimation of Trade Protection in Middle East and North African Countries

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Authorized for distribution by Zubair Iqbal

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Abstract

This paper studies the structure and evolution of trade protection in the Middle East and North African (MENA) countries in the 1990s. MENA countries use tariffs and nontariff barriers, and tariff dispersion and nontariff barriers, as substitute protection measures. Tariff levels and tariff dispersion are complements. Excluding Tunisia, the cross-country correlation between tariff and nontariff barriers is -0.46. The correlation between tariff dispersion and nontariff barriers is -0.8. The paper also develops an overall index of trade protection and finds that tariff levels, their dispersion, and nontariff barriers account for 60 percent, 10 percent, and 30 percent of overall protection, respectively.

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I. INTRODUCTION

A widely accepted principle in international economics is that economic distortions have to be addressed with domestic policies rather than with external policies. In practice, however, there are numerous departures from this fundamental theorem. The adoption of protective trade policies has been rationalized as a tool to generate government revenue, preserve domestic firms' home market position, facilitate foreign market access, promote domestic saving, and as an instrument to maintain an appreciated exchange rate. Successful trade reform requires the dismantling of protection in concert with liberalization of exchange controls and rationalization of resource allocation through correction of price distortions.

The quantification of countries' trade orientation and degree of openness has proven to be difficult and controversial (Edwards (1998), Deardorff and Stern (1998), Sharer and others (1998), and Anderson and Neary (1994)). Following the Uruguay Round, countries have on average reduced the use of tariffs, but have relied more heavily on regulatory restrictions (including anti-dumping), price controls and technical measures to limit foreign competition. Measurement difficulties arise when comparing different qualitative instruments and when the effects associated with a measure depend not only on its type, but also on its effective application (as in the cases of prohibitions and licensing requirements).

This paper studies the structure and evolution of trade protection in the Middle East and North African (MENA) countries in the 1990s. Trade policy has evolved differently in the MENA groupings of the Gulf Cooperation Council (GCC) economies and non-GCC economies, given the differences in resource endowment and pressures to address external imbalances.[2] To what extent have MENA countries liberalized their trade regimes? This question must distinguish between GCC and non-GCC countries. GCC countries' average tariff rates were below tariff rates of, for example, the Association of South East Asian Nations (ASEAN) countries throughout the decade of the 1990s. In contrast the 19 percent average tariff rate maintained by non-GCC economies remains far above the single-digit rates achieved by the ASEAN member countries during the same period. Despite the reduction of average tariffs in both these country groupings, the tariff gap has remained constant. In addition, non-GCC countries maintain varying degrees of quantitative controls and nontariff barriers.

Given the complex nature of the issues involved, the paper develops two measures of protection to assess the nature and extent of trade restrictiveness. The first one follows the Index of Aggregate Trade Restrictiveness which was developed by Sharer and others (1998) and combines the unweighted average tariff rates and a ranking of nontariff barriers. The second

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[2] GCC economies are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. The non-GCC economies are Algeria, Djibouti, Arab Republic of Egypt, the Islamic Republic of Iran, Iraq, Jordan, Socialist People's Libyan Arab Jamahiriya, Lebanon, Mauritania, Morocco, Pakistan, Tunisia, Syrian Arab Republic, Sudan, and the Republic of Yemen.

measure of protection is an overall weighted trade restrictiveness index (OWTR) that combines the level of tariffs, tariff dispersion, and nontariff barriers. The weights assigned to each instrument of protection are endogenous.

The next section discusses the evolution of MENA tariff and para-tariff rates at the aggregate and sectoral levels, presents country rankings based on the height of tariff rates, and compares MENA region performance with the ASEAN experience. It examines the importance of nontariff barriers and presents some rankings of countries based on the use of nontariff barriers. Section III reports the cross-country correlations between tariffs, tariff dispersion, and nontariff barriers. It also presents overall trade restrictiveness rankings. Section IV contains conclusions and draws some lessons from the analysis.

II. Measuring Trade Restrictiveness

Trade liberalization is a complex phenomenon that includes reductions in tariff rates, suppression of tariff spikes, reduction in the variability of tariff schedules, and cuts in nontariff barriers. Given the variety of forces which have governed the use of trade restrictions and the pace of liberalization in MENA countries over the past decade, a common measure of restrictiveness and of liberalization policies is difficult to obtain. Countries have shown differing behaviors in the use of trade restrictions calling for assessment by the type of instruments used.

A. Tariff Barriers

Tariffs include customs and fiscal duties (inclusive of general rates, most-favored-nation (MFN) rates, rates bound under GATT/WTO, and reduced or suspended tariffs) while para-tariffs entail customs surcharges and surtaxes, stamp taxes, and additional fiscal charges. A number of indicators of trade restrictiveness (average tariffs, para-tariffs, and tariff dispersion) are presented below to answer the following questions: which MENA countries are more open to foreign competition? Is there a tendency towards trade liberalization in the MENA region? Are MENA countries catching up with the experiences of, for example, ASEAN economies, which are deemed to have spearheaded trade liberalization?

Average tariff rankings

Table 1 summarizes country rankings constructed from unweighted tariff to import-weighted averages.[3] Five of these country-rankings are constructed from unweighted average tariff data

[3] The import-weighted averages were obtained from IMF, United Nations Conference on Trade and Development (UNCTAD), and the World Bank staff estimates. The UNCTAD and the World Bank weights were obtained from total imports of a set of 120 developing countries in 1985. The main reason for using 1985 import figures is that actual import values underestimate countries' degree of protection because the share of imports attach small values to highly

(continued...)

developed by UNCTAD, the World Bank, the Organization for Economic Cooperation and Development (OECD), and the IMF staff estimates.[4] The author's estimates correspond to the average MFN tariff rates collected from Trade Analysis and Information System (TRAINS) database. The order of the ranking of MENA countries is from the least protectionist to the most protectionist. Despite differences in methodologies, periods used in the analysis, and criteria employed in their construction, the rankings have important common features:

a. The weighted and unweighted tariff restrictiveness indexes are similar in most of the cases. GCC countries are the least restrictive, Syrian Arab Republic, Tunisia, and Sudan are the most restrictive countries. An exception is Morocco, which is ranked as a relatively open economy when measured in terms of import-weighted tariff rates, but is restrictive when using unweighted rates.[5]

b. The five unweighted orderings confirm the openness of GCC countries. Kuwait and the United Arab Emirates have systematically low tariff rates (a flat rate of 4 percent in 1994–95), whereas Saudi Arabia has the highest average tariff rate (around 12 percent) among GCC countries. The GCC ranking has basically remained constant in the 1990s, despite the increase in tariff rates in the United Arab Emirates from 1 percent to 4 percent in 1994 in order to converge to the GCC common external tariff.

c. Ranking of countries with high nominal tariff protection changed between the late-1980s and the late-1990s. According to UNCTAD data, Sudan and Egypt had the highest aggregate unweighted average tariff rates in the late-1980s; IMF staff estimates put Syria as the most protectionist country in the late-1990s, followed by Tunisia, Morocco, and Sudan.

Lack of convergence to global trends

The pace of liberalization of non-GCC countries has lagged relative to the experience in the ASEAN countries, which exhibited the fastest pace of such liberalization over the past decade. Table 2 shows that GCC countries' MFN average rates were below ASEAN tariff rates both in 1988–1990 and in the late-1990s, a different picture emerges when examining non-GCC countries. In the late-1990s, tariff levels in the non-GCC region remained high, far higher than the single digit rate levels achieved by ASEAN economies and developed countries at large. According to World Bank data, between 1991 and 1994, non-GCC countries' mean tariff rate

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protected goods. IMF staff tariff rate estimates correspond to the most recent tariff rates collected from the literature.

[4] Unweighted tariff rates provided by UNCTAD, OECD, and the World Bank for MENA countries mainly correspond to the simple average rates over all tariff lines within each heading belonging to the corresponding product category.

[5] These differences might result from the role played by the tariff measure used to calculate weighted averages and the bias remaining when using 1985 import weights.

was twice as high as in ASEAN countries (32 percent as compared with 15 percent). In addition, the non-GCC country tariff rates did not converge to those prevailing in the ASEAN countries despite the tariff reductions by some MENA countries (Table 2). Mean tariff rates in the non-GCC region declined from 28 percent in the late-1980s (UNCTAD) to 19 percent in the late-1990s. The simple aggregate average MFN rate was about 37 percent in the late-1980s (UNCTAD) and about 27 percent in the late-1990s for a selected subset of non-GCC countries for which data are available (including Algeria, Egypt, Morocco, Pakistan, Sudan, and Tunisia). Thus, despite trade liberalization by the various MENA countries, as a group they still remain relatively more protectionist than ASEAN countries.

Intra-regional differences in the use of tariffs

Aggregate tariff rates for the region as a whole hide different tendencies in countries' tariff profiles. The average tariff rates in Algeria, the Islamic Republic of Iran, Jordan, Socialist People's Libyan Arab Jamahiriya, Morocco, Saudi Arabia, Syrian, and Tunisia have either increased or remained constant since the late-1980s.[6] In contrast, for Egypt and Pakistan estimated mean tariff rates declined from 42.2 percent and 61.0 percent, respectively, in the mid-1990s to 15.9 percent and 23.8 percent, respectively, in the late-1990s.[7]

The pace of tariff reductions has been crucially affected by macroeconomic considerations including difficulties associated with balance of payments pressures and budget deficits. In addition, as countries reduced quantitative restrictions, the burden of protecting domestic import substitutes shifted to tariff rates and domestic taxes. This shift did not necessarily result in higher protection. For example the increase in Saudi Arabia's average tariff rate from 8 percent in the 1980s to 12 percent in the late-1990s, primarily reflecting budgetary pressures and the higher costs of managing customs administration.[8] Other countries were driven by a variety of other

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[6] For instance, average tariff rates in Syria have increased from 14.8 percent in the late-1980s to 19.9 percent and 35 percent (if including surcharges) in the late-1990s. Average tariff rates also increased in Tunisia, despite the reduction of rates on inputs and capital goods in the mid-1990s. See El-Naggar (1992) for extended analysis of the 1980s experience.

[7] Algeria, Jordan, Egypt, Pakistan, Sudan, and Yemen are among the countries engaged in restructuring. Algeria adopted a structural reform program supported by the IMF in 1994. The liberalization measures included the reduction of maximum tariff ceilings from 60 percent to 50 percent in 1996 and from 50 percent to 45 percent in 1997. As part of its stabilization program in place in the late-1990s, Jordan is in the process of reducing the maximum tariff rates from 40 percent to 35 percent.

[8] This is also the case for Iran and Jordan. Iran reacted to the 1994–95 balance of payment crisis by tightening import requirements, by imposing import bans, and restoring an import-substitution policy. Revenue losses lay behind the slow pace of trade liberalization in Jordan in the late-1990s and the delays in the reduction of tariff rates in 1998.

pressures. Revenue requirements due to budget imbalances, protection of key domestic sectors, and political objectives help to explain tariff rate increases and greater protectionism in Algeria and Morocco. Although useful as an indicator of change in trade policy, one should be cautious when using the height of tariff rates as evidence to conclude whether or not efforts toward trade liberalization continued, slowed down, or were reversed. The conversion of nontariff barriers to tariff barriers explains why, for example, Morocco's nominal tariff rates increased from 22.8 percent in 1991–94 to 25.7 percent in 1999.

Sectoral dispersion of tariff rates

The inefficiencies associated with a tariff schedule depend on the variability or dispersion of tariff rates. A uniform nominal tariff system is less distorting than a dispersed tariff rate structure. For a given average tariff rate, greater tariff dispersion results in larger deadweight losses.[9] Moreover, uniform tariffs are preferable because they are simple to administer, transparent, and less subject to interest group pressures (Harberger (1964), Panagariya and Rodrik (1993), and Panagariya (1994)). In practice, authorities do not always abide by this rule. When designing tariff schedules, countries tend to discriminate among sectors in order to provide differentiated rates of effective protection.

Table 3 presents the most recent data available on MENA countries' sectoral MFN tariff rates. Non-GCC countries practice tariff acceleration with average rates ranging from 15 percent to 62 percent. The highest rates are imposed on prepared food (62.1 percent) followed by textiles, live animals, footwear, and headgear. GCC economies continue using uniform tariff schedules with lower rates than non-GCC countries in all sectors. For instance, Saudi Arabia and Oman apply low average MFN tariff rates in most sectors, ranging between 5 percent and 13 percent. Exceptions are the prepared food categories with average rates exceeding 15 percent in Oman.[10]

There is no clear pattern in the reduction of tariffs at the sectoral level during the 1990s. While some countries such as Pakistan engaged in a systematic reduction of maximum and minimum tariff rates in many sectors, other countries increased tariff rates in key sectors of the economy

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[9] The size of the deadweight loss related to a country's tariff scheme is a function of the square of the tax rate. Uniform rates minimize efficiency cost of protection if demand elasticity across goods is approximately the same and cross-price effects are negligible (OECD, 1997a).

[10] Health and religious reasons explain the large (and for some items prohibitive) tariff rates imposed on the prepared food sector (inclusive of alcoholic beverages and tobacco). In the late-1990s, the prepared food sector is subject to the highest average tariff rate: 62.1 percent in non-GCC countries and 15.4 percent in the GCC. Protection of domestic producers and the presence of lobbies explain the high rates on textiles and other primary items in non-GCC countries. The non-GCC countries apply a 36.3 percent tariff rate on textiles. The second highest rate applied by GCC countries is an 11.7 percent tariff rate on live animals and product.

that offset the reduction of rates in other sectors. For instance, Morocco substantially increased its tariffs on primary goods—especially on fats, oils, and live animals—and slightly reduced rates on textiles. Between 1992 and 1998, Tunisia substantially increased tariff rates on footwear and headgear while rates applying to primary goods were kept relatively constant (ranging between 21 percent and 32.6 percent). Table 4 analyzes the impact of tariff dispersion by calculating the standard deviation of tariffs for selected countries for which data are available; reduction of tariff dispersion implies a reduction of effective protection. Tariff dispersion in Morocco shrank from 30.2 percent to 13.1 percent on average between 1993 and 1997 while Pakistan's tariff dispersion remained constant at 22 percent between 1994 and 1998.

Since the reduction of tariff dispersion—which captures the decline of tariff spikes—can hide increases of average tariff rates, data in Table 4 need to be viewed in concert with the average tariff rates and other indicators of restrictiveness. Saudi Arabia illustrates the difficulties in obtaining a single measure of trade liberalization. It slightly increased its tariff rates in the late-1990s, and has the highest MFN rates among the GCC countries. However, Saudi Arabia has the least distorting tariff system, as measured by the standard deviation of tariff rates (the standard deviation was 3.3 percent in 1995) among all MENA countries for which data are currently available. Egypt is another remarkable case. It has the highest levels of dispersion, with maximum tariff rates of 70 percent in most sectors. In terms of the average MFN tariff rate, though, Egypt is a moderately open economy compared with the other non-GCC economies.

Para-tariff measures

Para-tariff rates are usually applied under escape clause provisions, as safeguard measures (such as antidumping and countervailing measures), or to all imports as an additional duty to raise revenues.[11] The lack of transparency and the possibility of their use on a discriminatory basis make para-tariff measures attractive instruments for protectionist purposes. In several instances, the level of para-tariff rates and its discriminatory application across sectors constitute an important source of government revenue and impose substantial cost increases on key import sectors. Specific additional taxes, sales taxes, and custom clearance charges are common para-tariff measures used in the MENA countries.[12]

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[11] Para-tariff measures include customs surcharges, additional taxes and surcharges such as taxes on foreign exchange transactions, stamp taxes, statistical taxes, and sales tax levied on imports.

[12] In 1994, Egypt obtained about 23 percent of total custom value through customs clearance charges. In addition to the MFN rate, Algeria imposed on average a 64 percent specific additional tax on imports in 1998. This tax is especially relevant on items such as machinery and vegetable products (with rates exceeding 65 percent). In 1996, Sudanese imports were subject to a custom clearance tax of 6.7 percent (on average) over the average 5.4 percent MFN tariff rate. Moreover, major customs clearance rates of 15 percent and 13 percent applied to footwear, headgear, fats, and oils.

The simplification of para-tariff measures constitutes a major step toward trade openness. As part of the 1994–98 liberalization strategy, Pakistan unified the set of para-tariff instruments (including customs surcharges, preferential margin rates, and other measures exceeding 30 percent in some cases) with the sales tax on imports (averaging 14 percent).

B. Nontariff Barriers and Protection

The importance of nontariff barriers, particularly quantitative restrictions, has been growing over time in developing countries. The MENA region is not an exception. In the mid-1990s, the incidence of nontariff measures in MENA countries was ten times higher than that in ASEAN countries.

Nontariff rankings and international comparisons

The quantification of nontariff barriers is difficult owing to the lack of transparency.[13] Some nontariff barriers are made public through an official mandate, but others are unpublished or informal policies that might be applied on a discretionary basis. Moreover, in many instances the application of some official regulations constitutes a nontariff barrier, per se. For instance, clearance delays affecting imported perishable goods due to technical regulations (such as health inspections) work as a de facto barrier to imports. Currently, the mix of nontariff barriers applied by MENA countries on imports is quite complex and remains far from being transparent.

Table 5 summarizes four different country rankings based on the incidence of nontariff measures which rank MENA countries from the most open to the most protectionist. Figures were obtained from UNCTAD and IMF staff estimates,[14] and author's computations.[15] The import-coverage

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[13] See Deardorff and Stern (1998), Edwards (1998), Rodriguez and Rodrik (1999), Laird and Yeats (1990), Yeats (1978). Iqbal (1999) examines the theory of alternative forms of trade restrictions.

[14] The nontariff measures provided by UNCTAD and World Bank for MENA countries correspond to the percentage of tariff lines within the corresponding product category affected by a nontariff measure (known as frequency ratio). IMF staff estimates are based on the share of imports, production, or the number of tariff lines subject to nontariff measures. The classification scheme is divided in three groups: low-incidence, intermediate incidence, and high-incidence.

[15] The author's ranking uses the frequency ratio as the nontariff barrier measure. The frequency ratios reported by the author are based on the 1996 and 1998–99 versions of TRAINS database published by UNCTAD, containing the number of tariff lines subject to nontariff measures. Recent data was obtained for Algeria, Egypt, Morocco, Oman, Pakistan, Saudi Arabia, Sudan, and Tunisia. The tariff lines used in the analysis follow the six-digit Harmonized Commodity and Classification System (HS). IMF staff estimates were used when data are not available. Following Sharer and others (1998), nontariff barriers are classified in three groups: open, which includes the countries with less than 5 percent of product lines subject to nontariff barriers;

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ratio[16] and the frequency ratio are the two instruments used to rank MENA countries. These indicators serve to identify the sectors in which nontariff barriers are especially relevant, and the significance of nontariff barriers in the overall economy. In the late-1980s, the Iran and Algeria ranked as the most protectionist countries as measured by frequency ratios (UNCTAD, 1994). The use of nontariff barriers in Libya and Syria substantially increased in relation to other MENA countries between the late-1980s and the late-1990s. In the late-1980s, Libya and Syria belonged to the intermediate-incidence region of the nontariff measure, but moved to the more protectionist incidence region in the late-1990s.

Composition of nontariff barriers

Quantitative restrictions and technical requirements are overwhelmingly the preferred nontariff mechanisms employed by MENA countries (Table 6). By far the most common officially announced quantitative restrictions are non-automatic licensing and prohibitions. For example, in 1998 Pakistan's prohibitions applied to 48.5 percent and non-automatic licensing to 18.6 percent of all tariff lines. In the late-1990s, about 69 percent of tariff lines in Saudi Arabia were subject to technical requirements (product labeling, packing, testing, inspection, and quarantine). The restrictiveness character of technical measures should, however, be measured by the biased application of national regulatory standards to foreign goods relative to domestic goods. The cost and the delays suffered to obtain a certification also constitute an effective technical nontariff barrier.

Transportation costs, customs clearance procedures, import valuation, quality controls, and financing constitute important barriers to trade liberalization in the MENA region that are not recorded in the available databases cited above. The high cost of transportation might reflect the presence of a domestic monopoly. Port, freight, and refrigerated containers—required for some perishable goods—represent a cost increase of about 40 percent over the CIF price of some perishable imports in some MENA countries such as Egypt. The presence of a domestic monopoly on maritime shipping could also contribute to such costs. Moreover, the cost of import clearance represents an additional effective tariff.

Most MENA countries apply domestic import valuation criteria to reduce the competitiveness of foreign goods. Two valuation practices used by MENA countries can be identified that are not recognized under international standards. The first one is the reference price valuation system

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moderate, which includes the countries with 5 percent to 10 percent of product lines subject to nontariff barriers; and restrictive, with frequency ratios exceeding 10 percent.

[16] The import coverage ratio is an import-weighted frequency ratio indicator highlighting the proportion of a country's imports subject to nontariff barriers. The pre-Uruguay Round sectoral nontariff coverage ratios were obtained from OECD (1997b) which follows the SITC classification system.

used to determine the tariff base.[17] The second mechanism is the discriminatory use of exchange rates applied to import valuation. For instance, in 1997 Syria applied a rate of LS 11.2 = US$1.00 on several primary imports (including raw materials, wheat, rice, sugar, and tea), but a rate of LS 43.5 = US$1.00 on imports of computers, small electronic equipment, and others. Domestic competition policies and privatization of key sectors (such as information technology, energy, insurance, and banking) also play an important role in Jordan, Egypt, Saudi Arabia, and the United Arab Emirates.

Incidence of nontariff barriers

Empirical trade literature has widely used the following four methods of measuring nontariff barriers: (a) the frequency-type methods (e.g., frequency ratio and coverage ratio); (b) price-comparison measure; (c) quantity-impact measure; and (d) the equivalent nominal rates of assistance (Deardorff and Stern (1998), and Yeats (1978)). Our analysis focuses on the frequency approach and the price-gap differential. The frequency type measure follows the inventory approach, and uses the pattern and frequency of use of nontariff instruments. The frequency ratio measure is computed for the late-1990s from the TRAINS database and is used for comparison with the rankings based on pre-Uruguay Round nontariff frequency ratios for the period 1990–93 (OECD, 1997b). The price-gap measure is an outcome-type measure that uses the gap between the free trade price and the price in the presence of trade restrictions to assess a country's restrictiveness level.

Table 7 summarizes a broad concept of the nontariff barrier frequency ratio at the sectoral level.[18] It indicates that nontariff measures are concentrated on a limited number of sectors, typically primary goods and some manufactures. For instance, for Saudi Arabia the incidence of nontariff barriers is concentrated on live animals and products, vegetable products, and weapons, with the frequency ratios of 26 percent, 36 percent, and 100 percent, respectively. The incidence in most other sectors is far smaller. The imposition of nontariff barriers was more widespread in

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[17] In Pakistan, customs evaluation in the late-1990s entailed comparing the items value declaration and the official price list published by the authorities in the Valuation Manual. In 1997, tariffs in Egypt were determined using the so-called "Egyptian Tariff Code" under which tariffs are computed using the commercial invoice presented the first time the item was imported independently of the importer's identity. Customs authorities use the original invoice to compute the duty, and no price lower than the first shipment price is authorized. In practice, this implies the applied tariffs exceed the statutory tariffs. According to U.S. authorities' estimates, commodity price increases due to customs evaluation practices range between 10 percent and 30 percent.

[18] The core concept of nontariff barriers only includes price and quantity barriers. A broad concept of nontariff barriers also covers restrictive licensing, quotas, standards, prohibitions, money and finance measures, price controls, a single channel for imports, and others (OECD, 1997a).

the case of Tunisia. Indeed, Tunisia in the mid-1990s, had nontariff barriers in all tariff lines, as measured by frequency ratios. Based on the pre-Uruguay Round import-coverage ratio (OECD, 1997b), the coverage rates ranged from over 30 percent in manufactures to over 37 percent in primary goods; the textile sector had the highest nontariff frequency (and import-coverage) ratio exceeding 144 percent. Notice that frequency and coverage ratios can exceed 100 percent because a given product can be subject to multiple measures. The incidence of nontariff barriers in Pakistan remained small. Except for weapons and works of art, frequency ratios ranged between 0 and 7 percent. Nontariff barriers in Pakistan are also applied to prepared food, mineral products, transport equipment, and textiles. The frequency ratio for textiles is 4.9 percent and corresponds to prohibited textile tariff lines in 1998. Compared with the rest of non-GCC countries, protection levels based on nontariff barriers in Pakistan are relatively small, and remained basically constant across sectors between 1992 and 1998.

Protection levels can also be assessed through the distortionary effects of trade barriers on domestic prices, that is, on the extent to which domestic prices depart from free trade prices. This is known as the price-gap measure (also implicit tariff rate) and entails computing the tariff equivalents of nontariff barriers at the product level.[19] Table 8 summarizes the price-gap results at the product level for selected MENA countries for which adequate data are available.[20] Notice that the price-gap analysis at the product level does not capture the overall degree of protectionism. In the early 1990s, Saudi Arabia had larger levels of protection on wheat compared with the rest of the MENA countries, followed by Qatar with a 83.6 percent price-gap. However, owing to adjustment in domestic prices, the effective protection to wheat fell in the mid-1990s. Judging from the lower sectoral price-gaps, Jordan has reduced the protection levels on primary items and Pakistan liberalized imports on wheat and sugar.

How does MENA countries' experience with nontariff barriers depart from ASEAN liberalization experience? As in the case of tariffs, the incidence of nontariff barriers in GCC countries is below ASEAN rates in 1988–1990; the GCC nontariff incidence rates were 3.7 percent versus 4.3 percent in East Asia. In contrast, the incidence rate was 45.4 percent for

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[19] Formally, price-gaps are defined as the difference between the price of a good produced domestically and the price of imported perfect-substitute goods. This measure assumes: (a) domestic and imported goods are perfect substitutes and differences are negligible in terms of their economic value; (b) prices are comparable at the time and location dimension; and (c) prices are obtained for each distribution stage. The assumptions are quite stringent in practice (for example, the first assumption is usually violated when country-of-origin plays a role in signaling product quality).

[20] We used CIF import prices as proxy for domestic commodity prices, and world commodity prices as proxy of free-trade prices. Data were obtained from the United Nations Statistics from 1990 to the latest available reports covering 1996. Products covered are wheat, maize, sugar, coffee, tobacco, and cotton. The countries analyzed are Algeria, Egypt, Jordan, Kuwait, Libya, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Syria, Tunisia, and the United Arab Emirates.

non-GCC countries. In the early 1990s, while the percentage of imports subject to nontariff measures halved in both non-GCC and ASEAN countries, the use of nontariff barriers as measured by the incidence ratio still remained ten times higher in the former than the levels in the latter countries.

III. Overall Trade Restrictiveness Indexes

Measuring protectionism is a complex task since it requires controlling for the use of quantitative and qualitative barriers to trade. For instance, the reduction of tariff rates might be accompanied by an increase of tariff dispersion or nontariff barriers. Therefore, an assessment of restrictiveness requires integrating the effects of tariffs, tariff dispersion, and nontariff barriers.[21] Table 9 presents the correlation matrix for tariff levels, standard deviation of tariffs, and nontariff measures for the seven countries for which data are available (Algeria, Egypt, Morocco, Oman, Pakistan, Tunisia, and Saudi Arabia). Figure 1 presents the scatter plots between the three variables. The average MFN tariff rate has a weak positive correlation with the dispersion of MFN tariff rates as measured by the standard deviation. In other words, there is complementarity between tariff levels and tariff dispersion. MFN tariff rates are moderately correlated with the number of tariff lines subject to nontariff barriers. The correlation between MFN tariff rates and nontariff barriers is negative (the correlation coefficient is -0.46) when Tunisia is excluded. This suggests that MENA countries (except Tunisia) tend to use tariff rates and nontariff barriers as substitute instruments of protection.

Moreover, nontariff barriers and tariff dispersion are moderately substitute measures (with the correlation coefficient of -0.3). This suggests that countries with more discriminatory tariff structures impose lower nontariff measures. If Tunisia is excluded from the analysis, the substitution is accentuated and the correlation coefficient rises to -0.8. Summing up, the results obtained suggest (not surprisingly) that MENA countries with greater nontariff barriers set lower MFN rates and less discriminatory tariff structures. But, higher tariff rates move along with greater tariff discriminatory structures.

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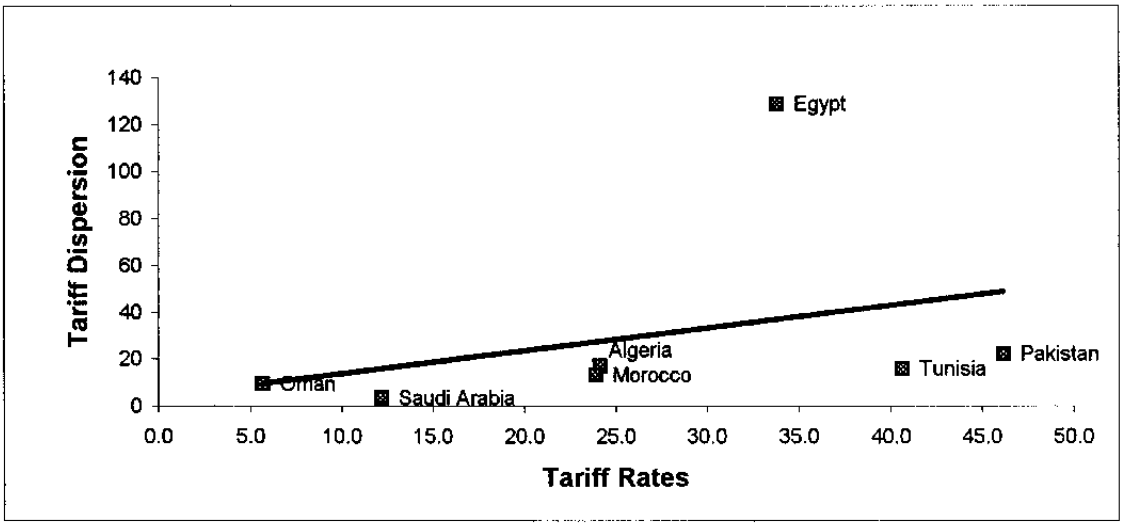
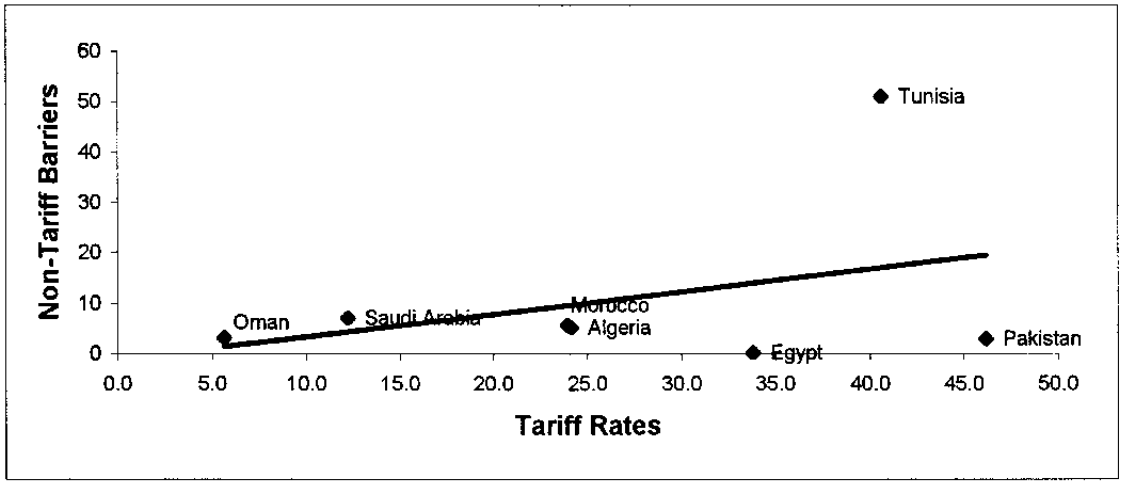
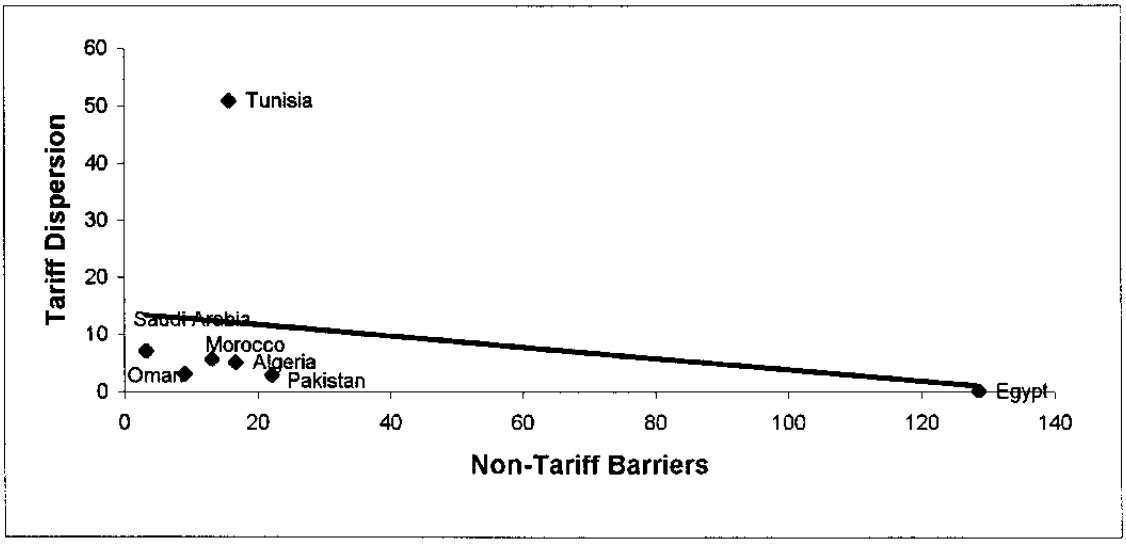
[21] Alternative indicators of overall trade restrictiveness include: (a) the structure-adjusted trade intensity index based on the magnitude of trade (imports plus exports) to production adjusted by some ad hoc structural variables such as per capita GDP levels and transportation costs (Chenery and Syrquin, 1989); (b) Leamer's openness and trade distortion indexes based on the Heckscher-Ohlin-Vanek model (Leamer, 1988); (c) black market premium indicators (Harrison, 1991); and (d) quantitative measures based on trade and exchange rates (Balassa, 1971, Bhagwati, 1978, Krueger, 1978 and 1984).

Figure 1. Tariff Levels, Dispersion, and Nontariff Barriers







A. Overall Classification Indexes

In order to accommodate all aspects of protection, we develop two overall protection indexes. The first one is a combined index of tariff levels and nontariff barriers, and uses frequency ratios as the measure of nontariff barriers. The second index is an overall protection ranking based on the weighted average of the level of tariffs, tariff dispersion, and nontariff barriers. We compare these estimates with two complementary rankings. The first alternative ranking is based on the standard openness ratio (import plus exports as a ratio of GDP) based on the Penn-World Table database. The second ranking is developed by Sharer and others (1998) and is based on an overall trade policy restrictiveness index.

The Index of Aggregate Trade Restrictiveness developed by Sharer and others (1998) at the IMF provides a measure of protection that combines the unweighted average tariff rate and a ranking of nontariff barriers. As a first step, countries are classified in five categories (ranging from open to restrictive) according to the level of tariffs. For instance, a country with tariff rates ranging between 0 to 10 percent is considered open, but a country with tariff rates exceeding 25 percent is rated as restrictive. In a second step, countries are classified in three categories (open, moderate, and restrictive) according to the use of nontariff barriers. This is a judgmental classification based on data on the share of imports and production in total demand, the number of tariff lines subject to nontariff barriers, and the share of trade subject to nontariff measures (depending on the availability of data). In the third and last step, the ratings given to a country for the use of tariff and nontariff barriers are mapped into a classification scheme providing a unique measure for overall trade restrictiveness.

Table 10 reproduces the ten-point scale matrix of trade restrictiveness developed by Sharer and others (1998). Consider a given level of protection as measured by the use of nontariff barriers. Moving from "open" to "relatively open," as measured by the level of tariff rates, means increasing the trade restrictiveness rating of the country by one unit. Similarly, consider a given level of protection as measured by tariff barriers. Moving from "open" to "moderate" in the nontariff barriers axis, implies increasing the rating value assigned to a country by three units (except that when increasing the rating from moderate to restrictive and from relatively restrictive to restrictive, the weight increases by two).

The author develops an overall ranking that differs from the ranking of Sharer and others (1998) in that the author uses the frequency ratio measure to classify countries in three categories according to the percentage of tariff lines subject to nontariff barriers. For instance, a country is rated open when the frequency ratio ranges between 0 to 5 percent, but restrictive when the frequency ratio exceeds 10 percent. This classification of protection schemes is based on an objective and standard nontariff measure.[22] The author adopts the weighting schemes developed by Sharer and others (1998) to combine tariffs and nontariff measures.

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[22] The use of frequency ratios to measure the presence of nontariff barriers does not capture the intensity of the nontariff measures set by the country. The coverage ratio measure is a standard

(continued...)

According to the author's ranking, the levels of protection in Algeria and Morocco are similar in the late-1990s, and Pakistan is more open (Table 11). According to Sharer and others (1998) overall ranking, Pakistan and Algeria have similar levels of protection, and Morocco is more protectionist.

B. Overall Weighted Trade Restrictiveness Index

Sharer and others (1998) overall trade index and the overall index formulated by the author are based on a classification scheme that does not explicitly consider tariff dispersion as an additional source of distortion. Alternatively, tariff levels, tariff dispersion, and nontariff barriers can be viewed as indicators that serve to characterize a latent variable, "protectionism," which is unobservable. The construction of an overall trade policy index should account for these three variables. Such an indicator, developed below, has two virtues. First, it takes the dispersion of tariff rates into account. Second, the relative importance assigned to different types of trade barriers does not depend on judgment, in the sense that different analysts will obtain the same ranking when using the same database.

Let us denote the latent variable "protectionism" by the symbol (P). Protectionism is defined as a linear combination of tariffs (T), dispersion (D), and nontariff barriers (NT):

$$P = \alpha T + \beta D + (1- \alpha-\beta)NT. \qquad (1)$$

The methodology for deriving the weights endogenously consists of obtaining the weights that maximize the average correlation between the three measures and protection (P). Formally,

$$\text{Max}_{\alpha,\beta} \frac{\rho[T,P]+\rho[D,P]+\rho[NT,P]}{3}$$

$$=\frac{1}{3}\rho[T, \alpha T +\beta D+ (1-\alpha-\beta)NT] + \frac{1}{3}\rho[D, \alpha T +\beta D+ (1-\alpha-\beta)NT]$$

$$+ \frac{1}{3}\rho[NT, \alpha T +\beta D+ (1-\alpha-\beta)NT]. \qquad (2)$$

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alternative measure for nontariff barriers. However, because the coverage ratio accounts for the value of imports subject to nontariff barriers, product lines subject to prohibitive nontariff barriers (i.e., imports are zero) are not controlled by this measure.

Notice that the endogenous weights and related ranking are invariant to changes of scale and origin in the measurement of the variables (because correlations are invariant to scale and origin).[23] The correlations between the trade restriction variables and the latent variable, protection, are positive by construction (otherwise the correlation would carry a zero weight). In principle, the correlations should be weighted according to the distortions they generate. However, the required elasticities and data on relative distortions are not generally available. Furthermore, introducing additional parameters into the system and using a judgmental criterion to weigh the relative importance of each correlation on measuring protection would weaken the analytical robustness of the indicator.

The measure of protection (P) used for the OWTR classification for country (i) is:

$$P^i = \alpha T^i + \beta D^i + (1-\alpha-\beta) NT^i = 0.6\, T^i + 0.1\, D^i + 0.3\, NT^i. \qquad (3)$$

The weights are obtained by solving the maximization problem formulated above. Due to limited data availability, this measure of protection was computed only for Algeria, Egypt, Morocco, Pakistan, Oman, Saudi Arabia, and Tunisia.[24]

The correlation matrix is given by

$$\rho\,[T,\ 0.6T + 0.1D + 0.3NT] = 0.9, \qquad (4)$$
$$\rho\,[D,\ 0.6T + 0.1D + 0.3NT] = 0.45, \qquad (5)$$
$$\rho\,[NT,\ 0.6T + 0.1D + 0.3NT] = 0.6. \qquad (6)$$

There is a high correlation between tariffs and protection, and relatively high correlation between nontariff barriers and protection. The correlation between dispersion and protection (P) for MENA countries is moderate.

The OWTR index provides a tool to measure protection with minimum data requirements (the level of tariff rates, standard deviation of tariff barriers, and the number of tariff lines subject to nontariff measures). An alternative mechanism for accounting for protection is to use a loss function accounting for the trade-off between tariffs, dispersion and nontariff barriers, but it is difficult to assign weights.

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[23] See Appendix I for an approach to weighted average ranking.

[24] Excluding Tunisia, tariffs explain 10 percent of protection, dispersion 20 percent, and nontariff barriers 70 percent (i.e., $\alpha = 0.1$, $\beta=0.2$, $1-\alpha-\beta=0.7$). The country ranking is the same as in the Table 11.

C. Comparison of Indexes

Table 11 summarizes the overall trade policy restrictiveness index developed by Sharer and others (1998) and author's overall indexes. The table compares the indexes with the standard openness ratios (import plus exports to GDP ratio) for 1990 and 1992 presented by Summers and Heston in the PWT 5.6 database (1994).[25] Indexes in Table 11 are not based on welfare comparisons but are computable, given available data and provide a more comprehensive protection measure than the common method of only looking at tariff levels.[26]

Once missing countries are taken into account in the rankings, the methodologies give roughly similar rankings but there are some important differences. For instance, Egypt appears more restrictive than Morocco when dispersion is taken into account (author's weighted ranking) but appears equally restrictive when only tariff and nontariff barriers are considered (Sharer and others, 1999 update). The reason is that Egypt has four times the standard deviation of tariff levels of Morocco (see Table 4). According to Summers and Heston (1994), Iran and Sudan were the most protectionists in the mid-1990s. According to Sharer and others (1998) and the author's ranking (1999), Iran and Syria were the most protectionist countries in the late-1990s.

IV. Conclusions

The tension between international pressures for liberalization, on one hand, and macroeconomic pressures pushing for protectionism, on the other hand, are at the core of the recent developments in the MENA region. Whether the balance moves toward protectionist or liberalization depends on how governments are able to deal with domestic imbalances and regional conflicts. Up to now, regional agreements have served as a channel to increase trade relations with developed countries, but not between the countries in the region (El-Erian and Fischer (1996) and Fischer (1992)).

In contrast with ASEAN economies, the paper finds that non-GCC countries' tariff rates are not converging toward ASEAN rates. In the mid-1990s, the incidence of nontariff measures in the non-GCC MENA countries was ten times higher than in ASEAN countries. Moreover, the paper obtains that MENA countries use tariffs as a complementary protection measure to tariff dispersion, but use tariff dispersion schemes and nontariff barriers as substitute measures of

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[25] Dollar (1992) presents an outward orientation index based on estimates obtained by regressing the index of a country's relative price level on per capita GDP and other variables for 95 countries from 1976 to 1985. Pakistan and Jordan were the most open countries and Algeria, Egypt, and Iraq were the most protectionist.

[26] For an analysis of a welfare-theoretic measure of trade restriction, see Anderson and Neary (1994).

protection. Tariffs and nontariff barriers are also substitutes. Specifically, excluding Tunisia, the cross-country correlation between tariffs and nontariff barriers is -0.46, and the cross-country correlation between tariff dispersion and the level of nontariff barriers is -0.8.

This paper takes a step toward studying the evolution and current state of trade policies in the MENA countries. The lack of data on tariffs and nontariff barriers remains a major impediment to objective analysis of protection policies. Further work entails exploring alternative measures of trade protection, examining the substitutability and complementarity properties of different trade policies, and searching for mechanisms and domestic policies to encourage greater intra-regional trade.

Table 1. Tariff Rankings for MENA Countries

Unweighted Average Tariff Tariff Rankings					Weighted Average Tariff Rankings		
UNCTAD Data Based 1988–90	OECD Data-Based 1993	World Bank Data-Based 1991–94	IMF Data-Based Most recent year	Author's Index 1999	UNCTAD Data Based 1988–90	World Bank Data-Based 1991–94	IMF Data-Based 1998
Kuwait	Oman*	Saudi Arabia	Djibouti	Djibouti	Kuwait	Saudi Arabia	Djibouti
U.A.E.	Kuwait*, Qatar*	Jordan	Bahrain	Bahrain	Syria	Lebanon	Oman
Oman	U.A.E.*	Morocco	U.A.E.	U.A.E.	Algeria	Algeria	Bahrain
Saudi Arabia	Bahrain*	Algeria	Kuwait	Kuwait	Libya	Morocco	Iran
Jordan	Saudi Arabia	Tunisia	Qatar	Qatar	Morocco	Jordan	Saudi Arabia
Syria	Yemen*	Egypt	Oman	Oman	Egypt	Tunisia	Morocco
Yemen	Algeria	Pakistan	Saudi Arabia	Saudi Arabia	Tunisia	Pakistan	Egypt
Libya	Syria		Yemen	Yemen	Pakistan		Lebanon
Iran	Jordan*		Egypt	Mauritania	Sudan		Jordan
Morocco	Tunisia		Mauritania	Jordan			Pakistan
Algeria	Egypt		Lebanon	Lebanon			Algeria
Tunisia	Libya		Iran	Iran			Yemen
Egypt	Morocco		Jordan	Morocco			Tunisia
Sudan	Sudan*		Pakistan	Algeria			Syria
	Pakistan		Algeria	Egypt			
	Iran*		Sudan	Libya			
			Morocco	Syria			
			Tunisia	Tunisia			
			Syria	Pakistan			

Sources: OECD, Market Access for the Least Developed Countries: Where are the obstacles? OECD/GD(97)174; Foroutan, Faezeh, Does Membership in a Regional Preferential Arrangement Make a Country More or Less Protectionist? mimeo World Bank, 1998; IMF estimates; UNCTAD: Directory of Import Regimes, Part 1.; and 1998–99 version of TRAINS.

Table 2. Simple Average Tariff Rates

	UNCTAD Mean Rates 1988–90	World Bank Mean Rates 1991–94	IMF Most Recent Year	Year	Author's Index
MENA Countries					
Algeria	24.6	22.9	24.2	1999	24.2
Djibouti	n.a.	n.a.	0.0	1996	n.a.
Egypt	33.5	42.2	15.9	1998	33.8
Iran	20.7*	n.a.	23.0	1998	23.0
Jordan	13.8	17.6	23.7	1997	16.8
Lebanon	n.a.	n.a.	19.0	1998	19.0
Libya	18.3	n.a.	34.7	1996	34.7
Mauritania	n.a.	n.a.	12.0–19.0	1998	12.0–19.0
Morocco	23.5*	22.8	25.7	1999	23.9
Pakistan	58.8	61.0	23.8	1999	46.2
Somalia	n.a.	n.a.	n.a.		n.a.
Sudan	56.6*	n.a.	24.8–26.0	1998	5.4
Syria	14.8	n.a.	19.9–35.0	1996	19.9–35.0
Tunisia	27.5	27.6	29.9	1999	40.6
Yemen	16.2	n.a.	12.9	1998	12.9
Average total (Non-GCC)	**28.02**	**32.35**	**19.3–21.3**		**24.0–25.7**
GCC Countries					
Bahrain	n.a.	n.a.	3.0	1990	3.3
Kuwait	3.5	n.a.	4.2	1986	3.5
Qatar	n.a.	n.a.	5.0	1990	5.0
Oman	5.7	n.a.	5.7	1994	3.0
Saudi Arabia	12.2	12.1	12.3	1997	13.0
U.A.E.	4.5	n.a.	4.0	1998	4.0
Average total GCC	**6.5**	**12.0**	**5.7**		**5.3**
East Asian Countries					
Hong Kong	0.0	0.0	0.0	1998	0.0
Indonesia	20.3	19.1	9.5	1998	6.0
Korea	12.9	10.1	7.9	1998	7.7
Malaysia	13.0	13.4	9.3	1998	6.4
Philippines	n.a.	24.3	10.7–11.2	1998	13.34
Singapore	0.4	0.4	0.0	1998	0.05
Taiwan	n.a.	n.a.	11.2	1995	3.5
Thailand	40.8	37.8	18.4	1994	6.9
Average Total	**14.5**	**15.0**	**8.4–8.44**	1998	**5.1–5.5**

Source: IMF estimates, World Bank: Recent Development Indicators, various issues, and World Bank, "Open Economies Work Better," Policy Research Working Paper No. 1636.

*Data for 1984–87

Table 3. Simple Average Most-Favored-Nation Tariff Rates

	Algeria	Egypt	Morocco		Pakistan		Sudan	Oman	Saudi Arabia	Tunisia		Average Total	Total Non-GCC	Total GCC
	1998	1995	1993	1997	1994	1998	1996	1992	1994	1992	1998	Most Recent	Most Recent	Most Recent
Live animals and products	35.2	28.9	30.1	74.0	61.8	57.1	15.7	12.2	11.1	32.5	32.6	**33.4**	**33.3**	**11.7**
Vegetable products	25.6	26.0	27.2	28.9	36.0	35.3	5.4	3.4	11.5	22.1	21.5	**19.7**	**23.6**	**7.4**
Fats and oils	19.1	15.9	19.0	95.6	59.2	51.5	3.3	2.2	12.0	25.6	26.0	**28.2**	**22.4**	**7.1**
Prepared food, etc.	35.4	206.8	33.8	33.4	50.4	45.3	23.2	17.5	13.3	28.2	28.2	**50.4**	**62.1**	**15.4**
Mineral products	7.6	12.9	11.1	8.4	44.6	39.9	2.1	6.4	12.4	17.0	27.2	**14.6**	**15.1**	**9.4**
Chemical products	15.2	16.2	18.5	12.9	40.5	39.3	2.0	4.7	11.9	20.6	29.3	**16.4**	**18.6**	**8.3**
Plastic and rubber	23.0	22.1	23.0	22.7	60.7	55.7	3.9	5.3	12.6	31.9	35.5	**22.6**	**26.6**	**8.9**
Hides and skins	25.9	35.4	24.4	24.8	41.8	39.9	11.6	6.3	12.2	32.0	43.0	**24.9**	**28.2**	**9.2**
Wood and articles	27.4	28.5	21.6	20.9	48.5	46.0	2.6	5.0	12.8	35.2	36.4	**22.4**	**26.9**	**8.9**
Pulp, paper, etc.	21.2	28.8	29.4	27.4	60.6	55.2	3.3	5.0	11.9	29.0	34.0	**23.4**	**27.8**	**8.5**
Textile and articles	36.4	51.8	31.6	30.9	66.8	58.9	9.6	5.0	12.3	29.7	57.2	**32.8**	**36.3**	**8.6**
Footwear, headgear	40.7	64.8	38.3	31.9	44.5	43.2	11.1	5.0	12.3	0.0	41.8	**31.4**	**33.0**	**8.7**
Articles of stone	32.6	36.7	25.3	21.9	63.7	60.1	3.8	6.0	11.1	0.0	35.6	**26.0**	**26.4**	**8.5**
Precious stones, etc.	30.1	27.5	15.0	16.5	18.8	18.6	2.0	4.8	11.1	0.0	0.0	**13.8**	**15.5**	**7.9**
Base metals and products	20.9	22.0	17.8	17.1	56.4	52.4	3.0	5.0	13.4	22.1	29.6	**20.4**	**23.0**	**9.2**
Machinery	17.6	20.1	21.3	12.3	43.2	34.2	1.6	5.0	12.1	27.1	27.3	**16.3**	**20.3**	**8.5**
Transport equipment	18.9	31.0	20.1	14.4	64.4	61.9	1.7	5.0	11.8	30.6	30.7	**21.9**	**27.4**	**8.4**
Precision instrument	17.9	19.1	27.2	10.9	35.1	28.8	1.0	5.0	10.4	26.3	32.8	**15.7**	**20.0**	**7.7**
Arms and ammunition	16.5	28.3	34.7	32.3	70.0	65.0	0.0	5.0	7.3	0.0	0.0	**19.3**	**24.1**	**6.2**
Miscellaneous manuf.	37.6	42.4	35.0	28.1	56.4	53.3	11.4	5.0	14.0	25.0	41.4	**29.1**	**34.1**	**9.5**
Works of art., etc	0.0	42.5	14.7	10.6	57.1	50.0	0.0	5.0	12.0	0.0	0.0	**15.0**	**17.9**	**8.5**
Total	**24.2**	**33.8**	**24.5**	**23.9**	**51.0**	**46.2**	**5.4**	**5.7**	**12.2**	**27.3**	**40.6**	**24.0**	**26.9**	**8.9**

Source: Authors' estimates from 1996 and 1998–99 TRAINS.

Table 4. Measures of Tariff Dispersion

	Algeria			Egypt			Morocco					
	1998			1995			1993			1997		
	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation
Live animals and products	3	45	15.7	1	70	27.7	2.5	361.5	88.0	0	45	12.5
Vegetable products	0	45	17.4	1	70	21.8	2.5	157	20.2	0	45	15.4
Fats and oils	5	45	15.4	1	70	16.2	2.5	290	115.9	2.5	40	9.6
Prepared food, etc.	5	45	15.5	1	3000	653.7	2.5	103	14.2	2.5	45	11.9
Mineral products	0	45	10.2	5	70	13.0	0	35	7.7	0	40	7.8
Chemical products	0	45	9.0	1	70	14.0	2.5	35	12.2	0	40	9.4
Plastic and rubber	0	45	17.4	0	70	16.5	2.5	35	13.0	2.5	40	13.5
Hides and skins	5	45	17.9	0	70	21.8	2.5	35	11.0	2.5	40	12.4
Wood and articles	5	45	16.5	5	70	22.5	2.5	35	11.3	2.5	40	11.4
Pulp, Paper, etc.	0	45	14.5	0	70	22.3	2.5	35	11.7	0	40	12.4
Textile and articles	3	45	15.1	5	80	20.9	2.5	35	9.0	0	40	10.7
Footwear, headgear	0	45	9.5	30	70	10.6	10	35	8.3	27.5	40	3.7
Articles of stone	3	45	13.2	5	70	19.9	2.5	35	11.6	2.5	40	10.5
Precious stones, etc.	0	45	15.8	1	40	16.9	-1	35	12.2	-1	40	14.4
Base metals and products	5	45	15.6	5	70	16.1	2.5	35	13.4	2.5	40	13.7
Machinery	0	45	13.2	0	70	21.4	2.5	35	11.9	2.5	40	10.5
Transport equipment	0	45	16.2	0	160	36.9	-1	35	11.4	-1	40	14.6
Precision instrument	0	45	15.7	5	70	16.9	2.5	35	10.9	2.5	40	11.1
Arms and ammunition	0	45	15.1	0	70	17.4	2.5	35	7.4	22.5	40	6.1
Miscelaneous manuf.	0	45	12.9	5	70	27.2	2.5	35	11.1	10	40	7.1
Works of art., etc	0	45	0.0	5	50	18.4	2.5	35	14.1	2.5	40	17.3
Total	***0***	***45***	***16.7***	***0***	***3000***	***128.6***	***-1***	***361.5***	***30.2***	***-1***	***45***	***13.1***

Table 4 (continued). Measures of Tariff Dispersion

	Oman 1992			Pakistan 1994			Pakistan 1998			Saudi Arabia 1995		
	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation
Live animals and products	0	100	27.3	15.0	70.0	15.9	-1	65	16.2	0	20	5.0
Vegetable products	0	100	12.2	0.0	70.0	16.2	-1	65	15.3	0	20	2.5
Fats and oils	0	5	2.5	25.0	70.0	15.7	-1	70	20.4	12	12	0.0
Prepared food, etc.	0	100	30.8	15.0	250.0	28.7	-1	250	29.6	0	30	4.9
Mineral products	0	50	8.3	15.0	70.0	21.1	-1	65	23.0	12	20	1.7
Chemical products	0	15	1.4	0.0	80.0	17.3	-1	65	16.9	0	20	3.0
Plastic and rubber	5	15	1.6	15.0	70.0	18.2	0	70	19.0	12	2.1	20.0
Hides and skins	5	100	11.0	10.0	70.0	24.8	10	65	22.7	12	20	1.1
Wood and articles	5	5	0.0	0.0	70.0	24.0	0	65	21.7	12	20	2.3
Pulp, Paper, etc.	5	5	0.0	15.0	70.0	17.6	-1	70	18.1	0	125	8.8
Textile and articles	5	5	0.0	10.0	70.0	11.0	-1	65	15.1	12	20	1.4
Footwear, headgear	5	5	0.0	35.0	70.0	15.7	35	65	13.5	12	20	1.6
Articles of stone	5	25	4.1	25.0	70.0	12.8	25	65	11.4	0	12	3.2
Precious stones, etc.	0	5	1.0	15.0	70.0	11.0	15	65	10.2	0	12	3.2
Base metals and products	5	5	0.0	15.0	80.0	20.6	-1	70	19.6	12	20	3.0
Machinery	5	5	0.0	10.0	70.0	16.0	-1	70	18.8	0	20	1.2
Transport equipment	5	5	0.0	20.0	265.0	48.1	-1	265	46.1	0	20	4.1
Precision instrument	5	5	0.0	10.0	70.0	20.4	-1	65	17.6	0	12	3.6
Arms and ammunition	5	5	0.0	70.0	70.0	0.0	65	65	0.0	0	12	6.0
Miscelaneous manuf.	5	5	0.0	25.0	70.0	18.0	25	65	15.6	12	20	3.5
Works of art., etc	5	5	0.0	25.0	70.0	22.0	25	65	20.7	12	12	0.0
Total	***0***	***100***	***9.1***	***0.0***	***265.0***	***22.1***	***-1***	***265***	***22.1***	***0***	***125***	***3.3***

Table 4 (concluded). Measures of Tariff Dispersion

	Sudan			Tunisia					
	1996			1992			1998		
	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation	Minimum rate	Maximum rate	Standard deviation
Live animals and products	0.0	30.0	14.8	17	52	11.8	17	52	11.8
Vegetable products	0.0	30.0	8.8	15	43	8.1	15	43	7.0
Fats and oils	0.0	5.0	2.4	17	43	9.4	17	43	9.3
Prepared food, etc.	0.0	200.0	47.0	17	34	7.0	17	34	7.0
Mineral products	0.0	10.0	2.7	17	17	0.0	17	38	7.4
Chemical and products	0.0	0.0	6.2	17	27	3.9	17	43	7.8
Plastic and rubber	0.0	30.0	7.2	17	52	9.8	17	52	9.3
Hides and skins	0.0	30.0	13.4	17	43	10.3	43	43	0.0
Wood and articles	0.0	20.0	4.7	22	52	10.8	22	52	10.2
Pulp, Paper, etc.	0.0	20.0	5.4	17	52	10.3	17	52	10.4
Textile and articles	0.0	50.0	13.7	17	43	12.5	17	60	9.2
Footwear, headgear	0.0	20.0	9.8	0.0	0.0	0.0	38	43	2.3
Articles of stone	0.0	20.0	4.8	0.0	0.0	0.0	27	43	6.3
Precious stones, etc.	0.0	20.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
Base metals and products	0.0	50.0	4.8	17	32	5.4	17	43	10.2
Machinery	0.0	30.0	3.2	17	52	6.4	17	52	6.5
Transport equipment	0.0	10.0	2.7	17	52	10.3	17	52	10.1
Precision instrument	0.0	10.0	2.9	17	43	11.6	17	43	10.4
Arms and ammunition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miscelaneous manuf.	0.0	70.0	18.3	25	25	0	25	43	4.9
Works of art., etc	0.0	0.0	0.0	0	0	0.0	0	0	0.0
Total	***0.0***	***200.0***	***13.3***	***15***	***52***	***9.1***	***15***	***60***	***15.7***

Source: Authors' estimates from 1996 and 1998–99 TRAINS.

Table 5. Nontariff Measures' Rankings

UNCTAD 1988–1990	IMF 1999	Author Most Recent
Kuwait	**Low-incidence**	**Low-incidence**
Saudi Arabia	Bahrain	Bahrain
Sudan	Djibouti	Djibouti
Libya	Mauritania	Mauritania
Pakistan	Qatar	Qatar
Morocco	U.A.E.	Egypt
Syria	**Intermediate-incidence**	Pakistan
Egypt	Algeria	Oman
Tunisia	Egypt	**Intermediate-incidence**
Algeria	Jordan	Algeria
Iran	Kuwait	Egypt
	Lebanon	Jordan
	Morocco	Kuwait
	Oman	Lebanon
	Pakistan	Morocco
	Saudi Arabia	Saudi Arabia
	Sudan	Sudan
	Tunisia	Yemen
	High-incidence	**High-incidence**
	Iran	Iran
	Libya	Libya
	Syria	Syria

Sources: Foroutan, Faezeh, "Does Membership in a Regional Preferential Arrangement Make a Country More or Less Protectionist?" mimeo World Bank, 1998; IMF staff estimates; and UNCTAD: Directory of Import Regimes, Part 1. Author's data was obtained from the 1996 and 1998–99 TRAINS database.

Table 6. Nontariff Barriers Distribution
(In percent)

Nontariff Measures	MENA Countries (Non-GCC)							GCC Economies	
	Algeria		Egypt	Morocco	Pakistan		Tunisia	Saudi Arabia	Oman
	1992	1998	1994	1994	1993	1998	1993	1995	1999
Quantitative Restrictions	59.8	97.4	48.1	96.3	75.0	67.1	77.1	30.0	98.7
Prohibitions	59.8	0.0	48.1	1.8	46.8	48.5	0.0	19.1	21.8
Non-automatic licensing	0.0	97.4	0.0	94.5	28.2	18.6	77.1	10.8	76.9
Price Control Measures	0.0	0.0	0.0	37.5	0.0	0.0	1.3	0.0	0.0
Administrative pricing	0.0	0.0	0.0	37.5	0.0	0.0	1.0	0.0	0.0
Variable charge	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Monopolistic Measures	0.0	2.6	0.0	2.4	2.1	0.9	1.2	1.2	0.0
Technical Measures	39.2	0.0	51.9	0.0	22.9	20.9	20.2	68.9	0.0

Source: Authors' computations from 1996 and 1998–99 TRAINS database

Table 7. Frequency Ratio Using the Broad Nontariff Barriers Concept

	Algeria			Egypt	Morocco	Pakistan			Tunisia	Saudi Arabia	Oman
	1992	1998	In percent	1992–95	1994	1993	1998	In percent	1992	1995	1992
Live animals and products	30.5	48.0	17.5	0.3	9.3	4.8	4.8	0.0	0.4	26.2	0.0
Vegetable products	0.4	45.1	44.6	0.0	4.6	3.6	3.4	-0.2	68.4	36.3	5.6
Fats and oils	6.6	43.7	37.0	0.0	6.8	3.4	4.3	0.9	42.9	1.5	0.0
Prepared food, etc	5.8	8.2	2.4	0.6	7.3	6.9	6.9	0.0	94.9	23.0	8.3
Mineral products	0.0	0.0	0.0	0.0	3.7	7.8	6.1	-1.7	70.2	0.0	0.0
Chemical products	0.2	0.0	-0.2	0.8	0.7	4.1	4.1	0.0	17.3	10.8	6.9
Plastic and rubber	0.0	0.0	0.0	0.0	1.8	1.0	1.0	0.0	17.4	0.0	4.3
Hides and skins	0.0	0.0	0.0	0.0	0.9	1.9	1.9	0.0	65.6	13.3	0.0
Wood and articles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.8	0.0	0.0
Pulp, paper, etc.	0.3	0.0	-0.3	0.0	0.0	0.6	0.6	0.0	61.9	3.3	12.8
Textile and articles	0.1	0.0	-0.1	0.0	20.3	4.9	4.9	0.0	144.5	1.3	0.0
Footwear, headgear	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0	80.6	0.0	0.0
Articles of stone	0.7	0.0	-0.7	0.0	2.1	0.3	0.3	0.0	24.9	0.0	0.0
Precious stones, etc.	0.0	0.0	0.0	0.0	0.7	4.3	0.9	-3.4	97.0	7.8	3.8
Base metals and prod.	0.1	0.0	-0.1	0.0	0.4	0.0	0.0	0.0	21.2	0.0	0.0
Machinery	0.0	0.0	0.0	0.0	1.1	0.6	0.5	-0.1	22.4	0.0	3.4
Transport equipment	0.0	0.0	0.0	0.2	14.9	5.8	5.1	-0.7	59.2	0.9	0.0
Precision instrument	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	17.8	0.3	0.0
Arms and ammunition	0.0	0.0	0.0	0.0	0.0	48.2	48.2	0.0	100.0	100.0	105.9
Miscellaneous manuf.	0.6	0.0	-0.6	0.0	0.8	0.4	1.1	0.7	43.8	1.4	0.0
Works of art., etc	0.0	0.0	0.0	0.0	0.0	18.8	18.8	0.0	85.7	0.0	16.7
Total	***0.6***	***5.1***	***4.6***	***0.1***	***5.7***	***3.0***	***2.9***	***-0.1***	***50.9***	***7.1***	***3.1***

Source: Authors' estimates from 1996 and 1998–99 TRAINS

Table 8. Sectoral Price-Gap Measures

Imports	Wheat			Maize			Sugar			Coffee			Tobacco			Cotton		
	1990–1992	1995–1996	Change	1990–1992	1995–1996	Change	1990–1992	1995–1996	Change	1990–1992	1995–1996	Change	1990–1992	1995–1996	Change	1990–1992	1995–1996	Change
Algeria	6.6	32.2	25.6	6.3	10.1	3.8	87.2	54.5	-32.7	22.8	1.9	-20.9	-55.7	-41.1	14.6	3.0	17.1	14.1
Egypt	18.3	16.9	-1.4	2.6	4.9	2.3	66.9	27.3	-39.5	14.9	20.6	5.7	-29.9	-9.8	20.1	-16.0	-81.4	-65.4
Jordan	42.6	2.2	-40.4	7.3	1.2	-6.1	62.9	58.9	-4.0	20.9	20.9	0.0	30.7	1.0	-29.7	-27.7	0.0	27.7
Kuwait	81.2	21.0	-60.2	21.1	16.7	-4.4	47.9	107.2	59.3	143.1	117.9	-25.1	n.a.	n.a.	n.a.	-58.4	-50.3	8.0
Libya	30.1	n.a.	n.a.	68.5	n.a.	n.a.	67.7	n.a.	n.a.	19.3	n.a.	n.a.	n.a.	n.a.	n.a.	41.8	n.a.	n.a.
Morocco	10.5	10.2	-0.2	8.0	4.6	-3.4	17.3	11.8	-5.5	23.3	8.2	-15.1	-32.6	-23.4	9.2	-19.9	-9.1	10.8
Oman	48.0	9.0	-39.0	21.2	-75.8	-97.0	109.3	126.5	17.2	88.3	85.6	-2.7	-6.9	14.8	21.6	n.a.	109.1	n.a.
Pakistan	63.2	16.1	-47.1	-21.4	-82.0	-60.7	89.4	48.5	-40.9	n.a.	108.3	n.a.	n.a.	30.9	n.a.	5.0	-34.6	-39.6
Qatar	83.6	n.a.	n.a.	38.6	n.a.	n.a.	148.9	n.a.	n.a.	180.9	n.a.	n.a.	n.a.	n.a.	n.a.	-53.8	n.a.	n.a.
Saudi Arabia	236.1	76.2	-159.9	22.8	-18.2	-41.0	96.2	69.4	-26.7	155.3	110.6	-44.7	n.a.	-52.3	n.a.	-57.5	-54.1	3.4
Syria	n.a.	-100.0	n.a.	n.a.	-0.2	n.a.	n.a.	23.8	n.a.	n.a.	17.4	n.a.	n.a.	18.9	n.a.	n.a.	811.8	n.a.
Tunisia	2.5	12.8	10.3	8.9	4.9	-4.0	45.5	38.6	-6.9	18.3	52.2	33.9	n.a.	n.a.	n.a.	-11.5	n.a.	n.a.
U.A.E.	82.6	n.a.	n.a.	22.8	n.a.	n.a.	96.2	n.a.	n.a.	155.3	n.a.	n.a.	n.a.	n.a.	n.a.	-40.8	n.a.	n.a.

Table 9. Correlation Matrix

Correlation Matrix	Tariff	Standard Deviation	NTB
Correlation matrix for Algeria, Egypt, Morocco, Oman, Pakistan, Tunisia, and Saudi Arabia when using the most recent available data			
Tariff	1		
Standard deviation	0.23	1	
Nontariff barrier	0.32	-0.35	1
Correlation matrix when excluding Tunisia			
Tariff	1		
Standard deviation	0.43	1	
Nontariff barrier	-0.46	-0.8	1

Table 10. Overall Trade Restrictiveness Index

Tariff Restrictiveness Classification		Nontariff Restrictiveness Classification	
Level Frequency Ratio	Average Tariff Range	NTB Level (Sharer)	Frequency Ratio (Author)
	(In percentage)		(In percentage)
Open	0 < t < 10	Open	0 < f < 5
Relatively Open	10 < t < 15	Moderate	5 < f < 10
Moderate	15 < t < 20	Restrictive	> 10
Relatively Restrictive	20 < t < 25		
Restrictive	> 25		

Source: Sharer and others (1998), and author

Weighting Scheme for Overall Trade Restrictiveness

	Nontariff Barriers		
	Open	Moderate	Restrictive
Tariff			
Open	0+1=1	1+3 = 4	4+3 = 7
Relatively open	1+1=2	2+3 = 5	5+3 = 8
Moderate	2+1=3	3+3 = 6	6+3 = 9
Relatively restrictive	3+1=4	4+3 = 7	7+3 = 10
Restrictive	4+1=5	5+3 = 8	8+2 = 10

Source: Sharer and others (1998)

Table 11. Trade Orientation and Openness: Overall Rankings

Penn-World Table Ranking		Sharer Overall Ranking	Authors' Overall Ranking	Authors' Weighted Ranking
1990	1992	1999	1999	1999
Bahrain (88)	Mauritania	Djibouti, Qatar, U.A.E.	Djibouti, Oman, Qatar, U.A.E.	Oman
Jordan	Tunisia	Bahrain	Bahrain	Saudi Arabia
Djibouti (87)	Egypt	Mauritania	Mauritania	Morocco
Mauritania	Syria (91)	Oman, Kuwait	Kuwait, Sudan	Algeria
U.A.E (89)	Morocco	Saudi Arabia, Yemen	Saudi Arabia, Pakistan, Egypt, Yemen	Pakistan
Kuwait (89)	Algeria	Yemen	Lebanon, Jordan	Egypt
Tunisia	Pakistan	Lebanon	Algeria, Morocco	Tunisia
Qatar (89)	Iran	Pakistan, Jordan, Algeria	Tunisia, Iran, Syria	
Saudi Arabia (89)	Sudan	Morocco, Sudan, Egypt		
Oman (89)		Iran, Syria		
Yemen				
Egypt				
Syria				
Morocco				
Iraq				
Algeria				
Pakistan				
Iran				
Sudan				

Source: Summers and Heston Penn-World Table database, Sharer and others (1999), TRAINS database and authors' computations.

Weighted Average Ranking

The weighted average ranking is an overall protectionist ranking based on the weighted average of the level of tariffs (T), tariff dispersion (D), and nontariff barriers (NT). Formally, weights α and β are obtained by maximizing the average correlation with overall protectionism $\alpha T + \beta D + (1-\alpha-\beta)NT$, which is equivalent to:

$$\text{Max}_{\alpha,\beta}\, \rho\,[T, P] + \rho\,[D, P] + \rho\,[NT, P]$$

$$= \rho\,[T, \alpha T + \beta D + (1-\alpha-\beta)NT] + \rho\,[D, \alpha T + \beta D + (1-\alpha-\beta)NT]$$

$$+ \rho\,[NT, \alpha T + \beta D + (1-\alpha-\beta)NT]$$

$$= \frac{\alpha\sigma_T^2 + \beta\,\text{cov}(T,D) + (1-\alpha-\beta)\text{cov}(T,NT)}{\sigma_T\sqrt{\alpha^2\sigma_T^2 + \beta^2\sigma_D^2 + (1-\alpha-\beta)^2\sigma_{NT}^2 + 2\alpha\beta\,\text{cov}(T,D) + 2\alpha(1-\alpha-\beta)\text{cov}(T,NT) + 2\beta(1-\alpha-\beta)\text{cov}(D,NT)}} +$$

$$\frac{\beta\sigma_D^2 + \alpha\,\text{cov}(D,T) + (1-\alpha-\beta)\text{cov}(D,NT)}{\sigma_D\sqrt{\alpha^2\sigma_T^2 + \beta^2\sigma_D^2 + (1-\alpha-\beta)^2\sigma_{NT}^2 + 2\alpha\beta\,\text{cov}(T,D) + 2\alpha(1-\alpha-\beta)\text{cov}(T,NT) + 2\beta(1-\alpha-\beta)\text{cov}(D,NT)}}$$

$$+ \frac{(1-\alpha-\beta)\sigma_{NT}^2 + \alpha\,\text{cov}(NT,T) + \beta\,\text{cov}(NT,D)}{\sigma_{NT}\sqrt{\alpha^2\sigma_T^2 + \beta^2\sigma_D^2 + (1-\alpha-\beta)^2\sigma_{NT}^2 + 2\alpha\beta\,\text{cov}(T,D) + 2\alpha(1-\alpha-\beta)\text{cov}(T,NT) + 2\beta(1-\alpha-\beta)\text{cov}(D,NT)}}.$$

We obtain the weights $\{\alpha,\beta\}$ from the first order conditions

$$\frac{d\{\rho[T,P] + \rho[D,P] + \rho\,[NT,P]\}}{d\alpha} = 0 \text{ and } \frac{d\{\rho[T,P] + \rho[D,P] + \rho[NT,P]\}}{d\beta} = 0.$$

The two-equation system was solved using Mathematica. The standard deviation for tariffs is $\sigma_T = 14.7$, the standard deviation of tariff dispersion is $\sigma_D = 44.4$, and the standard deviation of nontariff barriers is $\sigma_{NT} = 17.9$. Covariances are given by $\sigma_{T,D} = 165.97$, $\sigma_{D,NT} = -201.4$ and $\sigma_{T,NT} = 81.6$ with Tunisia. If Tunisia is excluded, the standard deviation for tariffs is $\sigma_T = 14.6$, the standard deviation of tariff dispersion is $\sigma_D = 47.7$, and the standard deviation of nontariff barriers is $\sigma_{NT} = 2.5$. Covariances are given by $\sigma_{T,D} = 247.2$, $\sigma_{D,NT} = -13.8$ and $\sigma_{T,NT} = -80.5$.

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