Forthcoming *in Quarterly Review of Economics and Finance*

Explaining Trade Policy in the Middle East and North Africa

Hadi Salehi Esfahani
University of Illinois at Urbana-Champaign
Lyn Squire
Global Development Network

Revised April 2006

Abstract

This paper examines the evolution of trade policy in the Middle East and North Africa (MNA) countries since the 1960s. It shows that contrary to the current popular perception, until the 1980s MNA countries were generally more open than the rest of the developing world. That situation changed in the 1980s and especially the 1990s as most MNA countries maintained their trade policies, while many other developing countries proceeded with liberalization. The paper develops and estimates a political economy model of trade policy to search for the factors behind the initial relative openness of the region and its reversal. The results show that the pattern is related to the rise and decline of the region's resource rents, which affected the political weight of domestic producers vs. consumers. Other factors are also considered, but they all seem to have secondary effects.

JEL Classification: F13, P16

Key words: Middle East and North Africa, Trade Policy, Political Economy, Imperfect Markets.

Please address all correspondence concerning this paper to:
Hadi Salehi Esfahani
Department of Economics
University of Illinois
Urbana, IL 61801, USA
Phone: (217) 333-2681; Fax (217) 333-1398; E-mail: Esfahani@uiuc.edu

1. Introduction

Throughout her distinguished career, Dr. Heba Handoussa has maintained a strong interest in industrial policy and trade strategy including issues such as competitiveness and the role of export oriented industries in developing countries.[1] And of course she has had a special interest in how these issues have unfolded in the Middle East and North Africa (MNA) and in particular in Egypt.[2] In recognition of her work in this area, this paper explores some of the factors that have influenced and determined trade policy in MNA.

The common perception is that MNA countries, with the exception of Turkey and the small Persian Gulf emirates, are among the world's least open economies (Hoekman and Messerlin, 2002). Surprisingly, and contrary to common perception, Figure 1 shows that the trade share in MNA countries excluding Turkey was consistently higher than that for other developing countries throughout the 1960s, 1970s, and 1980s and, indeed, until 1995. To illustrate, note that the trade share was an astonishing 90 percent in the oil exporting countries of MNA in 1975 and a still high 60 percent in the non-oil exporters compared with a more modest 36 percent average for other developing countries. This result also holds when we control for various non-policy determinants of the share of trade in GDP such as country size and other country characteristics. Thus, at least until 1995, MNA could claim to be more open than the rest of the developing world.

Figure 1, however, also shows why MNA may be viewed as a relatively closed region. Observe that other developing countries (and Turkey) have systematically increased their trade shares since the early 1960s with a noticeable acceleration in the late 1980s and throughout the 1990s. In sharp contrast, MNA countries have seen their trade share fall dramatically from the mid-1970s to the mid-1980s and again, albeit less precipitously, in the 1990s. Thus, MNA seems to have become more closed at the very time the rest of the developing world was embracing the global market. Fortunately, that pattern seems to be changing in recent years as both oil-exporters and non-oil-exporters are finding the means and motives to liberalize their trade.

---

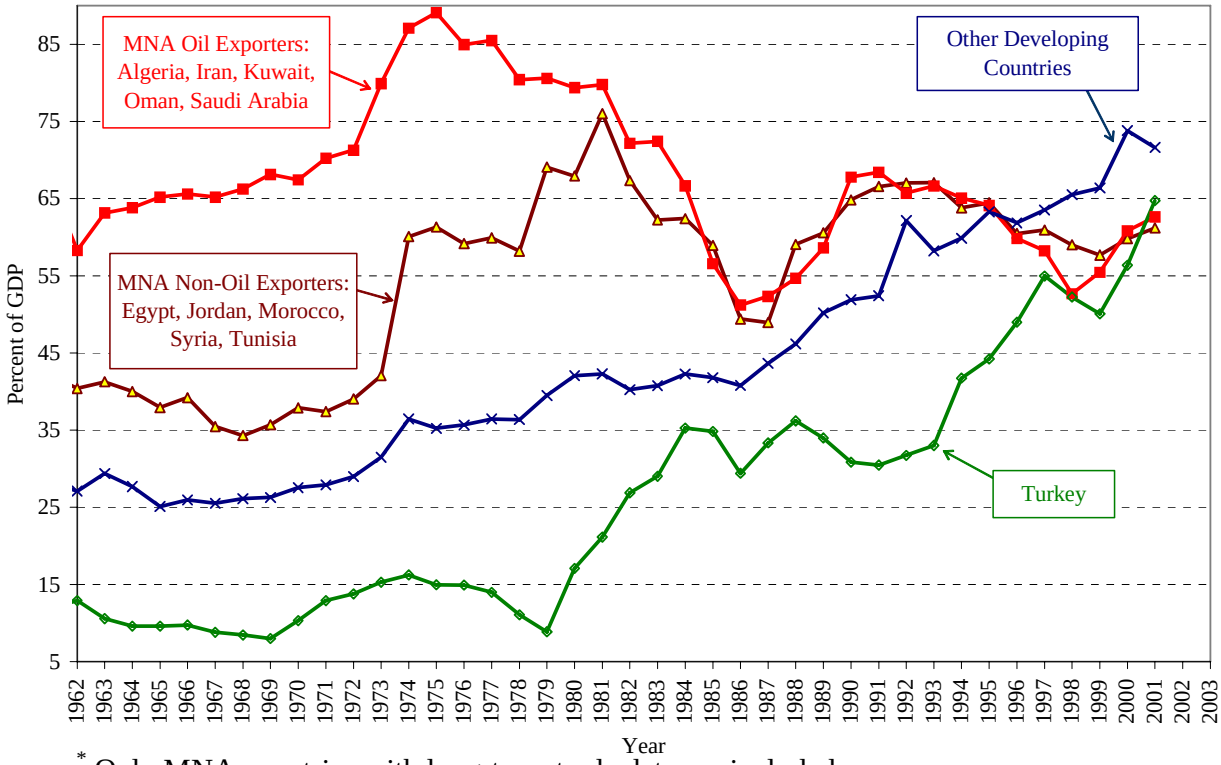
[1] "Competitiveness of the Arab Industrial Structure", paper presented at the ERF seminar on The Role of the State in Arab Economies, Kuwait, 1999; "Prospects for the Development of Export Oriented Industries in Egypt", paper prepared for the Japanese Institute of Middle Eastern Economies, Tokyo, 1993; "The South Korean Success Story: Comparison and Contrasts with Egypt", *L'Egypte Contemporaine*, 77th year, No. 403, 1986; "Turkey: Industrial Policies and Incentives", consultant's report for Industrial Restructuring Project, World Bank, 1985.

[2] "Summary of Results of Joint Study between Ministry of Industry and World Bank on Trade Strategy and Comparative Advantage in Egyptian Industry", Ministry of Industry, Cairo, 1983; "Productivity Change in Egyptian Public Sector Industries after 'the Opening', 1973-1979" with Meiko Nishimizu and John Page, *Journal of Development Economics*, Vol 20, 1986.

Figure 1

Imports Plus Exports as Share of GDP: MNA vs. the Rest of the Developing World

(GDP-Weighted Averages)



* Only MNA countries with long-term trade data are included.

Sources: World Bank, *World Development Indicators 2003*, and *Penn World Tables 6.1*.

This apparent difference in the experience of MNA relative to the rest of the world raises a number of important questions about trade policies in the region. Were MNA economies really more open than other developing countries in the past? Why has the share of trade in GDP declined in MNA countries since late 1970s? Have MNA trade policies become more restrictive over time? And, if so, why? In this paper, we address these questions.

To this end, the rest of the paper is organized as follows. In Section 2 we examine various measures of openness that try to capture policy stance rather than outcomes (trade shares) to assess whether the statements made above on the basis of observed trade shares are reflected in indicators of policy. Drawing on and extending Grossman and Helpman (1994), Section 3 then explores some of the key factors that could have been driving the region's trade policies and performance. This political economy model of protectionism integrates three possible reasons for increased protectionism: political lobbying, a revenue motive, and a second-best argument. Based on this model, we develop an empirical test of protectionism in MNA. The results are presented in Section 4 and our conclusions are reported in Section 5. In sum, the evidence of Section 2 generally supports the view that emerges from an examination of trade shares: MNA countries have become relatively more restrictive and closed

compared to other developing countries. And the econometric analysis of Section 4 supports the view that MNA policy-makers have maintained higher levels of protection than in the rest of the developing world primarily because the costs and benefits of protection have shifted in favor of producers and against consumers.

2. Measuring Openness: An Application to MNA

An economy is considered more open when there are fewer barriers hindering its trade with the rest of the world. Barriers could be natural, such as geographic distance, which are not subject to change, or they can be policy induced, such as tariffs. We have seen in Figure 1 that the share of trade in GDP has fallen in the MNA countries. This is often used as one measure of openness. But it is a measure that reflects many factors and not just policy. We now want to see whether trade policies in MNA countries have become more restrictive relative to the rest of the developing world. Trade policies, however, are often multifaceted (in the form of tariffs, quotas, standards, regulations, etc.) and have complex effects on trade, depending on how each is designed and implemented. As a result, it is difficult to come up with an overall measure of restrictiveness by a quick examination of the policies themselves. For this reason, four types of inexact openness indicators have emerged in the literature: Indices based on tariffs and quotas, ordinal rankings, relative real exchange rates, and relative trade shares. Below, we discuss these indices and examine the picture they provide concerning trade policies in MNA.[3]

Tariff and Quota Indices

One way to measure the overall trade policy of a country is to create an index based on statutory or effective tariffs and quotas. However, a major problem in developing such an index is the patchy and unreliable nature of the available data. In addition, it is not easy to come up with appropriate weights for aggregation of various types of protection across all products. For example, average effective tariff rates are often formed by weighing individual tariff rates for various items by the amount of imports of those items. Clearly, this procedure underestimates the rates of protection because it puts too little weight on items whose imports are heavily restricted. (In fact, tariff rates that are prohibitive and rule out all imports receive zero weight!) In contrast, items that receive little protection can be imported in larger quantities and receive larger weights. Similar, and perhaps more serious, problems plague the measurement of non-tariff barriers (NTBs), which are often quantified by the NTB coverage ratio (the share of imports affected by various forms of NTB). Despite these caveats, it is still useful to see whether there are

[3] A number of earlier studies have examined trade policy in MNA countries, most recently and among others, Hoekman and Jamel Zarrouk (2000), Hoekman and Messerlin (2002), and Hakimian and Nugent (2004). This section focuses on aggregate trade barriers and extends the existing literature in that respect.

discernible trends in MNA countries based on such measures and how the region compares with the rest of the world.

Table 1 offers a glimpse of the available data. A notable fact concerning this data is that the effective average tariffs and quotas in many countries do not appear to be very high. But, this is likely to be the consequence of the reliability and calculation problems mentioned above. In any case, the effective tariff rates, for which more data are available, suggest that except for the small oil exporting countries, protection through tariff instruments has been generally higher in the MNA region than in other developing countries. This is also true about NTBs, though that data are less reliable and only available for the mid-1980s (see the last column of Table 1).

The table also confirms the well-known trend that tariff rates have tended to decline in the past few decades. The decline, however, has been much more pronounced outside the MNA region, with the notable exception of Turkey. Indeed, some heavy users of NTBs such as Egypt, Iran, and Syria, are replacing them with tariffs and, as a result, average tariff rates have been rising in those cases during the past decade (Table 1). It is not clear how much NTBs have declined as a result of this process. The overall impact of the tariff rise and replacement of some forms of NTBs with others may have, in fact, increased the overall rate of protection in MNA, as other indices discussed below seem to indicate.

Ordinal Rankings of Trade Policy

The second type of trade policy indices is a more comprehensive, but rather ad hoc (and often subjective) aggregation of various policy indicators. Such measures result in rough orderings of policy restrictiveness across countries and over time. The Heritage Foundation index employed in Table 2 provides a prominent example but only has information from the mid-1990s. It gives a score of 1 to a country if the average tariff rate is less than or equal to 4 percent and adds a point as the average tariff passes 4 percent, 9 percent, 14 percent, and 19 percent thresholds. It also adds a point if there are significant NTBs or if there is ample evidence of corruption. Based on this measure, only Turkey and the small oil exporting economies of MNA region (Bahrain, Kuwait, Oman, Qatar, and UAE) pursue trade policies that are more liberal than the average for developing economies. Moreover, in contrast to the measure's generally downward trend in the rest of the world (indicating increased openness), it displays no such tendency in MNA countries.

A similar index of trade restrictiveness, ranging from 1 to 10, has been developed by the Fraser Institute for five-year intervals during the past three decades. The summary of this data produced in Table 3 suggests that in the 1990s trade liberalization in many MNA countries, especially the oil exporting ones, may have proceeded more slowly than in other developing countries. Interestingly, according to this indicator, in the earlier decades MNA countries with the clear exception of Turkey have been relatively

more open than their counterparts. This is consistent with the trends in trade shares observed in Figure 1 and our analysis of other trade policy indicators presented below.

Another example of the ordinal trade policy indicators is the composite measure developed by Sachs and Warner (1995) for the 1950-1992 period. It labels a country as closed if some trade related policies pass given thresholds. The indicator is dichotomous and takes the value of 1 if any of the following criteria apply: Average tariff rate is higher than 40%; the average NTB coverage is more than 40%; the economic system can be characterized as "socialist"; there is state monopoly of major exports; and there is a black market premium on foreign exchange exceeding 20%. It should be evident form these criteria that, as Rodrik and Rodriguez (2000) point out, the Sachs-Warner index is a mixture of trade policy and other market interventions. In any event, by this measure, MNA countries other than Jordan, Yemen, and the small oil exporting countries around the Persian Gulf were all closed until the late 1980s, at which time Morocco, Tunisia, and Turkey became open. On the whole, the Sachs-Warner indicator suggests that at least until the early 1990s, MNA countries were typically no more closed than their counterparts elsewhere. A change may have come about in the 1990s when other developing countries started to liberalize according to the Sachs-Warner criteria, while most MNA countries did not.

Relative Real Exchange Rate Indicators

The third type of trade policy indicator is based on the regression of the real exchange rate on its non-policy determinants. For example, Dollar (1992), who proposed this type of index, used GDP per capita and regional and time dummies as regressors. The purpose of such regressions is to filter out the role of some basic country characteristics that influence the real exchange rate and to arrive at the differences in tradable prices across countries that are due to protection. However, as Rodrik and Rogriquez observe, the index may be driven by factors other than protection and the required assumptions for using the index as a measure of protection are rather restrictive.

To improve the index, we follow the suggestions of Falvey and Gemmell (1999) and add a number of regressors that can account for variations in local demand and supply as well as the natural barriers to price equalization. For this purpose, we include GDP, population, labor force, land area per head, and the share of fuel in exports.[4] The first two variables influence demand and tend to raise the real exchange rate, while the increased supply of local labor should tend to lower it. Area per head and fuel share in exports represent natural resource endowments and, as Falvey and Gemmell (1999) note, affect both supply and demand, which could generate a net positive or negative effect on the real exchange rate.

[4] There is some endogeneity problem in using GDP and share of fuel in exports as regressors. However, this problem is unlikely to change the ranking of countries that emerges from the ratio of actual to predicted values.

Since the magnitude of all these effects is likely to be smaller when the economy is more accessible by the rest of the world economy, we interact these variables with a measure of country coastline (specifically, the log of one plus the coastline in 1000s of kilometers).[5] For each one of the variables, we expect its interaction term to have the opposite sign of the variable itself. The regressant is the log of the price level of GDP in each country relative to the price level in the United State (where the price level is set equal to 100). This is an indicator of the real exchange rate, which is available from *Penn World Tables*. We include all the regressors in log form (for fuel, log of one plus the share of fuel in exports) and add the square of log GDP and log population to capture possible non-linearities in the relationship.

We use panel data for 145 countries during 1960-2001 and include yearly fixed effects to control for worldwide factors that may have been influencing the real exchange rates of all countries vis-à-vis the US. The results are reported in Table 4 and all the predicted signs, including those of the interaction terms, are born out with statistical significance. Natural resource availability turns out to have a positive effect on the real exchange rate. The fit of the regression is very good and more than 60 percent of the variation across countries and over time is explained by the model.

The Dollar-type index that we use here as an indicator of trade policy is the ratio of the actual real exchange rate relative to its predicted value based on the regression in Table 4. Lower values of the index represent less restrictive trade. Table 5 presents five-year averages of this indicator for MNA countries and the rest of the developing world. The difficulties with this measure can be seen in its large fluctuations, even after averaging over five years. A key problem is that measures of real exchange rate do not properly capture the consequence of foreign exchange rationing and price controls when there are multiple exchange rates. This can be seen, for example, in the sharp drop in the residual of the real exchange rate in Iran between 1990-94 and 1995-99. This drop seems to indicate that Iran's trade was quite restricted before 1994 and became much more liberal afterwards. However, it is well known that trade restrictions increased sharply in 1995 following a foreign debt crisis that led to severe rationing of foreign exchange. At about the same time there was a devaluation of the highly overvalued exchange rate that applied to official trade of "essential goods" together with more intensive controls on domestic markets. As a result, domestic prices appear to have fallen sharply relative to their foreign counterparts, while in fact trade was curbed significantly.

Despite its shortcomings, our Dollar-type index points to trends in MNA that are broadly consistent with our reading of most other indicators of trade policy. The figures in Table 5 suggest that until mid-1990s most MNA countries were not much more closed than other developing economies,

[5] We also experiment with measures of distance from the United States and other world markets. But, the interaction terms with these variables did not prove statistically significant.

though there are notable exceptions such as Iran, Jordan, Syria, and Turkey at different times. After the mid-1990s, the index suggests that the trend may have changed and protectionism may have risen in all non-oil exporting countries of the region. This pattern is broadly similar to the one observed in the case of effective tariff rates and Heritage Foundation's trade policy index.

Relative Trade Share Indicators

Trade policy indicators of the fourth type are those that try to account for non-policy determinants of trade flows and use the residual as an indicator of policy effects. The trade share index that we develop here is based on the "gravity model," which posits that trade between a country and its partners increases with the sizes of economic activity on the two sides and decreases with their geographic distance (Andriamananjara and Nash, 1997; Frankel and Romer, 1999). This approach can be implemented in various ways. The procedure adopted here is to estimate the determinants of total trade-GDP ratio and take account of all foreign economic activity by creating an aggregate index of distance-adjusted foreign GDP (*DAFG*) for each country. For example, for country *i*, the index can take the form,

$$(1.1) \qquad DAFG_i = \sum_{j \in C_{-i}} GDP_j d_{ij}^{-\alpha} ,$$

where C_{-i} is the set of all countries other than country *i*, GDP_j is the GDP of country *j* in constant US dollars, d_{ij} is the distance between countries *i* and *j*, and $\alpha > 0$ is a parameter that measures the impact of distance on trade costs.

For our study of trade shares indices of openness, we use the aggregation method summarized by Equation (1.1) with $\alpha = 1$, which generates a good fit. (Experiments with various values around 1 showed that the results are not sensitive to this assumption.) The regression's dependent variable is the log of total trade (imports plus exports) as a share of GDP and the independent variables are the key demand factors (logs of GDP per capita in constant dollars, population, and $DAFG_i$) as well as controls for resource endowments (logs of labor force, area per head, and one plus share of fuel in exports), accessibility (coastline), and time dummies. The reason for using the trade share on the left-hand side is to reduce the heteroskedasticity problem that the level of country trade entails. Also, on the right-hand side we add the square of each variable to the regression to allow for possible higher degrees of non-linearity.

Table 6 shows the results of our trade share regression using the panel data of 143 countries that have at least three observations available during the years 1960-2001. The quadratic expressions for the logs of GDP per capita and DAFG indicate that the marginal effects of these variables on trade share are positive for about three-quarters of the sample. The marginal effect of population is positive for small populations, but declines and becomes negative as population rises. The opposite is true about labor force.

Controlling for population, GDP, and other factors, countries with larger labor forces tend to trade more (and increasingly so as they try to export the products of their abundant labor in exchange for the products of other resources that they have in relatively short supply). More land per capita and larger shares of fuel in exports are always associated with larger trade. Coastline turns out to have a positive effect on trade, but only when it is very long. The overall fit of the regression is good with R^2 well over 0.6.

The indicator of trade restriction that we build based on the regression in Table 6 is the ratio of predicted to actual trade share.[6] Table 7 summarizes this index for MNA countries and compares the results with the average values for other developing countries. The broad picture that emerges confirms the one observed in Figure 1 based on raw trade shares suggesting that the region has become relatively more closed mostly after the mid-1990s. In fact, until the early 1980s, most MNA countries, especially the oil exporters, were trading more than the amounts predicted by the model, especially compared to other developing countries. The situation started to change in the 1980s for the oil exporting countries, but not for the non-oil exporters that ended up expanding their trade shares relative to their predicted values (and relative to most other developing countries). The MNA non-oil exporters' relative trade share growth continued into the early 1990s and even the oil exporters did somewhat better in the first half of 1990s. But, that trend ended for most MNA countries around 1995. With the notable exception of Turkey, the ratios of predicted to actual trade shares have risen sharply in the MNA region since the mid-1990s. This happens to be a period in which many other developing countries have managed to become increasingly open by most measures.

As we noted at the start of this section, none of the measures presented here is free of conceptual or data problems. Nevertheless, they tell a broadly consistent story of increased protectionism in MNA countries relative to the rest of the developing world. To see this in summary form, Table 8 presents the *ratio* of openness in MNA countries relative to that in all other developing countries for the two measures that have the best geographical and temporal coverage (the Fraser Institute Index and the Trade Share filtered for non-policy influences). A value of the ratio greater than 1 means that trade policies in MNA countries are more restrictive than in the rest of the developing world. An increase in the ratio between the two dates shown in the table indicates a rise in MNA's relative trade restrictiveness.

The key conclusion from Table 8 is that in the early to mid 1980s trade policy was generally less restrictive in MNA countries relative to other developing countries. But, by the first years of the new century, the situation had reversed. MNA countries have liberalized relatively little and may even have increased protection at a time when other countries were rapidly liberalizing. Given the above findings, the intriguing question is: what factors account for the relative decline in the openness of most MNA

[6] Using import shares in the regression rather than trade shares does not change basic results that follow.

economies in the past decade? We attempt to answer this question in the next section by combining the theoretical explanations of protectionism available in the literature into a single political economy model following Esfahani (2005). We then apply the model to both openness indices reported in Table 8.

3. A Political Economy Model of Protectionism

The political economy literature offers three categories of motives for protectionism. The first is the lobbying or "protection for sale" as formulated most effectively by Grossman and Helpman (1994), hereafter GH. The basic idea is that the owners of some factors may be more effective in organizing politically than others. As a result, by making campaign contributions or bribing the politicians, they may be able to buy protection at the cost of the unorganized part of the population. The second explanation of trade restrictions is the revenue motive: If the government finds it costly to collect other taxes, it may turn to more easily collected taxes such as import tariffs. The third reflects a second best argument: If there are failures and externalities in domestic markets that cannot be easily addressed directly through taxes and subsidies, particularly in the capital and insurance markets, the government may find it necessary to use trade policy as a substitute. These three motives have been modeled and used for understanding cross-industry trade policies within individual countries. We use those models to shed light on cross-country trade policies by developing a simple model that captures all these effects and lends itself to econometric estimation.

The existing models of trade policy are mostly concerned with the relative rates of protection across industries and do not focus on the determinants of the overall rates of protection. Since our aim is to examine the extent of protectionism across countries, we cast our model in a more aggregate form to make it amenable to empirical estimation for the purposes at hand. Consider a version of the GH model where there are only 3 traded goods—indexed by $i = n, m,$ and x, representing a numeraire product, n, importables, m, and exportables, x. Let the domestic prices of these products be represented by p_i and the world prices, which we take as exogenous, by p_i^*, $i = n, m, x$. For the numeraire good, the domestic and foreign price are both set equal to one, $p_n = p_n^* = 1$. Its production uses only labor with an input-output coefficient of one. The production of all other goods requires an industry-specific asset as well as labor.

The government sets specific trade taxes (including non-tariff barriers) on importables and exportables, totaling t_i and making the domestic price $p_i = p_i^* + t_i$ for $i = m, x$. The higher the value of t_i, the larger will be the price that domestic consumers must pay and the greater will be the protection that domestic producers will enjoy. Note that in the case of exportables, a positive t_i is a subsidy on exported units. t_i can be negative if the government subsidizes imported goods or taxes exports.

There is a continuum of individuals—with a population size normalized to one—who own the factors of production and generate domestic demand for the goods. Individuals have identical preferences

over their consumptions of the three products, c_n, c_m, and c_x:

(3.1) $U = c_n + u_m(c_m) + u_x(c_x)$,

where u_m and u_x are concave, increasing functions. The implied demand for good i by an individual with income y can be found by maximizing U with respect to c_i subject to the budget constraint,

(3.2) $c_0 + p_m c_m + p_x c_x = y$.

For $i = m$ and x, this optimization implies $u_i'(c_i) = p_i$, which yields the demand of the individual for good i—denoted by $d_i(p_i)$—as the inverse of $u_i'(.)$. The demand for good 0 is then $d_0 = y - p_m d_m(p_m) - p_x d_x(p_x)$. The indirect utility function of the individual can be derived as $V = y + s_m(p_m) + s_x(p_x)$, where $s_i(p_i) = u_i(d_i(p_i)) - p_i d_i(p_i)$ is the individual's consumer surplus from purchasing good i.

Total labor supply is normalized to one and its ownership is uniform across the population. The supply of labor is assumed to be sufficiently large such that in a competitive equilibrium the output of the numeraire good is positive. This ensures that the wage rate is equal to 1. The size of each specific asset i, $i = m$ and x, is also normalized to one, but its ownership is assumed to be distributed equally among a subset of individuals whose share in the population is $\alpha_i < 1$. Each individual can own at most one type of specific asset, with the ownership rights being nontradable. The specific asset owned by each individual is managed by a firm. The firms in each industry are identical and possess a constant returns to scale technology that produces $q_i(\ell_i)$ unit of good i per unit of specific asset i, where ℓ_i is the labor input per unit of specific asset i and $q_i' > 0$ and $q_i'' < 0$.

Based on the setup just discussed, GH specify the political structure, the government's preferences, and the equilibrium conditions. Their setup focuses on the role of lobbying. We follow those same steps, but we introduce two additional features into the model to capture the revenue and market-correction motives for protection as well. The task can be accomplished in different ways. To keep the setup simple and empirically relevant, we model the revenue motive by assuming that the government places a premium, θ, on each dollar of t_i earned by its treasury or, in case of quotas, each dollar of quota premium that the government directs towards intended groups. The reason for the existence of the premium could be redistribution of the proceeds to buy support for the government or provision of public goods. If r_i is the net import of good i, with $r_m > 0$, and $r_x < 0$, the overall social value of trade taxes will be $(1+\theta)(t_m r_m + t_x r_x)$.

For the market correction motive, we assume that the marginal value of profits in industry i is $\tau_i \geq 1$, which can vary across industries and is higher when market failures are more severe and the government has greater difficulty using subsidies to address the underlying problems. For example, when informational asymmetries severely restrict the access of an industry to capital and insurance markets, a

dollar of additional profit in the industry can reduce the extent of the problem and, therefore, has a premium from the government's perspective. This premium is higher the more severe are the failures and the greater is the difficulty of the government to address the problem through fiscal transfers. Based on this specification, a firm in industry *i* with a labor-asset ratio of ℓ_i perceives the value of its profits per unit of the specific asset to be $\tau_i\,(p_i\,\underline{q}_i(\ell_i) - \ell_i)$. Let $\pi_i(\,p_i\,) = \max_{\ell_i}\,[p_i\,\underline{q}_i(\ell_i) - \ell_i\,]$. Then the payoff of the firm owners in industry *i* is $\tau_i\pi_i(\,p_i)$. Using Hotelling's lemma, it is easy to see that the supply function of the industry is $q_i(p_i) = \pi_i'(p_i)$. Given the domestic demand for good *i*, net imports are $r_i(p_i) = d_i(p_i) - q_i(p_i)$.

Noting that the total incomes of individuals consist of the returns to their specific assets and labor (which equals 1 for the population as a whole), the aggregate welfare—or the total indirect utility of all individuals inclusive of the value of trade taxes—can be written as:

$$(3.3) \qquad W = \sum_{j=m,x} \tau_j \pi_j + 1 + \sum_{j=m,x} s_j(p_j) + (1+\theta) \sum_{j=m,x} t_j r_j \,.$$

For the political structure, which shapes the interaction between the government and various segments of the population, assume that in the importable and exportable industries, the owners of the specific assets may be organized in industry-specific lobbies and let I_i be the indicator of lobbying, where $I_i = 1$ if there is a lobby in industry *i* and $I_i = 0$ otherwise. This dichotomous indicator may be crude because it does not capture and extent and strength of the lobbies, but it offers a convenient way of modeling lobbies and capturing the role that they may play in trade policy.

When present, a lobby offers political contributions to the policymakers in exchange for the adoption of trade policy favorable towards its respective industry. The lobby's objective is to maximize the welfare of the asset owners, W_i, net of political contributions, C_i; that is, the lobby's objective function is $W_i - C_i$.[7] If industry *i* is not organized, $C_i = 0$. The joint gross welfare of the owners of industry *i* is:

$$(3.4) \qquad W_i = \tau_i\pi_i + \alpha_i\left[(1+\theta)\sum_{j=m,x} t_j r_j + 1 + \sum_{j=m,x} s_j(p_j)\right].$$

The policymakers are a small set of individuals (politicians) who control the government and set the policies. They owe their position to support from the balance of forces in the population. If too many groups become dissatisfied, the balance may tip in favor of another set of politicians to replace the

[7] This specification assumes that the owners, not the firms, pay the contributions. If the contributions come directly from firm resources, then their marginal cost to the industry would be τ_i and the lobby's objective function becomes $W_i - \tau_i C_i$. In the final equations that we derive, this only affects the terms that are constant across industries, which has little consequence for the empirical analysis.

incumbent ones. The incumbent politicians value their positions because of the benefits they derive from contributions, though they may use part of the contributions for election campaigns. For simplicity, we assume that none of those eligible to become policymakers owns specific assets. We specify the politicians' objective function, G, as a weighted average of aggregate welfare and lobby contributions. Normalizing the unit of the politicians' utility to one dollar of aggregate welfare and denoting the premium that they assign to a dollar of political contributions as β, we have:

$$G = W + \beta(C_m + C_x). \tag{3.5}$$

The politicians' effort to maximize G and the interest of each lobby in maximizing its welfare net of political contributions results in a process that determines all t_i's and C_i's. GH specify this process as a "menu auction" à la Bernheim and Whinston (1986). While the level of political contributions is sensitive to the details of the interactions among the parties, the equilibrium trade taxes—which are the main concern here—are invariant to those details (as long as one can assume that contributions are differentiable in t_i's). This is because, as Goldberg and Maggi (1999) argue, in the type of bargaining processes that arises in this model, equilibrium t_i*'s* ultimately maximize the joint surplus of the government and the lobbies. This problem amounts to selecting t_i's that maximize

$$W + \beta \sum_{j \in L} W_j = \sum_{j=m,x} (1+\beta I_j)\tau_j \pi_j + (1+\beta\alpha_L)\left[(1+\theta)\sum_{j=m,x} t_j r_j + 1 + \sum_{j=m,x}^{n} s_j(p_j)\right], \tag{3.6}$$

where $\alpha_L = I_m\alpha_m + I_x\alpha_x$ is the share of population that is organized in any of the two potential lobbies.

The first-order condition for the maximization of (3.6) with respect to t_i is:

$$(1+\beta I_i)\tau_i q_i + (1+\beta\alpha_L)[(1+\theta)\frac{\partial r_i}{\partial p_i} t_i + (1+\theta) r_i - d_i(p_i)] = 0, \qquad i = m, x. \tag{3.7}$$

When (3.7) has a solution and $r_i \neq 0$, we can rewrite it as:

$$\mu_i \frac{t_i}{p_i^*} = \frac{\theta}{1+\theta} + \frac{1}{1+\theta}\left[\frac{(1+\beta I_i)\tau_i}{1+\beta\alpha_L} - 1\right]\left(\frac{q_i}{r_i}\right). \tag{3.8}$$

where t_i/p_i^* is the rate of protection and $\mu_i = -(p_i^*/r_i)(\partial r_i/\partial p_i^*)$ is the elasticity of the net import demand with respect to the world price. Note that this derivation takes advantage of the fact that $\partial r_i/\partial p_i = \partial r_i/\partial p_i^*$ and that $\mu_i > 0$ for imports and $\mu_i < 0$ for exports.

Equation (3.8) determines the equilibrium trade taxes. It would be exactly the equation derived by GH if one adopts their assumptions that $\theta = 0$ and $\tau_i = 1$. In that case, when an industry is politically organized, $I_i = 1$, it will receive positive protection because $r_i\mu_i$ is always positive and the term in the

square brackets simplifies to $\beta(1-\alpha_L)/(1+\beta\alpha_L) > 0$. When industry i is not organized, its protection will be negative if the other industry is organized because in that case the term in the square brackets becomes $-\beta\alpha_L/(1+\beta\alpha_L) < 0$. If neither industry is organized, $I_i = \alpha_L = 0$, the protection rate in both industries will equal to zero. The impact of a lobby is stronger the smaller is μ_i and the larger is q_i/r_i, the industry's output relative to net imports.

Adding the market correction motive, $\tau_i > 1$, boosts the rate of protection for both industries, whether they are organized or not. Again, q_i/r_i and $1/\mu_i$ strengthen the effect. The revenue motive, $\theta > 0$, tends to reduce protection for (or increase taxation of) exporting industries, but creates a possibility that protection may be increased for import competing industries. The latter would be the case as long as

$$(3.9) \qquad \frac{r_i}{q_i} > \frac{(1+\beta I_i)\tau_i}{1+\beta\alpha_L} - 1.$$

The intuition behind this condition is that if imports are large relative to domestic production, a stronger revenue motive will encourage policymakers to increase trade restrictions and control more rents. But, when imports are very small, strengthening of the revenue motive may have the opposite effect: policymakers may be prompted to lower protection and allow more imports as a means of generating more revenue. Note that if there is no need for market correction, $\tau_i = 1$, and no lobbying, $I_i = \alpha_L = 0$, then the second term on the right hand side of (3.8) would vanish and t_i/p_i^* would equal $\theta/[(1+\theta)\mu_i]$. In that case, the pure revenue motive leads to Ramsey pricing, which assigns larger taxes to products with lower import demand elasticity.

Equation (3.8) and condition (3.9) are the basic relations that we will use for our empirical investigation. Since the actual measures of trade policy mostly reflect import restrictions, we focus on the case of importables sector, $i = m$. Since lobbies are far more likely to be present in importables than in the exportables sector, we assume that when there is any lobby in the economy, one must exist in the importables sector. This implies that either there is no lobby in the economy, $I_m = \alpha_L = 0$, or the importables sector is organized, $I_m = 1 > \alpha_L > 0$. In the first situation, the term in the square brackets of (3.8) boils down to $\tau_m \geq 1$, while in the second situation, that term becomes $(1+\beta)\tau_m/(1+\beta\alpha_L) - 1 > 0$. In either case, the square brackets term must be positive. This observation is important for predicting the effects of various factors on the rate of protection.

Given the above assumption, relations (3.8) and (3.9) suggest that exogenous factors that raise I_m, τ_m, and q_m/r_m or reduce μ_m and α_L should raise import restrictions. The reason for the increase in protection associated with factors that raise I_m and τ_m is straightforward: These factors make the profits of import competing firms more valuable to the politicians and motivate them to induce more profits for the

industry. An increase in q_m/r_m due to exogenous factors (e.g., a decline in the price of a country's resource exports) tends to induce more protection because it magnifies the producers' benefits of a marginal increase in t_m relative to the costs that such a change imposes on the consumers. On the other hand, a higher μ_m entails a bigger deadweight loss and a larger α_L implies greater internalization of the deadweight loss by the lobby members. These effects make import restrictions costly for the government and the lobbies and discourage protectionism. Finally, the factors that increase θ should induce greater protectionism as long as import penetration, r_m/q_m, is sufficiently large to satisfy (3.9), but the opposite should hold when r_m/q_m is small, which makes it difficult to extract additional revenues from imports.

4. Explaining MNA's Increased Protectionism

To examine the empirical relevance of the model developed in section 3, we specify and estimate a model of import restrictions based on equation (3.8). Since equation (3.8) is highly nonlinear, its direct estimation faces parameter identification and convergence problems. Therefore, we use the following linearized version of it:

$$(4.1) \qquad \mu_{jt} T^m_{jt} = a_0 + a_1 D_{jt} + [a_2 + a_3 A_{jt}] Q_{jt}(a_5 - a_4 D_{jt}) + R_{jt} + \varepsilon_{jt},$$

where the subscripts j and t refer to country and year, respectively, and a_i's are parameters. In this equation,

T^m_{jt} is a measure of overall protection rate (t_m/p^*_m);

$a_0 + a_1 D_{jt}$ is a linearized version of $\theta/(1+\theta)$, with D_{jt} acting as a proxy for the premium on public funds;

Q_{jt} is a measure of output-import ratio (q_m/r_m);

$a_2 + a_3 A_{jt}$ is a linearized version of the square brackets term in (3.8), $(1+\beta I_m)\tau_m/(1+\beta\alpha_L) - 1$, discussed in more detail below.

R_{jt} represents other possible controls, including annual and country fixed effects.

ε_{jt} is an error term, which may be serially correlated and heteroskedastic.

The rationale for the specification of the square brackets expression in (3.8) is as follows. That expression contains three variables: I_m, τ_m, and α_L. There is no reliable cross country data for the variables reflecting the extent of political organization, I_m and α_L. However, since import competing industries in all countries engage in lobbying in one form or another, it is reasonable to assume $I_m = 1$. This also suggests that the share of organized population, α_L, may be related to the degree of industrialization. On the other hand, the extent of market imperfection in the economy, τ_m, should be higher in economies that

have diversified less into modern industry and services.[8] Therefore, as a key indicator of $\tau_m/(1+\beta\alpha_L)$, we may use the share of agriculture in GDP, A_{jt}, which is an inverse indicator of industrialization; hence the rationale for the $a_2 + a_3A_{jt}$ expression. This specification helps us take account of the interests of domestic producers in the trade policy calculus—both their demands for rent and their needs for alleviation of market imperfections—though we cannot distinguish clearly between the two factors.

The measures that we use to represent T^m_{jt} are the Fraser Institute index shown in Table 3 and the ratio of predicted to actual trade share summarized in Table 7. The latter is our preferred measure because it is available for a larger set of countries and years. The Fraser Institute index is a subjective and ordinal measure, which is somewhat more difficult to interpret. Nevertheless, it can act as a check on the specificity of the results to the trade share index. Also, it represents an alternative set of measures that are, in a sense, comprehensive and take account of factors that may be difficult to capture through other indices. The Heritage Foundation's trade policy index produces results similar to the Fraser Institute index, but it is too short to permit panel estimation with country fixed effects. The real-exchange-rate-based index seems to be too noisy to yield statistically significant results.

The data for import demand elasticity are borrowed from Senhadji (1998), who offers single, time-invariant estimates for 66 countries. The limited availability of this variable is a key constraint on the size of our sample. To expand the sample and test the stability of the estimates, we used three different proxies for the missing values. The first one is the mean of the available elasticity estimates. The second is also the mean value, but weighted by country imports. The third proxy is the predicted values from a cross-country regression of the available elasticities on area, population, and average trade share in the 1980s. All three methods yield a sample of 128 countries and produce similar results for the estimation of (4.1). Here, to save space, we report only the estimates with the third proxy.

For Q_{jt} we use the ratio of GDP to total imports because we do not have data for the output of import competing industries. Our indicator for the shortage of funds, D, is the budget deficit before the inclusion of import duties as a share of GDP (i.e., the sum of budget deficit and import duties both as shares of GDP). The data for all these variables come from WDI. Since international events may have broad impact on all countries, we take account of them by including yearly fixed effects as part of the R_{jt} expression. Finally, we use Newey-West heteroskedasticity-autocorrelation consistent standard errors to ensure that the significance levels of the estimated parameters are not driven by the heteroskedasticity and autocorrelation in the disturbance term, ε_{jt}.

[8] We also experimented with the PPP price of investment deflated by the exchange rate, which has been used in other studies as an indicator of market imperfections. The results proved quite consistent with our hypotheses. However, the PPP price of investment is strongly driven by the real exchange movements, which is not what the concept that τ represents. Therefore, we do not rely on that variable in the present paper.

The output-import ratio on the right-hand side of (4.1) is endogenous. We instrument by means of the inverse of the exogenous determinants of the import-GDP ratio—population, area, and DAFG. Since there is also a possibility of simultaneity for the budget deficit and share of agriculture on the right-hand side, we instrument them as well with the lagged values of their 5-year moving averages. Because of the non-linearities in (4.1), our instrument list also includes the interactions of these instruments.

Our samples include countries that have at least five observations for all the variables and instruments. This implies that the regression that uses the Fraser Institute index times import elasticity as the dependent variable includes 49 countries with a total of 258 observations. This regression is shown in the first column of Table 9. The second column of that table shows the regression that relies on the ratio of predicted to actual trade share, which includes 58 countries and 1310 observations. Since these samples include few MNA countries and the restriction on the countries included might be biasing the results, we also ran the regressions with a larger sample by replacing the missing elasticities with the import-weighted mean of the available figures (0.97). The extended-sample result for the index based on trade share is shown in the third column of Table 9. The outcome is similar for the Fraser Institute index. All three regressions include annual and country fixed effects. The regressions produce relatively accurate coefficient estimates and show a good fit for the model, as judged by the adjusted R^2.

Note that according to our model, $a_2 + a_3A_{jt}$ must be positive, with a_3 specifically being greater than zero. In addition, our model suggests that $a_1 > 0$, $a_4 > 0$, and $a_0 + a_1D_{jt} = 1 - (a_5 - a_4D_{jt})$. The latter implies $a_0 = 1 - a_5$ and $a_1 = a_4$. However, these restrictions cannot be tested because the non-linear nature of the model and the presence of fixed effects prevent us from identifying a_0, a_4, and a_5. Therefore, we normalize $a_5 = 1$ and let a_1 and a_4 be different.

Table 9 shows that the estimated values of a_1, a_4, and $a_2 + a_3A_{jt}$ all have the expected positive signs with high levels of statistical significance. Second and third column regressions that use the trade-share-based index produce very similar point estimates of these parameters, despite the major difference in sample sizes. The point estimates in the first column are larger than those in the other two columns because the Fraser Institute index has a different scale. Nevertheless, the relative values of the estimates in all three columns are quite similar. The results imply that shortage of public funds, market underdevelopment, and import capacity limitation relative to the domestic market size can each account for higher levels of import restrictions.

A key question for our purposes is whether the factors highlighted by the model can help explain a sizable part of the relative decline in MNA's openness. To answer this question, we calculated the marginal impacts of the changes in Q_{jt}, and D_{jt}, A_{jt} between 1990-1994 and 1995-2001 on the predicted values of T^m_{jt}, which we denote as $T_m(Q_{jt}, D_{jt}, A_{jt}, R_{jt}, \mu_{jt})$. The results reported here are the differences of

those marginal impacts in MNA countries and the GDP-weighted averages of the corresponding changes for other LDCs. We report the results of the estimates using the trade-share-based index. The regression with the Fraser Institute index (not reported here) yields similar results, though for a smaller sample.

The first column of Table 10 shows the actual differences of MNA countries from the average non-MNA developing country in terms of the change in T^m_{jt} between mean values of 1990-1994 and 1995-2001. In other words, this index shows how much more restrictive MNA countries became relative to the rest of the developing world between those two periods. The second column reports a similar indicator based on the predicted values, $T_m(Q_{jt}, D_{jt}, A_{jt}, R_{jt}, \mu_{jt})$. Since this calculation requires data for μ_{jt}, we used the predicted values from our estimated equation for countries lacking data on this variable. Algeria's elasticity estimate is very low, 0.1, which seems like an outlier in the sample and renders incredibly high values for T_m. For this reason, we exclude Algeria from the weighted averages that we calculate at the bottom of the table. We also exclude Turkey from the averages to focus on the rest of MNA economies that have not opened up as much as the rest of the world. Interestingly, although the model's prediction for Turkey is quite poor, including that country in the averages makes the model look better because it brings the actual and predicted relative changes in T^m_{jt} closer together.

A comparison of the first two columns of Table 10 shows that the model generally predicts a good part of the relative changes in T^m_{jt}.[9] The weighted averages reported at the bottom of the table indicate that about two thirds of the increase in relative measure of trade restriction in MNA may be attributed to the factors captured in our model. Notably, this is true of both oil exporting and non-oil exporting countries in MNA. In the 1990s, both groups have been slow to liberalize relative to the rest of the world and the model predicts to the same extent for both of them.

The next question is how much each of the three factors—D_{jt}, A_{jt}, Q_{jt}—has contributed to the rise in relative protectionism in MNA during the 1990s. To answer this question, we recalculated $T_m(D_{jt}, A_{jt}, Q_{jt}, R_{jt}, \mu_{jt})$ three more times, each time setting two of the three determinants equal to the mean of LDCs for all countries and allowing only one to vary across countries. This enables us to examine the marginal role played by each variable at the mean of the sample. The last three columns of Table 10 report the results. To interpret these figures consider the entry for Egypt under the GDP-Imports Ratio column. The results show that if the country's only deviation from the average features of non-MNA developing countries at each point in time were its GDP-import ratio, then the expected value of its trade policy index would have grown faster than the one in other LDCs by 0.28 (which is 28 percent of the mean of the index and about a third of its standard deviation). Similarly, if the only deviation is with respect to its budget deficit measure or the share of agriculture in GDP, then Egypt's index would have risen by 0.05

[9] The correlation coefficient of actual and predicted relative changes, excluding Algeria and Turkey, is 0.48.

and 0.06, respectively, relative to the average for the other developing countries between 1990-1994 and 1995-2001. Note, that the sum of the three independent effects is not the same as their simultaneous effect (0.28) because of interactions among variables.

The marginal effect measures presented in Table 10 reveal an important point: The reduction in import shares is the central factor behind the rise in the predicted value of relative protectionism in MNA between 1990-1994 and 1995-2001, and the effect is clearly more pronounced in the oil-exporting countries. In fact, the slowness of market development measured by the share of agriculture seems to have had a very insignificant effect and the deficit reduction may have had a favorable impact in most MNA counties relative to their counterparts in other regions. The explanation for this latter outcome is that MNA governments managed to control their expenditures and cope with the revenue shortfalls that started to appear in the 1980s. As a result, during the 1990s, they appear to have done relatively better as they emerged from the trough of late 1980s.

The impact of the reduction in import shares on protectionism warrants further discussion. This effect is not a simple reverse causality, as it may seem, because we control for the simultaneity of the import share. Rather, the effect reflects the fact that foreign exchange rents for the region had fallen and had led to a reduction in imports relative to domestic production. This phenomenon increases the benefits of protection to producers relative to the costs incurred by consumers since imports comprise a smaller share of total consumption. Since producers are likely to be more vocal politically and more likely to make political contributions, politicians feel less constrained in retaining or raising tariff levels. As a result, when the capacity to import declines relative to the domestic production potential, cost of protection also declines and politicians find it more tempting to tighten import restrictions. Of course, the strength of this explanation varies across counties in MNA depending on the potentials for increasing the gains from trade separate from the factors captured in our model. In such circumstances, other reasons to liberalize may counteract with the need for revenue and the reduction in the costs of restrictions.

5. Conclusion

This paper has offered an interpretation of the evolution of trade policy in MNA countries, a story that not surprisingly finds its starting point in the oil boom of the 1960s and 1970s. The evidence of Figure 1 makes it clear that MNA countries, contrary to popular perception, were more open in terms of trade shares than the rest of the developing world. As oil revenues increased, the oil exporters were able to expand imports significantly and kept protection relatively low. Moreover, this phenomenon carried over to the non-oil exporting countries through official transfers and worker remittances.

In the 1980s and especially the 1990s, circumstances changed. Resource rents diminished sharply. This had an immediate effect on imports. At about this time, many non-MNA countries began

to open their economies, intensifying competition in world export markets. This put downward pressure on MNA's non-oil exports, further reducing foreign exchange earnings and import capacity. As a result, and as shown in Figure 1, the share of imports in GDP declined throughout the MNA region and indeed by 2000 was below that in the rest of the developing world. This development had an important consequence for the political calculation influencing the decision regarding the degree of protection. Tariffs and quotas come with a cost in terms of higher consumer prices. This political cost may, however, be offset if increased protection benefits other politically vocal groups or mitigates some market failures—e.g., credit and insurance market imperfections, especially for small, labor intensive firms employing mostly unskilled workers. As the imports fall as a share of total sales, the possible externality benefits rise and producers reap a greater part of the surplus generated by protection. The political costs of protectionism are thereby reduced because more of the surplus accrues to the group that benefit from trade barriers. Since in setting trade policy, politicians must weigh the benefits of increased revenue and redistribution to domestic producers against the costs to consumers, the reduction in the supply of foreign exchange must have increased the benefits of protectionism relative to its costs in MNA region. This effect prompted greater protectionism in MNA countries than would otherwise have prevailed and relative to other countries. This also helps explain why MNA countries appear to have been relatively more open in earlier decades when oil revenues were relatively larger parts of their economies. Interestingly, as oil prices have rebounded in recent years, the trend has reversed and most MNA countries have accelerated their trade liberalization.

The story sounds plausible but can it be confirmed by empirical evidence? The paper offers two concrete pieces of empirical evidence. The first, presented in Section 2, shows that MNA countries have increased their degree of protectionism relative to other countries according to the standard measures of trade policy available in the literature. And the second, presented in Section 4, identifies trade share as the key factor underlying the increased protectionism relative to other developing countries, the factor underlying the interpretation of the evolution of trade policy presented in this paper. Neither of the other possible reasons for protection—the need for revenue and second-best arguments—apparently played much of a role in determining the level of protection.

In the 1980s and 1990s, MNA countries were caught in a political economy trap. From an efficiency point of view, the decline in import shares should have prompted greater effort to promote trade. In practice, the resulting change in the costs and benefits of protection actually made it politically easier to maintain past protection rates and, in some cases, even raise trade barriers. Other factors may be required to enable countries to break out of this trap. Indeed, there are clear signs that in some countries in the region other factors are coming into play. In particular, the opportunity to form free trade areas with the European Union is pushing Tunisia and Turkey towards greater liberalization of trade policy despite

the impediments identified in this paper. Similar deals being arranged for Jordan, Egypt, Algeria, and Lebanon are also likely to change the calculus of trade policy in those countries. Return of the high oil prices may facilitate the process in countries that receive the rents.

References

Andriamananjara, S., and J. Nash. 1997. "Have Trade Policy Reforms Led to Greater Openness in Developing Countries?" International Economics Working Paper No. 1730, The World Bank.

Bernheim, B. Douglas, and Michael D. Whinston. 1986. "Menu Auctions, Resource Allocation and Economic Influence," *Quarterly Journal of Economics*, 101.1: 1–31.

Dollar, David. 1991. "Outward Oriented Developing Economies Really Do Grow More Rapidly: Evidence From 95 LDCs, 1976-85." *Economic Development and Cultural Change*, 40.3: 523-544.

Esfahani, Hadi Salehi. 2005. "Searching for the (Dark) Forces Behind Protection," *Oxford Economic Papers*, 57.2: 283-314.

Falvey, Rod, and Norman Gemmell. 1999. "Factor Endowments, Nontradables Prices and Measures of 'openness'," *Journal of Development Economics*, 58.1: 101–122

Frankel, Jeffrey, and David Romer. 1999. "Does Trade Cause Growth?" *American Economic Review*, June, 89.3: 379-399.

Goldberg, Pinelopi Koujianou, and Maggi, Giovanni. 1999. "Protection for Sale: An Empirical Investigation," *American Economic Review*, 89.5: 1135-1155

Grossman, Gene, and Elhanan Helpman. 1994. "Protection for Sale," *American Economic Review*. 84.4:833-850.

Hakimian, Hassan, and Jeffrey B. Nugent, eds. 2004. *Trade Policy and Economic Integration in the Middle East and North Africa: Economic Boundaries in Flux*, New York, NY: Routledge.

Hoekman, Bernard, and Patrick Messerlin. 2002. *Harnessing Trade for Development and Growth in the Middle East*, New York: The Council on Foreign Relations.

Hoekman, Bernard, and Jamel Zarrouk (eds.). 2000. *Catching up with the Competition: Trade Opportunities and Challenges for Arab Countries*. Ann Arbor: University of Michigan Press.

Rodrik, Dani and Rodriguez, Francisco. 2000. "Trade policy and economic growth: A skeptic's guide to the cross-national evidence." *NBER Macroeconomics Annual 2000*, eds. Ben Bernanke and Kenneth S. Rogoff, MIT Press for NBER, Cambridge, MA.

Sachs, J. D. and Warner, A. 1995. "Economic reform and the process of global integration." *Brookings Papers on Economic Activity*, No. 1: 1-118.

Senhadji, Abdelhak. 1998. "Time Series Estimation of Structural Import Demand Equations: A Cross-Country Analysis," *IMF Staff Papers*, 45.2: 236-268.

Table 1
Effective Tariff and Non-Tariff Trade Barriers:
MNA Countries vs. the Rest of the Developing World

		Average Effective Tariff Rates (Own-Import Weighted)							Own-Import Weighted Non-Tariff Barrier Frequency of Intermediate and Capital Goods
Period:		**1970-1974**	**1975-1979**	**1980-1984**	**1985-1989**	**1990-1994**	**1995-1999**	**2000-2001**	**Mid-1980s**
MNA Oil Exporting Countries*	**Algeria**	..	..	..	..	17.4	18.8	17.3	0.003
	Bahrain	..	..	2.6	3.2	2.8	3.4	3.1	0.020
	Iran	16.8	10.5	17.0	16.8	5.7	7.1	9.1	0.863
	Iraq	..	..	..	..	..	..	..	0.180
	Kuwait	3.3	2.4	2.5	2.3	1.6	2.0	..	0.053
	Libya	..	..	..	..	..	..	..	..
	Oman	1.8	0.9	1.7	3.0	2.6	..	..	0.020
	Qatar	..	..	..	..	..	..	..	..
	Saudi Arabia	..	..	..	..	..	..	..	0.019
	UAE	..	..	..	..	..	..	..	0.006
	Yemen	..	..	..	..	8.6	6.6	..	0.128
Non-Oil MNA Countries	**Egypt**	..	19.5	18.7	15.8	10.8	13.2	..	0.247
	Jordan	..	12.0	9.3	9.7	10.0	8.5	6.2	0.109
	Lebanon	..	..	..	..	7.5	14.6	..	..
	Morocco	11.5	12.5	14.2	12.0	15.3	13.6	..	0.307
	Syria	11.7	10.7	9.4	4.9	5.3	6.1	..	0.538
	Tunisia	19.3	18.3	19.4	20.7	17.5	11.7	6.8	0.543
	Turkey	25.2	29.3	6.8	5.4	4.1	1.8	1.0	0.872
	WB & Gaza	..	..	..	..	..	..	..	..
Simple Averages:									
MNA Oil Exporting Countries*		7.3	4.6	5.9	6.3	6.4	7.6	9.9	0.144
Non-Oil MNA Countries		16.9	17.1	13.0	11.4	10.1	9.9	4.7	0.436
All Other LDCs		15.46	15.34	11.85	12.16	10.08	7.75	5.44	0.134

* Countries with significant share of oil in their exports.

Sources: World Bank, *World Development Indicators 2003*, and *Barro-Lee Growth Data Set*.

Table 2
Heritage Foundation Index of the Restrictiveness of Trade Policy:
MNA Countries vs. the Rest of the Developing World
(1= Least Restrictive, 5= Most Restrictive)

		Average Index for Period:	
Countries:		**1995-1999**	**2000-2002**
MNA Oil Exporting Countries*	**Algeria**	5.00	4.67
	Bahrain	2.00	2.67
	Iran	5.00	5.00
	Iraq	5.00	5.00
	Kuwait	2.00	2.33
	Libya	5.00	5.00
	Oman	2.60	2.33
	Qatar	3.00	2.67
	Saudi Arabia	4.00	4.00
	UAE	2.00	2.00
	Yemen	5.00	3.67
Non-Oil MNA Countries	**Egypt**	5.00	5.00
	Jordan	4.00	4.00
	Lebanon	3.50	4.00
	Morocco	4.60	4.33
	Syria	5.00	5.00
	Tunisia	5.00	5.00
	Turkey	1.80	2.00
	WB & Gaza	..	..
Simple Averages			
MNA Oil Exporting Countries*		3.69	3.58
Non-Oil MNA Countries		4.13	4.19
All Other LDCs		3.90	3.60
Weighted Averages‡			
MNA Oil Exporting Countries		3.14	3.31
Non-Oil MNA Countries		4.14	4.21
All Other LDCs		3.73	3.64

* Countries with significant share of oil in their exports.
‡ Weighted by GDP in terms of 1995 US dollars. Only countries with complete data are included.

Sources: Heritage Foundation, *Index of Economic Freedom* Dataset, and World Bank, *World Development Indicators* Database.

Table 3
Fraser Institute Index for the Restrictiveness of Trade Policy

(1= Least Restrictive, 10 = Most Restrictive)§

	Period:	1970	1975	1980	1985	1990	1995	2000-2001
MNA Oil Exporting Countries*	**Algeria**	..	..	5.40	6.15	6.20	5.95	4.40
	Bahrain	..	..	2.71	2.90	2.75	3.05	2.38
	Iran	3.84	1.93	7.05	7.70	5.87	5.99	5.96
	Iraq	..	..	..	..	..	..	..
	Kuwait	..	..	..	3.08	3.04	3.16	..
	Libya	..	..	..	..	..	..	..
	Oman	..	..	..	2.93	3.01	3.37	2.19
	Qatar	..	..	..	..	..	..	..
	Saudi Arabia	..	..	..	..	..	..	..
	UAE	..	1.21	1.12	2.34	2.06	1.86	1.75
	Yemen	..	..	..	..	..	..	..
Non-Oil MNA Countries	**Egypt**	..	4.72	4.73	6.61	6.36	3.94	3.81
	Jordan	..	3.45	3.42	3.28	3.50	3.19	2.73
	Lebanon	..	..	..	..	..	..	..
	Morocco	4.72	3.86	4.83	3.86	4.31	3.81	4.61
	Syria	5.60	4.55	6.13	6.78	6.48	5.82	3.80
	Tunisia	6.00	5.23	5.00	5.12	3.94	3.81	3.74
	Turkey	8.34	6.69	6.29	4.34	4.86	2.82	2.77
	WB & Gaza	..	..	..	..	..	..	..
Simple Averages								
MNA Oil Exporting Countries*		..	..	4.07	4.18	3.82	3.90	3.34
Non-Oil MNA Countries		..	4.75	5.07	5.00	4.91	3.90	3.58
All Other LDCs		4.90	4.93	5.01	4.95	4.58	3.68	3.40
Weighted Averages‡								
MNA Oil Exporting Countries**		..	..	4.69	5.56	4.63	4.72	4.28
Non-Oil MNA Countries†		..	5.82	5.64	4.86	5.06	3.34	3.30
All Other LDCs		3.46	5.08	5.34	5.64	4.35	3.85	3.09

§ For comparability purposes and to make the index rise with restrictiveness, the dependent variable is defined as 10 minus the index reported by the Fraser Institute.

* Countries with significant share of oil in their exports.

‡ Weighted by GDP in terms of 1995 US dollars. Only countries with complete data are included.

** Algeria, Bahrain, Iran, Oman, UAE. † Egypt, Jordan, Morocco, Syria, Tunisia, Turkey.

Sources: Gwartney, James, Robert Lawson, and Neil Emerick. 2003. *Economic Freedom of the World: 2003 Annual Report*, Vancouver, B.C.: Fraser Institute.

Table 4

Regression Analysis of the Non-Policy Determinants of the Real Exchange Rate, 1960-2001*

Dependent Variable: Log of Price Level of GDP (US Price Level = 100)

Right-Hand Side Variables	Coefficient	*p*-Value†
Constant	18.312	0.000
Log(GDP per Capita in Constant 1995 USD)	-4.034	0.000
Log(GDP per Capita in Constant 1995 USD) × Coast‡	0.074	0.011
[Log(GDP per Capita in Constant 1995 USD)]^2	0.262	0.000
[Log(GDP per Capita in Constant 1995 USD)]^2 × Coast‡	-0.005	0.046
Log(Population in Millions)	0.896	0.000
Log(Population in Millions) × Coast‡	-0.297	0.001
[Log(Population in Millions)]^2	-0.023	0.017
[Log(Population in Millions)]^2 × Coast‡	0.012	0.014
Log(Labor Force in Millions)	-0.773	0.000
Log(Labor Force in Millions) × Coast‡	0.205	0.021
Log(Surface Area per Head in km^2)	0.040	0.001
Log(Surface Area per Head in km^2) × Coast‡	-0.021	0.001
Log(1+Share of Fuel in Exports)	0.602	0.000
Log(1+Share of Fuel in Exports) × Coast‡	-0.228	0.007
R-squared	0.608	
Adjusted R-squared	0.602	
Number of Observations	4274	
Number of Countries Include in the Regression	145	

* The regression includes annual fixed effects, not shown in the table to save space.

† *p*-values are based on Newey-West heteroskedasticity-autocorrelation consistent standard errors.

‡ *Coast* is log of 1 plus coastline length in 1000s of kilometers.

Sources: World Bank, *World Development Indicators 2003*, *Penn World Tables 6.1*, and CIA's *World Fact Book*, 2002.

Table 5
Augmented Dollar Index of the Policy-Induced Divergence in Tradable Prices
(Higher values are expected to reflect more restrictive trade policies.)

	Period:	1960-1964	1965-1969	1970-1974	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2001
MNA Oil Exporting Countries*	Algeria	0.66	0.61	0.62	0.63	0.62	0.74	0.67	0.62	0.63
	Bahrain	..	..	..	..	..	..	..	1.12	..
	Iran	0.90	0.78	0.71	0.88	1.41	3.11	4.11	0.99	1.57
	Iraq	..	..	..	..	..	..	..	..	..
	Kuwait	..	..	..	..	..	..	..	0.43	..
	Libya	..	..	..	..	..	..	..	..	..
	Oman	..	..	..	..	..	..	..	0.36	..
	Qatar	..	..	..	..	..	..	..	0.68	..
	Saudi Arabia	..	..	..	..	..	..	..	0.65	..
	UAE	..	..	..	..	..	..	..	..	..
	Yemen	..	..	..	..	..	..	2.56	0.92	..
Non-Oil MNA Countries	Egypt	0.86	0.89	0.84	0.95	0.77	1.51	0.71	0.90	1.14
	Jordan	1.39	1.38	1.55	1.53	1.32	1.21	0.89	1.02	1.19
	Lebanon	..	..	..	..	..	..	1.20	1.84	1.94
	Morocco	1.11	1.03	1.08	1.03	0.92	0.86	0.95	1.00	1.00
	Syria	1.20	1.19	0.78	0.70	0.90	1.28	1.36	2.01	2.57
	Tunisia	0.79	0.69	0.79	0.76	0.68	0.68	0.77	0.83	0.76
	Turkey	1.39	1.53	1.31	1.52	1.10	1.01	1.24	1.19	1.30
	WB & Gaza	..	..	..	..	..	..	..	..	..
Simple Averages										
MNA Oil Exporting Countries*		0.78	0.70	0.67	0.75	1.01	1.93	2.45	0.72	1.10
Non-Oil MNA Countries		1.12	1.12	1.06	1.08	0.95	1.09	1.02	1.25	1.42
All Other LDCs		1.05	1.07	1.08	1.12	1.12	1.03	0.99	1.04	1.06
Weighted Averages‡										
MNA Oil Exporting Countries**		0.77	0.72	0.69	0.81	1.12	2.19	2.92	0.87	1.27
Non-Oil MNA Countries†		1.22	1.31	1.17	1.29	0.99	1.09	1.07	1.11	1.24
All Other LDCs		0.95	0.99	1.10	1.01	1.05	1.00	1.08	1.17	1.10

* Countries with significant share of oil in their exports.
‡ Weighted by GDP in terms of 1995 US dollars. Only countries with complete data are included.
** Algeria, Iran.
† Egypt, Jordan, Morocco, Syria, Tunisia, Turkey.

Sources: World Bank, *World Development Indicators 2003*, and *Penn World Tables 6.1*.

Table 6
Regression Analysis of Non-Policy Determinants of Trade Share, 1960-2001*

Dependent Variable: Log of Exports plus Imports as Share of GDP

Right-Hand Side Variables	Coefficient	*p*-Value†
Constant	3.924	0.002
Log(GDP per Capita in Constant 1995 USD)	1.162	0.000
[Log(GDP per Capita in Constant 1995 USD)]^2	-0.070	0.000
Log(Distance Adjusted Foreign GDP)	1.377	0.000
[Log(Distance Adjusted Foreign GDP)]^2	0.107	0.000
Log(Population in Millions)	0.429	0.000
[Log(Population in Millions)]^2	-0.143	0.000
Log(Labor Force in Millions)	-0.375	0.000
[Log(Labor Force in Millions)]^2	0.130	0.000
Log(Surface Area per Head in km^2)	0.184	0.000
[Log(Surface Area per Head in km^2)]^2	0.032	0.000
Log(1+Share of Fuel in Exports)	1.011	0.002
[Log(1+Share of Fuel in Exports)]^2	-0.845	0.120
Coast‡	-0.056	0.160
(Coast)^2‡	0.016	0.055
R-squared	0.633	
Adjusted R-squared	0.628	
Number of Observations	4645	
Number of Countries Included in the Regression	147	

* The regression includes annual fixed effects, not shown in the table to save space.

† *p*-values are based on Newey-West heteroskedasticity-autocorrelation consistent standard errors.

‡ *Coast* is log of 1 plus coastline length in 1000s of kilometers.

Sources: World Bank, *World Development Indicators 2003*, *Penn World Tables 6.1*, and CIA's *World Fact Book*, 2002.

Table 7
The Ratio of Predicted to Actual Trade Share: MNA vs. the Rest of the Developing World

(Higher values are expected to reflect more restrictive trade policies.)

	Period:	1960-1964	1965-1969	1970-1974	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2001
MNA Oil Exporting Countries*	Algeria	0.81	0.99	0.98	0.82	0.93	1.30	1.15	1.19	1.06
	Bahrain	..	..	..	..	0.78	0.91	1.00	1.37	1.59
	Iran	1.33	1.04	0.74	0.70	1.47	2.63	0.90	1.18	1.08
	Iraq	..	..	..	..	..	..	..	..	..
	Kuwait	0.67	0.69	0.82	0.79	0.89	1.01	1.10	1.20	1.28
	Libya	..	..	..	..	..	..	..	..	..
	Oman	..	1.59	1.16	1.16	0.97	1.14	1.23	1.56	..
	Qatar	..	..	..	..	..	..	..	0.83	..
	Saudi Arabia	0.86	0.75	0.66	0.61	0.58	0.72	0.71	0.96	0.95
	UAE	..	..	..	..	..	..	..	..	..
	Yemen	..	..	..	..	..	..	1.59	1.54	..
Non-Oil MNA Countries	Egypt	0.61	0.76	0.79	0.60	0.61	0.85	0.76	1.09	1.32
	Jordan	1.19	1.33	1.25	0.78	0.72	0.78	0.63	0.78	0.85
	Lebanon	..	..	..	..	..	0.89	1.14	1.85	2.33
	Morocco	0.81	0.87	0.88	0.83	0.85	0.83	0.85	0.90	0.87
	Syria	1.28	1.20	1.27	1.33	1.69	1.61	1.19	1.25	1.33
	Tunisia	1.37	1.52	1.27	1.15	0.97	0.94	0.83	0.89	0.95
	Turkey	2.50	3.23	2.38	2.78	1.41	1.08	1.19	0.89	0.81
	WB & Gaza	..	..	..	..	..	..	..	..	..
Simple Averages										
MNA Oil Exporting Countries*		0.86	0.93	0.84	0.78	0.87	1.09	0.91	1.10	1.15
Non-Oil MNA Countries		1.06	1.19	1.15	0.97	0.92	0.95	0.89	1.01	1.06
All Other LDCs		0.85	0.93	0.93	0.93	0.94	0.92	0.90	0.89	0.89
Weighted Averages‡										
MNA Oil Exporting Countries**		0.87	0.84	0.75	0.68	0.79	1.05	0.85	1.09	1.04
Non-Oil MNA Countries†		1.33	1.59	1.45	1.33	1.02	0.98	0.99	0.93	0.95
All Other LDCs		1.14	1.12	1.05	1.02	0.98	0.93	0.86	0.80	0.74

* Countries with significant share of oil in their exports.
‡ Weighted by GDP in terms of 1995 US dollars. Only countries with complete data are included.
** Algeria, Iran, Kuwait, Oman, Saudi Arabia. † Egypt, Jordan, Morocco, Syria, Tunisia, Turkey.

Sources: World Bank, *World Development Indicators 2003,* and *Penn World Tables 6.1*.

Table 8
Measures of Relative Trade Restrictions:

MNA versus Other Developing Countries

Trade Policy Measures	Period 1	Period 2
Frazer Institute Ordinal Ranking	1985	2000-2001
MNA Oil Exporters	0.99	1.39
MNA Non-Oil Exporters	0.86	1.07
Trade-Share-Based Index	1980-1984	2000-2001
MNA Oil Exporters	0.80	1.41
MNA Non-Oil Exporters	1.04	1.28

Source: Derived from Tables 3 and 7.

Table 9
Estimate of the Steady State Expression of the Heritage Foundation Trade Policy Indicator*

(*p*-values are based on Newey-West heteroskedasticity-autocorrelation consistent standard errors are given in italics below parameter estimates.)

	Dependent Variable:		
Parameters	**Import Demand Elasticity Times the Fraser Institute Index****	**Import Demand Elasticity Times the Ratio of Predicted to Actual Trade Share**	**Extended Sample of Import Demand Elasticity Times the Ratio of Predicted to Actual Trade Share†**
a_1	27.077	4.676	3.293
	0.009	*0.018*	*0.027*
a_2	0.126	0.058	0.054
	0.462	*0.168*	*0.368*
a_3	1.125	0.198	0.187
	0.012	*0.007*	*0.050*
a_4	15.172	8.156	6.407
	0.000	*0.003*	*0.004*
Adjusted R^2	0.814	0.963	0.891
Number of Observations	258	1310	2378
Number of Countries‡	49	58	128

* All regressions include annual and country fixed effects, not shown here to save space.

** The index is calculated as 10 minus the figures published by the Fraser Institute to associate higher values with increases restrictiveness of trade.

† The extended sample replaces the missing elasticities with the predicted values from a regression of the available elasticities on area, population, and average trade share in the 1980s.

‡ The countries included in the first regression are (MNA countries in italics): Argentina, Australia, Austria, Belgium, Brazil, Burundi, Cameroon, Canada, Chile, Colombia, Dem. Rep. of Congo, Costa Rica, Cote d'Ivoire, Denmark, Dominican Republic, France, Gabon, Germany, Greece, Iceland, India, Indonesia, Italy, Japan, Kenya, Korea, Malawi, Mauritius, Mexico, *Morocco*, Myanmar, New Zealand, Nicaragua, Norway, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Portugal, South Africa, Spain, Sweden, Thailand, *Turkey*, United Kingdom, United States, Uruguay, Zambia.

The countries in the second regression include all of the above as well as: *Algeria*, China, Gambia, Honduras, Madagascar, Nigeria, Panama, Rwanda, and Trinidad and Tobago.

The countries in the third regression are all of those in the second one as well as the following 70 countries: *Bahrain*, Bangladesh, Barbados, Belarus, Belize, Bhutan, Bolivia, Botswana, Bulgaria, Burkina Faso, Comoros, Croatia, Cyprus, Czech Republic, Ecuador, *Egypt*, Estonia, Fiji, Finland, Ghana, Guatemala, Guinea-Bissau, Guyana, Hungary, *Iran*, Ireland, Jamaica, *Jordan*, *Kuwait*, Kyrgyz Republic, Latvia, *Lebanon*, Lesotho, Lithuania, Malaysia, Maldives, Mali, Malta, Moldova, Mongolia, Namibia, Nepal, Netherlands, *Oman*, Poland, Romania, Russian Federation, Senegal, Seychelles, Sierra Leone, Singapore, Slovak Republic, Slovenia, Somalia, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sudan, Suriname, Swaziland, *Syria*, Togo, Tonga, *Tunisia*, Uganda, Vanuatu, Venezuela, *Yemen*, Zimbabwe.

Table 10
Marginal Effects of Country Characteristics on Trade Policy

		Excess percentage change in the predicted index of protectionism, $T_m(Q_{jt}, D_{jt}, A_{jt}, R_{jt}, \mu_{jt})$, in MNA between 1990-1994 and 1995-2001 relative to the GDP-weighted average of the corresponding change for other LDCs when controlling for all factors except:				
		Actual (based on T^m_{jt})	**All Three Variables**	**GDP-Imports Ratio**	**GDP Share of Budget Deficit Before Trade Taxes**	**Share of Agriculture in GDP**
MNA Oil Exporting Countries*	**Algeria**	4	–294	26	–405	–74
	Bahrain	56	19	23	2	7
	Iran	32	41	35	6	–1
	Iraq	..	..	..	..	..
	Kuwait	22	–55	21	–71	6
	Libya	..	..	..	..	..
	Oman	39	0	23	–23	–2
	Qatar	..	..	..	..	..
	Saudi Arabia	..	..	..	..	..
	UAE	..	..	..	..	..
	Yemen	9	–13	12	–22	–1
Non-Oil MNA Countries	**Egypt**	40	28	28	5	6
	Jordan	27	21	23	5	5
	Lebanon	47	24	13	12	0
	Morocco	12	08	10	–4	–3
	Syria	14	12	12	1	–2
	Tunisia	18	05	21	–12	3
	Turkey	–25	41	–40	69	–13
	WB & Gaza	..	..	..	..	..
Weighted Averages‡						
MNA Oil Exporting Countries*		38	29	31	–4	2
Non-Oil MNA Countries**		27	20	24	1	5

‡ Weighted by GDP in terms of 1995 US dollars. Only countries with complete data are included.
* Bahrain, Iran, Kuwait, Oman, Yemen.
** Egypt, Jordan, Lebanon, Morocco, Syria, and Tunisia.

Sources: Calculated Based on Table 9.