Global Trade Analysis Project
https://www.gtap.agecon.purdue.edu/

This paper is from the
GTAP Annual Conference on Global Economic Analysis
https://www.gtap.agecon.purdue.edu/events/conferences/default.asp

Missed Opportunities:

Economic Effects of Potential Deep Trade Integration in the Levant*

Elena Ianchovichina♦ and Maros Ivanic♣

Abstract

On the eve of the Arab Spring, economies in the Levant region were considering options for deep regional trade integration, but the spread of unrest that culminated into the Syrian civil war interrupted this process. Using new data for six Levant economies, including Egypt, Iraq, Jordan, Lebanon, Syria, and Turkey, set within a database suitable for global general equilibrium analysis, the paper assesses the medium-term economic effects of potential deep trade reforms in the Levant. The results suggest that all Levant economies could have gained considerably had they continued strengthening their trade ties. In per capita terms, Iraq could have gained the most, followed by Syria, Egypt, Jordan, Lebanon, and Turkey. Services liberalization would have led to greatest benefits, estimated to contribute between 70% and 95% of the overall estimated welfare gains from deeper trade integration. Other measures, including further liberalization of agricultural trade with Turkey, reduction in non-tariff barriers, and improved transport logistics, would have led to modest welfare gains. However, the effects on exports vary by country, sector, and reform instrument, and are estimated to be sizable for some sectors. These results are indicative of some of the opportunity costs of the political conflict in the Levant and should be factored into assessments of its long-term costs on the Levant economies.

JEL classification: F13, F15

Keywords: Trade integration, Egypt, Iraq, Jordan, Lebanon, Syria, Turkey, Levant, Mashreq, Middle East, Syrian civil war, long-term costs

* We would like to thanks Sibel Kulaksiz and Jorge Araujo for comments on earlier versions of this paper. The findings, interpretations and conclusions expressed in the paper are entirely ours and should not be attributed to the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

♦ Elena Ianchovichina is lead economist in the Chief Economist Office, Middle East and North Africa Region, the World Bank, 1818 H Street NW, Washington, DC 20433, USA, Tel: +1 202 458 8910, E-mail: eianchovichina@worldbank.org .

♣ Maros Ivanic is research economist in the Development Research Group, World Bank. 1818 H Street NW, Washington, DC 20433, USA, Tel: +1 202 473 2604, E-mail: mivanic@worldbank.org.

1. Introduction

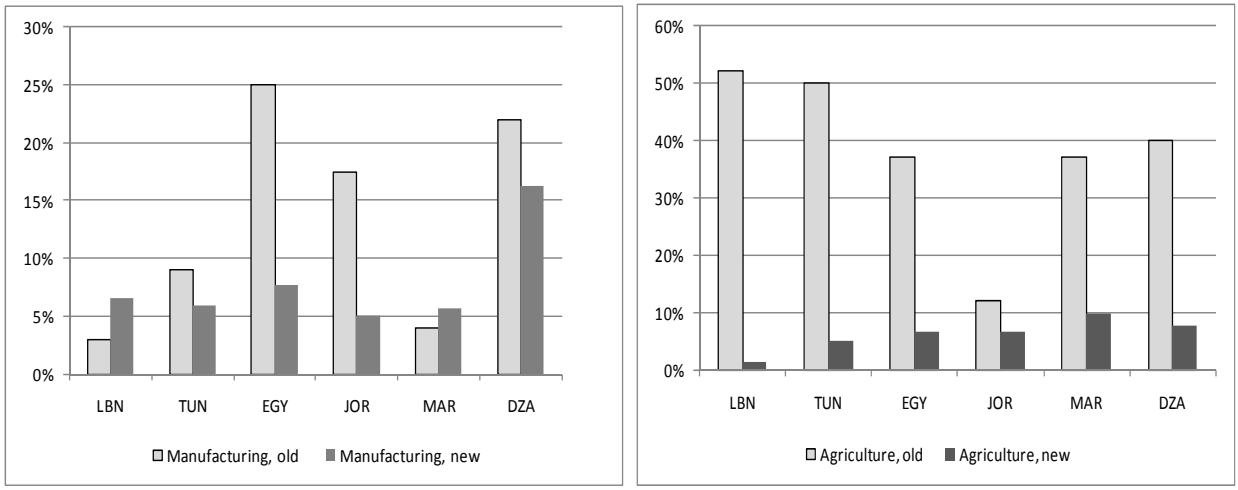
Countries in the Middle East and North Africa (MENA) have pursued regional integration for years and their earliest efforts to integrate pre-date those of other developing regions. In the course of fifty years, Arab states concluded numerous agreements to reduce trade barriers on a preferential basis. Many of these agreements overlapped and were eventually superseded with the formation of the Pan-Arab Free Trade Area (PAFTA), which resulted in the removal of barriers to trade in manufactured and agricultural products among 17 MENA economies in 2005. In addition, in the 2000s most Levant and other countries in the region signed Euromed Association Agreements (AAs) and bilateral Free Trade Agreements (FTAs) with Turkey. These agreements aimed to extend the free trade area in the MENA region to the North by including two major markets and potential locomotives of growth – the European Union (EU) and Turkey.

PAFTA resulted in the removal of tariffs on intra-regional merchandise trade while leaving many non-tariff barriers and barriers to trade in services in place (Hoekman and Sekkat, 2010). The preferential trade agreements (PTAs) with the EU and Turkey were more limited in scope and targeted mainly trade in manufactures, not protection on agricultural products and processed foods. The agreements aspired for gradual liberalization of agriculture and services and improvements in competition policy, government procurement, investment, and capacity building, but progress on these dimensions was limited.

Most of the regional agreements included negotiations to reduce the restrictive impact of non-tariff measures (NTMs) on trade. Recent analysis suggests that some MENA countries have made considerable progress towards this goal, limiting both the frequency and the restrictive power of NTMs. On the basis of data from the late 2000s available for four countries – Lebanon, Tunisia, Morocco, and Egypt, Augier *et al.* (2011) find that the NTM frequency ratios in these

four cases have declined substantially since 2001. The decline has been steepest for command-and-control instruments such as quantitative restrictions, prohibitions and/or anti-competitive measures and has driven the overall decline in frequency ratios in all four country cases. The latest frequency ratios are comparable to those in other regions and are much lower than those observed in the EU. The restrictive power of NTMs has also declined. A comparison of ad valorem equivalent (AVE) estimates of NTMs for six MENA countries, based on information from the early and late 2000s, is consistent with the decline in frequency ratios and suggests an overall decline in the restrictive power of NTMs (Figure 1). The decline has been most dramatic for agricultural products and can be considered a positive development, given the great dependence of MENA countries on imported food and the increase in food prices over the past decade (Ianchovichina *et al.* 2012). Yet, these are aggregations of AVEs at the HS6 product level which hide substantial heterogeneity across products. Reducing the variation within the product aggregates could lead to additional welfare gains.

Figure 1 Weighted average AVE estimates of NTMs



Source: Ianchovichina, Gourdon, and Kee (2011), and Ianchovichina and Kee (2012), based on World Bank/UNCTAD NTM data.

Thus, on the eve of the Arab Spring, the Levant countries were considering options for deeper integration, including liberalizing agricultural trade with Turkey, reducing further the restrictiveness of NTMs on intra-Levant trade in merchandise goods, improving transport logistics in the Levant, and enabling intra-Levant trade in services. These were in essence the main components of reforms that would have been negotiated and potentially implemented as part of a new Levant economic zone (World Bank, 2013). However, the spread of unrest which culminated in the Syrian civil war shifted priorities and put an abrupt end to potential deep trade integration negotiations among Levant partners.

This paper analyzes and quantifies the magnitude of the economic effects of these deep integration initiatives, which can be viewed as missed trade opportunities or opportunity costs of the political conflict in the Levant and should be factored into assessments of the long term costs of the Syrian civil war and the broader regional conflict on the economies in the greater Levant. In order to achieve our objective we had to expand and update the information on the Levant economies in the GTAP 8 database. Although widely used and comprehensive in many ways, the latest version of the GTAP database had insufficient information on the Levant economies. We added input-output, trade, and protection data on Jordan, Lebanon, Syria, Iraq, and several other Middle East and North African economies, including West Bank and Gaza, Yemen, Algeria, and Libya. This was a major modification given the need to balance both bilateral trade flows and macroeconomic aggregates for these MENA countries. Another major undertaking was the addition of trade preferences for all countries in the region including PAFTA, Euromed, and bilateral agreements. We used a combination of official data sources and a set of assumptions to fill in the missing tariff information in an effort to represent as accurately as possible existing tariff restrictions, and therefore avoid overestimating the trade-related effects of proposed

reforms. With the updated data in hand, we set out to simulate the general equilibrium effects of proposed reforms.

Our analysis suggests that all Levant economies could have gained considerably had they continued to work towards a new economic zone. In per capita terms, Iraq could have gained the most (17%), followed by Syria (12%), Jordan (7%), Lebanon (3%), and Turkey (2%). In absolute terms, Egypt's gains of $12 billion would have been largest and only slightly larger than Turkey's gain of $10 billion. Services liberalization would have led to greatest benefits, estimated to contribute between 70% and 95% of the overall estimated welfare gains from all potential reforms. Other measures, including liberalization of agricultural trade with Turkey, reduction in NTMs, and improved transport logistics, would have led to modest welfare gains. The effects on exports vary by country, sector, and reform instrument, and are potentially sizable for some sectors.

This paper is structured as follows. Next, we review the literature on the economic integration, focusing specifically on regional trade agreements signed and implemented in the Euromed area and the rationale and goals of a potential deep trade integration agreement in the Levant region. Section 3 presents the methodology and data needed for the general equilibrium assessment of trade liberalization scenarios among Levant trade partners. Section 4 offers a discussion of the simulation design while section 5 discusses simulation results. Section 6 offers concluding remarks and caveats.

2. The literature on regional trade agreements in the Euromed Area

There is a consensus in the literature that the benefits of free trade in goods among MENA countries have been limited (Testas 1998, 2002; Al-Atrash and Yousef 2000, Freund and

Portugal-Perez 2012). According to Testas (1998, 2002), the Association of South-East Asian Nations (ASEAN) had a much more profound economic impact on its members than the Arab Maghreb Union (AMU). Al-Atrash and Yousef (2000) also conclude that the observed intra-Arab merchandise trade flows were lower than those predicted using gravity models. Freund and Portugal-Perez (2012) confirm the previous findings and also suggest that the merchandise trade effects of preferential trade agreements signed by MENA countries between 1994 and 2009[1] have been small as most of these agreements had no significant impact on MENA's exports.[2] According to their analysis, these agreements had negative effects on MENA's merchandise exports to the EU and Turkey, respectively, and the effect on EU exports and Turkey's exports of goods to MENA was not significantly different from that of standard PTAs. Furthermore, the effects of intra-MENA agreements and EU-MENA agreements were much smaller than those of similar agreements negotiated by EU members at the time of EU accession.

Freund and Portugal-Perez (2012) explain the latter difference with the fact that the EU *accession* agreements granted greater access than the EU *association* agreements and, in anticipation, triggered large foreign direct investment flows. Furthermore, in MENA, political instability has discouraged foreign direct investment flows into tradable manufacturing activities, thus weakening the ability of the MENA countries to scale up merchandise exports (Burger et al. 2013). The weak supply response in MENA is another reason for the weak and even negative effects on exports from MENA countries of the bilateral agreements with Europe and Turkey. In addition, most of these agreements have been shallow and have resulted in the removal of border protection in the form of tariffs, and even more recently in the form of NTMs, but other costs

[1] Freund and Portugal-Perez (2012) examine the effects of GAFTA, Agadir, EU Association Agreements, and the MENA bilateral FTAs with Turkey and the US on the merchandise imports of signatories of these treaties.
[2] The bilateral agreement between Jordan and the US is a notable exception. The surge in Jordanian exports to the US started before the implementation of the bilateral PTA between the two countries and was likely due to preferences granted to firms in Jordanian Qualifying Industrial Zones.

associated with transport and logistics have not declined, while fees and markups due to monopolistic domestic structures might have increased and kept domestic prices of imported goods at elevated levels.

The literature on ex-ante evaluations of PAFTA is *not* sizable but findings from these evaluations are consistent the idea that preferential agreements must be deep in order to result in sizable gains for member countries. Konan (2003), which focuses on Tunisia and Egypt, concludes that the benefits of trade liberalization increase with deepening of the commitments, especially the opening of the services sectors. Bchir et al. (2006) observes similar increases in the size of the gains in the case of a move from a simple PTA to a Custom Union among Maghreb countries. Walmsley *et al.* (2006) find that China's benefits from acceding to the WTO stem mainly from a boost to investment and productivity in services which are a critical determinant of firm's competitiveness (Hoekman and Messerlin 2001, 2003). Reforms designed to open the service sectors to investment and competition could lower trade costs by reducing the cost of transport and other services, in addition to improving their variety and quality, thus boosting the productivity and profitability of manufacturing and stimulating job creation.

Services trade and investment policies in MENA are on average more restrictive than policies in countries with similar incomes in other parts of the world (Hoekman and Sekkat, 2010). Reforms aimed at bringing down these restrictions would beneficial, but opposition to such reforms is likely to be strong because of monopolistic structures and special interests which use their influence to pass regulations that restrict entry into some sectors (Rijkers et al. 2014; Hoekman and Messerlin 2001). Furthermore, state-owned companies dominate some service sectors in the MENA region. In the late 1990s, the literature began to inform on the negative impact of public monopolies in ports and poor infrastructure for loading and storing goods on the costs for

handling and shipping containers in the developing MENA countries. The situation was similar in air transportation, professional services, fixed line telecommunications and utilities.[3] Prohibitions on drivers originating in certain countries, arbitrary changes in documentary requirements, surcharges and discriminatory taxes, and prohibitions on obtaining cargo in the country of destination to take back to the country of origin, imposed severe costs on intra-Arab trade. Using a survey of firms in eight Arab countries, Zarrouk (2003) estimated that in 2000 the cost of getting goods across borders was on average 10 percent of the value of transported cargo. The relative importance of transport and logistics costs as an obstacle to trade in the Euromed area has most likely grown in light of the significant reduction in tariff and non-tariff barriers in MENA countries.

The literature therefore suggests that in order to be successful regional trade agreements between countries in the MENA region and their partners in the North must contain deep liberalization measures aimed at reducing trade-related costs and opening markets, especially for trade and investment in services. The reforms envisioned as part of a new Levant economic zone would have provided deep trade concessions among six countries in the greater Levant region – Egypt, Iraq, Jordan, Lebanon, Syria, and Turkey. The agreement would have underpinned political and security arrangements in the region, consolidated the bilateral FTAs of Egypt, Lebanon, Jordan, and Syria with Turkey, and improved market access for Turkey and Iraq to each other's economies. The negotiations were expected to be constrained by pre-existing agreements. Turkey would not have been able to make further concessions on tariffs levied on manufactured goods because of its Customs Union with the European Union. Therefore, other Levant countries would have been reluctant to open further their markets for manufactured imports from Turkey.

[3] See, for example, studies by Hoekman and Zarrouk (2000) and Rosotto, Sekkat, and Varoudakis (2005).

Table 1 Weighted average AVE estimates of NTMs by country and product

	Lebanon		Tunisia		Syrian Arab Rep.		Egypt, Arab Rep.		Jordan		Libya		Morocco		Algeria		Iraq	
	Turkey	World	Turkey	World	Turkey	World	Turkey	World	Turkey	World	Turkey	World	Turkey	World	Turkey	World	Turkey	World
Primary agriculture	5	2	1	5	**46**	**9**	10	7	**14**	**7**	10	8	7	10	18	8	6	5
Food processing	0	2	2	6	5	9	11	7	4	8	8	10	11	9	4	15	8	6
Gas extraction and distribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil extraction	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Oth. natural resource extraction	0	1	0	0	8	8	4	2	1	2	2	0	4	1	9	10	3	2
Petroleum, coal products	58	55	**62**	**38**	53	47	3	30	1	1	2	1	2	1	2	1	1	1
Electricity gernation & distribution	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2	2
Chemical industry	1	1	1	4	11	8	6	5	7	7	7	9	7	8	8	24	10	11
Textiles and apparel	2	2	0	0	2	3	2	4	3	3	2	3	2	2	10	8	2	2
Resource based manufacturing	1	4	9	4	**28**	**13**	**13**	**6**	7	9	16	13	**29**	**14**	**23**	**14**	14	12
Equiment, vehicles and machinery	1	2	7	5	15	11	7	8	7	13	6	9	8	7	17	26	7	11
Metal products	0	0	4	5	20	21	13	9	7	7	3	5	4	9	13	24	4	6
Oth. manufactures	0	0	0	11	9	24	**61**	**20**	6	11	13	12	10	12	13	25	13	11
Average across products	***5***	***5***	***7***	***6***	***15***	***12***	***10***	***8***	***4***	***5***	***5***	***5***	***6***	***6***	***9***	***12***	***5***	***5***

Source: Authors calculations based on estimates at the HS6 product level by Kee and Ianchovichina (2012).

However, the Customs Union excluded agricultural trade, so Turkey was expected to negotiate tariff reductions for its agricultural and food exports and imports to and from the Levant countries, respectively. The concessions would not have been negligible as tariffs on Turkey's imports of agricultural goods and processed foods from many of the Levant economies are much higher than tariffs on manufactured imports from these same countries (Appendix Table 3). Turkey was also expected to open up its manufacturing sector by reducing the restrictiveness of existing NTMs on imports from Egypt, Lebanon, Jordan, Iraq, and Syria. Estimates of NTMs' AVEs suggest that, in general, MENA countries' NTMs do not appear to be more restrictive for Turkey compared to other countries (Table 1).[4] Still, in a few sectors, NTMs are significantly more restrictive on imports from Turkey than on imports from other sources. This is especially the case for Turkey's exports of petroleum and coal products to Tunisia, primary agriculture to Jordan and Syria, other manufactures to Egypt, and resource-based manufactures to Egypt,

[4] The calculations assume that NTMs at the most detailed level are applied in a uniform manner across countries. Thus, the difference between the average AVEs of NTMs on imports from Turkey and another source is due to variations in import patterns at the most detailed tariff line.

Morocco, Syria, and Algeria (Table 1). In most other cases, the AVEs of NTMs on MENA countries' imports from Turkey are comparable or lower than those applicable to other countries.

The reforms were expected to stoke domestic reform as Levant economies removed barriers obstructing a strong supply response. These economies were also expected to harmonize business and investment climate rules and regulations, especially those governing investments in services, improve domestic and cross-border infrastructure and logistics, and the implementation capacity in junior partner countries. The hope was that reforms would propel convergence toward best practices and thus advance private sector development in the greater Levant area. Clear rules and effective implementation mechanisms would have been essential for the success of such a deep regional integration arrangement due to the multitude of pre-existing and overlapping regional agreements governing trade in the area. There was fear that administrative procedures such as customs administration, standards, conformity assessments, and rules of origin might tangle, increasing the costs to companies and government and dampening the investment response because of lack of clarity about the applicability of various commitments by product.

The paper next assesses the economic effects of the proposed deep trade integration reforms in the Levant. The assessment is a quantitative exercise that requires a systematic framework and data, presented in the next section. The section also discusses the simulation design reflecting the various reform initiatives. The welfare results indicate that countries farther from the best practice frontier and less advanced development, will benefit the most but results vary at the industry level. Importantly, these results are indicative of potential changes and should be considered together with detailed, sector-specific analysis.

3. Methodology, data, and simulation design

We use the GTAP model and a modified version 8 GTAP data base to analyze the economic effects of the proposed deep integration reforms in the Levant area. The model, documented comprehensively in Hertel (1997), is a multi-country, multi-sector CGE framework, well-suited and widely used for quantitative, ex-ante investigation of the medium-term effects of trade agreements. The model depicts firms, which produce for domestic and export markets, using constant-returns-to-scale technology and a mix of primary and intermediate inputs. Intermediate products are either produced domestically or imported from foreign markets, and substitute imperfectly, following the Armington structure. Product differentiation between imported and domestic goods and among imports from different regions allow for two-way trade in each product category, depending on the ease of substitution between products from different regions.

Land, physical capital, skilled, and unskilled labor, and in some sectors a natural resource factor, are used as primary factor inputs into production. The model takes into account the role of overall resource constraints in determining sectoral output supply. The results obtained with the model are indicative of medium term outcomes as factor inputs are perfectly mobile across sectors and returns adjust to changes in economic conditions. The model includes the explicit treatment of international trade and transport margins, a “global” bank mediating between world savings and investment, and a consumer demand system designed to capture differential price and income responsiveness across countries. The accounting relationships and behavioral linkages constrain outcomes in ways not possible with partial equilibrium models.

The paper extends the GTAP 8 database to include Jordan, Syria, Lebanon, and Iraq, as these countries do not feature individually in the database. Turkey and Egypt, as well as Morocco,

Tunisia, and Iran were present in GTAP 8 Database (Appendix Table B1). We aggregated Kuwait, Qatar, Bahrain, Saudi Arabia, UAE, and Oman into a GCC composite group, while separated Lebanon, Jordan, Syria, Iraq, and West Bank and Gaza from rest of Western Asia, and Algeria and Libya from rest of North Africa. We aggregated the 57 sectors in GTAP 8 data base into 22 sectors based on their importance for the MENA region (Appendix Table B1). The resulting MENA-specific database contains 26 countries, among which are the six Levant economies and the rest of the developing MENA economies.

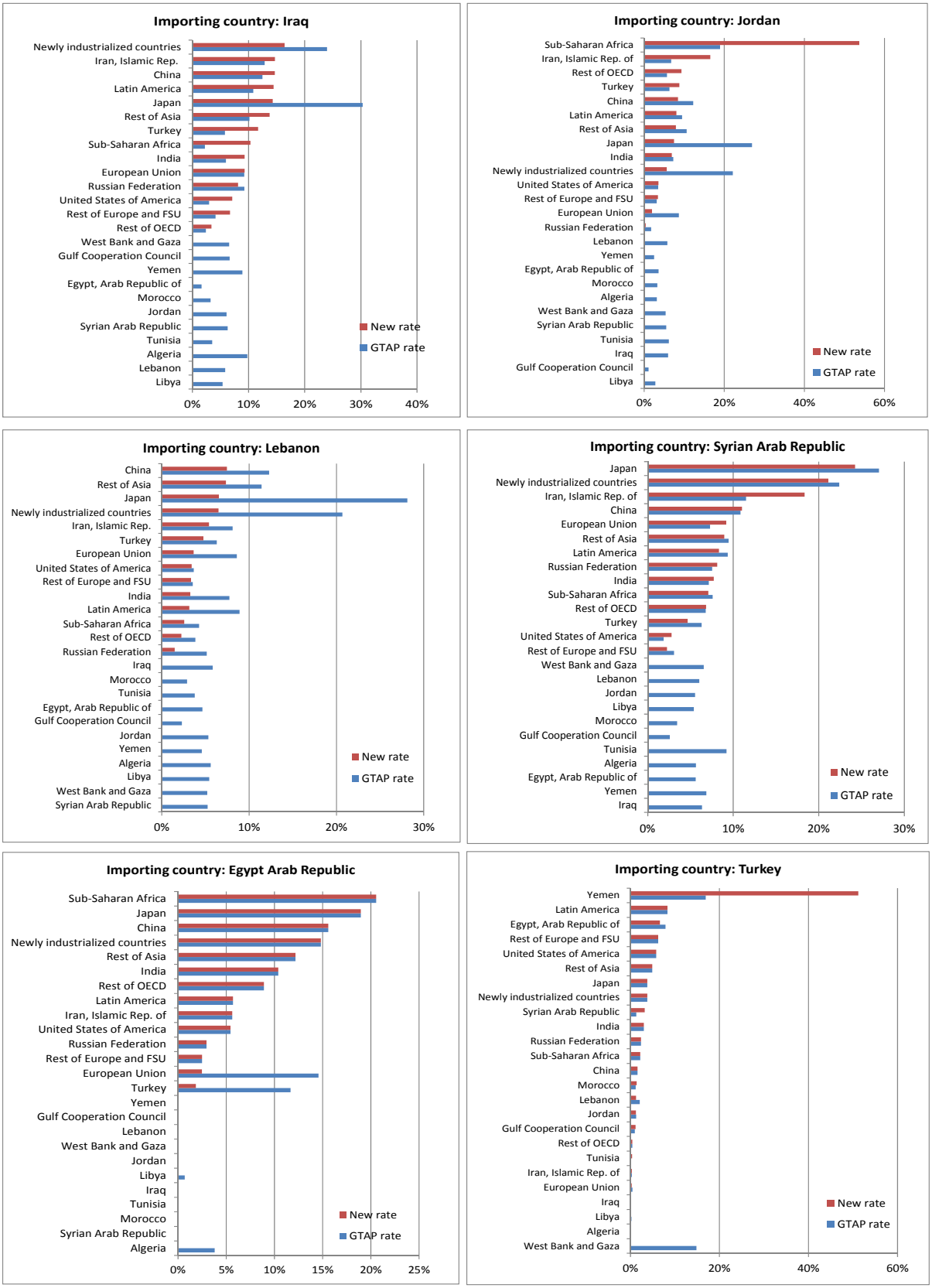
The separation procedure employed (i) data on the six components of GDP from the UN Statistics Division data for 2007 – agriculture, hunting, forestry, and fishing (ISIC A-B); mining, manufacturing, and utilities (ISIC C-E), construction (ISIC-F); transport, storage, and communication (ISIC I); wholesale, retail trade, restaurants and hotels (ISIC G-H); and other activities (ISIC J-P); (ii) bilateral trade value data from WITS; and (iii) bilateral tariff data from a medley of sources, presented in Table 2 and Appendix Tables A1 and A2. All entries in rest of Western Asia and rest of North Africa were split and assigned the split values to the newly created economies, while all entries for the two composite regions from the GTAP database were removed from the database. Each entry was split using the most thematically relevant external source. Sectoral GDP shares were used to split consumption and production values, trade data were used to split export and import values, and tariff information was used to assign tariff values. Export shares were used to split further production and consumption information into the final set of industries presented in Appendix Table B1. For internal consistency purposes, we imposed the required accounting relationships on the split database using iterative proportional fitting and the procedure was repeated until the database was balanced and consistent with all external targets.

Table 2. Data sources for import duties in Levant countries

Import destination / Export Source	Iraq	Jordan	Lebanon	Syrian Arab Republic	Turkey
Morocco	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 59.08 % coverage; WITS&WTO (MFN rates) 40.28 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 0.64 % coverage
Jordan	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 99.15 % coverage; WITS (Inferred from exports, 2007)&Reciprocal (WITS, Inferred from exports, 2007) 0.85 % coverage		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 99.9 % coverage	WITS&WTO (non-MFN rates) 80.73 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 11.59 % coverage; WITS&WTO (MFN rates) 7.68 % coverage
West Bank and Gaza		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage		WITS&WTO (MFN rates) 97.78 % coverage; WITS&WTO (non-MFN rates) 2.22 % coverage
Turkey	WITS (Inferred from exports, 2007)&Country sources 47.08 % coverage; WITS (Inferred from exports, 2007)&Reciprocal (WITS (Inferred from exports, 2007)) 39.36 % coverage; WITS (Inferred from exports, 2007)&GTAP 13.56 % coverage	WITS&WTO (MFN rates) 76.89 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 23.11 % coverage	WITS&Country sources 73.77 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 22.96 % coverage; WITS&GTAP 3.27 % coverage	WITS&Reciprocal (WITS (Imports, 2007)) 51.59 % coverage; WITS&Country sources 32.27 % coverage; WITS&GTAP 16.14 % coverage	
Syrian Arab Republic	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage		WITS&WTO (MFN rates) 97 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 3 % coverage
Gulf Cooperation Council	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 91.11 % coverage; WITS (Inferred from exports, 2007)&Reciprocal (WITS (Inferred from exports, 2007)) 8.89 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 99.97 % coverage	WITS&WTO (non-MFN rates) 99.91 % coverage	WITS&WTO (MFN rates) 70.72 % coverage; WITS&WTO (non-MFN rates) 29.21 % coverage
Egypt, Arab Republic of	WITS (Inferred from exports, 2008)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 59 % coverage; WITS&WTO (MFN rates) 40.81 % coverage
Libya		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (MFN rates) 80.11 % coverage; WITS&WTO (non-MFN rates) 15.71 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 4.18 % coverage
Tunisia	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 89.82 % coverage; WITS&WTO (MFN rates) 10.18 % coverage
European Union	WITS (Inferred from exports, 2007)&Reciprocal (WITS (Inferred from exports, 2007)) 48.22 % coverage; WITS (Inferred from exports, 2007)&Country sources 43.7 % coverage; WITS (Inferred from exports, 2007)&GTAP 8.08 % coverage	WITS&WTO (MFN rates) 69.19 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 30.7 % coverage	WITS&Reciprocal (WITS (Imports, 2007)) 70.3 % coverage; WITS&Country sources 28.2 % coverage; WITS&GTAP 1.5 % coverage	WITS&Reciprocal (WITS (Imports, 2007)) 79.14 % coverage; WITS&Country sources 11.21 % coverage; WITS&GTAP 9.66 % coverage	WITS&WTO (non-MFN rates) 75.47 % coverage; WITS&WTO (MFN rates) 21.57 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 2.84 % coverage
Iraq		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (MFN rates) 88.43 % coverage; WITS&WTO (non-MFN rates) 11.27 % coverage
Yemen	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (MFN rates) 100 % coverage
Lebanon	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 99.69 % coverage	WITS&WTO (MFN rates) 99.85 % coverage
Algeria	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (MFN rates) 91.06 % coverage; WITS&WTO (non-MFN rates) 8.94 % coverage

Note: Unless specified otherwise, all information from WITS refers to imports for 2007.

Figure 2. GTAP 8 Database and modified protection rates in the Levant countries



Another important modification was the implementation of Euromed, PAFTA, and bilateral preferences in the GTAP data. We obtained information on bilateral preferences at the most disaggregate product level from a variety of sources, including MFN and non-MFN rates from WTO data, country tariff data, and in the case of the European Union, from Eurostat (see Table 2 and Appendix Tables A1 and A2). Bilateral rates among PAFTA members were set at zero to reflect free trade in agricultural goods and manufactures. Whenever bilateral country tariff information and non-MFN rates from WTO sources were not available, we assumed reciprocity and applied the rates extended by the partner. In the absence of such rates we applied the MFN WTO rates. Duties on imports from countries outside the MENA region were left unchanged whenever the importing country was part of the GTAP database. In those cases when the country information had to be created from a composite region, we applied WTO MFN rates or used country information.

The detailed data on bilateral tariff lines were aggregated into weighted average rates for the twenty-two sectors in the paper (see Appendix Table B1) using bilateral import data from WITS for 2007.[5] Whenever such data were not available, imports were inferred from exports for 2007 or from WITS data for 2008. The updated tariffs are consistent with the rates applicable under PAFTA agreement, the bilateral Association Agreements with the EU, and the bilateral FTAs with Turkey for the participating MENA countries. These modifications were essential as suggested by the substantial differences between the tariff rates available in the GTAP database, especially those implied for Jordan, Iraq, Lebanon, and Syria (Figure 2), and the updated tariff rates, presented by country, product, and source in Appendix Tables A3 through A8. Since GTAP tariffs for the newly created regions do not correspond to the actual trade profile of

[5] This year was chosen in order to match the benchmark year of the GTAP 8 Data base.

individual countries in the composite, the new tariff rates differ from the GTAP ones both because of differences in the tariff lines and trade composition. In the cases of Egypt and Turkey, with a few exceptions, the tariff information in GTAP 8 Data base represents accurately existing preferences (Figure 2).

The newly constructed database is the starting point for the numerical simulations. We analyze the economic impacts of several potential trade initiatives: (1) removal of tariffs on trade in agricultural goods and processed foods between Turkey and the other Levant countries; (2) reducing the restrictiveness of NTMs among Levant trading partners; (3) liberalization of transport and logistics services resulting in reduced import and export transport costs to and from Levant countries; and (4) liberalization of trade in services amongst the six Levant countries.

Since the Levant economies rely on imported food and agricultural products, the tariff removal is expected to result in a tariff revenue loss, which we assume will be compensated by an increase in consumption taxes so as to keep the tax revenue constant as a share of income. Since NTMs add friction to trade relations, the reduction in the trade restrictive power of NTMs is modeled as an efficiency improvement. In the cases of Egypt, Lebanon, Jordan, Iraq, and Syria, the productivity shocks are equivalent to cuts in AVEs of NTMs by product to not more than 10%. Since the AVEs for many products are less than 10% (Table 3), there will be gains in market access for only some categories of products. This is particularly the case for Iraq. In the absence of information on Turkey, we assume a uniform 3% reduction in AVEs of NTMs for all products.

In this paper we assume transport cost reductions to be a result of productivity improvements in the process of shipping goods within the LEZ. The shocks are proportionate to the reductions

needed to bring down the transport cost of a standard container unit to and from these countries to those of a leading country in the region, including MENA and Turkey, according to the World Bank's Doing Business rankings. In the case of exporting a container, the lowest cost country in the developing part of the Mediterranean region is Morocco. In the case of importing a container Egypt is the lowest cost country, while Jordan is the lowest cost land-locked country.

The opening up of the service sectors to foreign competition within the Levant is expected to improve the efficiency of service companies engaged in cross-border trade and is modeled as a productivity shock which lowers the effective prices of imported services. We used the World Bank's Services Trade Restrictions (STR) database to estimate the size of the productivity shocks. Trade liberalization is assumed to bring down the service trade restrictiveness indexes in the Levant countries to the minimum of the corresponding indexes in the Euromed area. Sectoral indexes were available only for financial services and insurance, communications, trade, transportation, and other business services. In the case of construction and tourism, we used the overall service restrictiveness index, and in the case of Syria, data were not available so we assigned the average STRI for the MENA region. The shocks differ in size and suggest that the liberalization and the corresponding efficiency improvement will be smallest for Turkey (Table 3), as Turkey's services sectors are the most open and productive in the region.

Table 3 Productivity growth associated with services liberalization in LEZ (percent)

	Turkey		Jordan		Lebanon		Egypt		Iraq		Syria	
	Import-augmenting	Value-added	Import-augmenting	Value-added	Import-augmenting	Value-added	Import-augmenting	Value-added	Import-augmenting	Value-added	Import-augmenting	Value-added
Construction	0.0	12.9	9.3	29.7	9.3	0.0	27.3	55.5	9.3	75.7	9.3	68.5
Transport	0.0	0.0	26.8	25.8	26.3	20.1	16.1	35.7	17.8	71.6	17.8	37.1
Trade	0.0	4.4	25.0	21.8	25.0	0.0	50.0	21.6	17.9	62.5	17.9	19.6
Communication	0.0	0.0	25.0	25.8	25.0	20.1	25.0	35.7	26.8	71.6	26.8	37.1
FIRE	0.0	0.0	39.0	19.3	39.0	8.1	39.5	31.5	31.3	53.2	31.3	38.3
Business Services	15.9	0.0	0.0	19.3	7.9	8.1	10.7	31.5	1.9	53.2	1.9	38.3
Tourism & Other Services	0.0	4.4	9.3	21.8	9.3	0.0	27.3	21.6	9.3	62.5	9.3	19.6

The opening of the services sectors to foreign investment and competition will also boost value-added productivity in some services sectors. We assumed that as a result of these policies services sectors' value added per employee in the Levant countries would start converging to the highest value added per worker in the region. The convergence would be gradual and complete convergence is not expected within a 20 year period.[6] Since the simulation results are representative of what is likely to happen in a 3 to 5 year timeframe, we first computed the productivity shocks required for complete convergence over a 20 year period, annualized them, and then cumulated them to represent the productivity growth expected in the span of 3 years. The resulting productivity shocks are shown in Table 3. They suggest that within the Levant, Turkey is a productivity leader in a number of sectors, including transport, communication, finance, insurance and real estate, and business services, while Lebanon is a leader in construction and retail trade activities.

4. Simulation results

Next, we present simulation results from the four potential trade initiatives aimed at deepening the trade ties in the greater Levant. The removal of tariffs on agricultural goods and processed food is expected to stimulate trade in these products among Levant countries. The major effect stems from the removal of tariffs on bilateral trade in these products between Turkey and other Levant countries. The volume of Turkey's exports of primary agricultural goods to other Levant economies is expected to increase to various degrees, depending on the size of tariff protection in the destination markets (Appendix Tables A3-A8). Tariffs are lowest in Egypt, where the volume of Turkey's exports is expected to increase by just 6%. Turkish agricultural exports to Lebanon, where agricultural tariffs average 4%, will likely increase by 20%, and around 40% in the cases

[6] We exclude from the analysis all government-related services.

of Jordan, Syria, and Iraq. Exports of agricultural goods from Jordan to Turkey are expected to increase by a factor of 14, because of the removal of extremely high tariffs on a few agricultural products. The increase of exports from Iraq, Syria, and Egypt is estimated to be sizable, but more modest than Jordan's due to lower tariffs on agricultural exports from these countries to Turkey (Table 4). Lebanese agricultural exports face very low tariffs in Turkey so the boost to their exports will be marginal. The volume increase of food trade between Turkey and the other LEZ countries is expected to be dramatic. The post-reform volume of food exports to Turkey from Egypt, Syria, Lebanon, and Iraq will likely be several times the pre-reform levels, while exports from Turkey to these countries will jump by a factor of 6.3 in Jordan and 2 in the other Levant countries (Table 4). The smaller increase in the cases of Iraq, Syria, Lebanon, and Egypt can be explained with the fact that these countries have much lower tariffs on imported food from Turkey than Jordan (Appendix Tables A3 through A8).

Table 4 Change in bilateral export volumes due to tariff cuts (percent)

Agricultural goods						
	Turkey	Egypt	Jordan	Lebanon	Syria	Iraq
Turkey		6	42	20	35	39
Egypt	26		-2	-2	-2	-5
Jordan	1283	2		-2	-2	-5
Lebanon	1	2	-1		0	-5
Syria	51	2	-1	0		-3
Iraq	77	10	0	2	3	
Process food						
	Turkey	Egypt	Jordan	Lebanon	Syria	Iraq
Turkey		67	530	73	88	104
Egypt	505		-11	-3	-4	-18
Jordan	12	2		-1	-1	-17
Lebanon	108	1	-11		-2	-19
Syria	182	1	-10	-2		-17
Iraq	92	5	-10	0	0	

Bilateral trade patterns in the greater Levant are expected to change, with Egypt, Jordan, and Syria exporting more agricultural and food products to Turkey, and less of these products to

other Levant countries. As Turkey gains access to agricultural and food markets within the greater Levant, competition will intensify and Egypt, Jordan, Lebanon, and Syria might be displaced by Turkey in other Levant countries' markets. Turkey's exports of agricultural and food products to other Levant countries are expected to increase without a significant effect on Turkey's exports to other destinations.

The integration of agricultural and food markets through tariff removal is estimated to have a very small impact on aggregate exports from the Levant economies. The volume of Turkey's exports will expand by an estimated US$233 million, which is the largest absolute expansion in dollar terms, but represents a negligible increase in Turkey's total exports (Table 5). Iraq's and Jordan's exports are expected to grow by about half a percent or US$57 million and US$61 million, respectively (Table 5). The percentage changes in volumes in all other cases are negligible, while the dollar amounts vary, with Egypt's exports increasing by US$51 million, Lebanon's by US$11 million, and Syria's by US$12 million.

Agricultural output is expected to increase in all Levant countries other than Iraq, but food production will expand only in Turkey and Egypt (Table 6) as these two countries benefit from relatively large tariff cuts in each other's food markets and competition from Turkey results in contraction of processed food production in the other Levant countries. Consequently, demand for labor will fall in Jordan, Lebanon, Syria, and Iraq with negative implications for the wages of unskilled workers (Table 7), which in turn will lower slightly production costs and prices of most products. In Turkey and Egypt, the expansion of agriculture and food processing is expected to increase demand for land, capital, and both skilled and unskilled labor, and therefore production costs and export prices. The rise in production costs translates into higher export prices and stronger terms of trade.

Table 5 Export volume changes (US$ million)

	Agricultural liberalization						Reducing AVEs of NTMs						Improving transport logistics						Services liberalization						Cumulative results					
	Turkey	Jordan	Lebanon	Syria	Iraq	Egypt	Turkey	Jordan	Lebanon	Syria	Iraq	Egypt	Turkey	Jordan	Lebanon	Syria	Iraq	Egypt	Turkey	Jordan	Lebanon	Syria	Iraq	Egypt	Turkey	Jordan	Lebanon	Syria	Iraq	Egypt
Primary Agriculture	20	34	1	15	5	-12	11	3	0	13	5	-4	9	14	11	-11	30	10	-102	-3	-14	-213	-11	-241	-62	48	-3	-196	29	-246
Processed food	420	-20	-1	-17	2	341	-8	0	-5	-9	0	42	83	-7	3	-7	12	46	-64	4	-19	-44	-2	-177	431	-24	-22	-76	12	252
Gas extraction & distr.	0	0	0	0	0	-28	0	0	0	0	0	-7	0	0	0	0	0	-16	0	-1	0	-5	-4	-1157	0	-1	-1	-6	-5	-1208
Oil extraction	0	0	0	0	15	-1	0	0	0	90	-6	-4	1	0	0	250	-66	-6	0	0	0	-1133	-1479	-409	0	0	0	-793	-1536	-421
Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	-1	-2	-1	-7	-7	0	-1	-2	-1	-7	-7	0
Other natural resources	-1	0	0	0	0	-1	-1	0	0	1	0	-1	1	0	1	3	1	1	-45	-4	0	-9	-6	-25	-45	-4	1	-4	-5	-25
Petroleum and coal	0	0	0	0	0	-5	527	3	1	19	2	-6	204	0	1	24	5	-1	52	-4	-1	-66	-4	-393	782	-1	1	-22	3	-404
Electricity	0	0	0	0	0	0	0	0	0	1	0	-1	0	0	0	0	0	0	7	0	0	-1	-1	-6	7	0	0	0	-1	-8
Chemicals and metallurgy	-35	6	1	1	1	-46	-38	-4	36	19	4	169	97	-7	5	33	57	135	-511	-110	-62	-45	-7	-367	-487	-114	-19	7	54	-110
Textiles and apparel	-44	7	0	2	1	-37	-59	-3	-1	-3	2	-24	-135	6	5	-1	37	-12	-818	-66	-9	-53	-3	-327	-1057	-57	-4	-54	36	-400
Resource based manufactures	-6	1	1	0	0	-5	23	11	20	8	5	9	16	-2	1	0	9	3	-69	0	-18	-20	-3	-63	-36	10	4	-12	12	-57
Equipment and vehicles	-77	3	1	0	0	-8	-61	9	-2	2	1	-1	-150	4	1	5	8	4	-1066	26	-35	4	-3	-93	-1355	42	-35	11	6	-98
Metal products	-9	1	0	0	0	-4	9	15	9	0	1	-5	16	-7	-1	-1	5	-1	-78	0	-7	-9	-2	-10	-62	10	2	-9	5	-20
Other manufactures	-4	1	1	0	0	0	40	5	30	4	1	0	-10	1	6	3	1	0	-63	-11	-43	-8	-3	-7	-37	-5	-7	-2	-1	-7
Construction	-1	0	0	0	0	-8	-2	0	-1	0	0	-8	-5	0	0	0	0	-4	158	12	-2	38	32	631	151	13	-3	38	32	611
Transport	-17	7	1	3	7	-65	-15	-7	16	-13	-4	-62	-19	-2	-6	18	-22	-46	-306	415	185	1201	685	4007	-357	413	197	1209	666	3834
Trade	-3	2	0	1	2	-8	-5	-1	-5	-10	-1	-7	-13	0	-2	-6	-5	-5	187	98	-16	131	181	326	165	99	-23	116	177	306
Communications	-1	1	0	0	2	-16	-2	-1	-3	-7	-1	-15	-4	0	-1	-4	-6	-11	-27	96	42	186	216	1180	-33	96	38	175	211	1138
FIRE	-3	2	0	0	2	-7	-4	-1	-4	-6	-1	-7	-11	0	-1	-3	-6	-5	-41	85	18	190	173	487	-59	85	13	181	167	467
Public services	-3	4	1	1	3	-8	-4	-3	-15	-12	-1	-7	-12	-1	-7	-7	-8	-4	-48	-113	-57	-143	-88	-125	-67	-113	-78	-160	-94	-144
Other Business services	-1	11	3	3	14	-18	-2	-9	-48	-41	-6	-15	-5	-1	-18	-22	-46	-12	-22	589	218	1408	1267	1125	-29	590	155	1348	1229	1079
Tourism and others	-2	1	0	0	1	-10	-3	0	-1	-1	0	-8	-9	0	-1	0	-1	-6	102	27	-5	30	45	261	88	27	-7	29	44	237
Total	233	61	11	12	57	51	406	14	29	54	2	40	53	-2	-3	275	0	71	-2755	1037	172	1434	976	4615	-2063	1112	208	1775	1034	4778
	0.2%	0.6%	0.2%	0.1%	0.4%	0.1%	0.3%	0.2%	0.5%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	1.7%	0.0%	0.2%	-2.2%	10.9%	2.8%	9.3%	7.0%	13.0%	-1.7%	11.7%	3.5%	11.4%	7.4%	13.4%

Table 6 Output changes by sector due to agricultural and food trade liberalization (%)

	Turkey	Egypt	Jordan	Lebanon	Syria	Iraq
Primary Agriculture	0.0	0.2	1.0	0.0	0.1	-0.4
Processed food	0.3	1.6	-1.7	-0.3	-0.8	-6.1
Gas extraction & distr.	-0.3	-0.3	0.3	0.1	0.0	0.2
Oil extraction	0.0	-0.1	0.1	0.0	0.0	0.1
Other natural resources	0.0	-0.1	0.1	0.0	0.0	0
Petroleum and coal	0.0	-0.1	0.1	0.0	0.0	0.1
Electricity	0.0	0.0	0.1	0.0	0.0	0.1
Chemicals and metallurgy	-0.1	-0.3	0.3	0.1	0.1	0.3
Textiles and apparel	-0.1	-0.3	0.6	0.2	0.3	0.7
Resource based manufactures	0.0	-0.1	0.4	0.2	0.1	0.6
Equipment and vehicles	-0.1	-0.1	0.4	0.2	0.0	0.5
Metal products	-0.1	-0.2	0.5	0.1	0.1	0.6
Other manufactures	0.0	-0.2	0.3	0.1	0.0	0.3
Construction	0.0	0.1	-0.1	0.0	-0.1	-0.6
Transport	0.0	-0.4	0.2	0.1	0.1	0.4
Trade	0.0	0.0	-0.1	0.0	0.0	-0.1
Communications	0.0	-0.2	0.4	0.0	0.1	0.7
FIRE	0.0	0.0	0.1	0.0	0.0	0.2
Government services	0.0	0.0	0.1	0.0	0.0	0.2
Business services	0.0	-0.3	0.6	0.1	0.2	1.1
Tourism and other services	0.0	-0.1	0.2	0.0	0.0	0.2
GDP	0.0	0.0	0.1	0.0	0.0	0.1

Table 7 Real wage changes by types of labor (%)

		Turkey	Egypt	Jordan	Lebanon	Syria	Iraq
Agricultural liberalization	Unskilled Labor	0.0	0.2	-0.1	-0.1	-0.1	-0.2
	Skilled Labor	0.0	0.1	0.0	0.0	0.0	0.0
Reducing NTM's Restrictiveness	Unskilled Labor	0.0	0.1	0.2	1.1	1.2	0.1
	Skilled Labor	0.0	0.1	0.1	1.0	1.0	0.1
Improving Transport Logistics	Unskilled Labor	0.1	0.1	0.1	0.4	0.7	1.8
	Skilled Labor	0.1	0.1	0.1	0.4	0.6	1.7
Services Liberalization	Unskilled Labor	0.3	9.5	5.8	2.4	9.0	11.5
	Skilled Labor	1.0	10.7	7.0	2.6	10.3	16.8
Cumulative impact	Unskilled Labor	0.4	9.9	5.9	3.8	10.9	13.1
	Skilled Labor	1.1	11.1	7.1	3.9	11.9	18.6

The welfare effects of the agricultural and food liberalization reform are estimated to be negligible (Table 8). For Turkey, the greatest welfare gain of the reform will come from terms-of-trade improvements (US$36.5 million), linked to strengthened export prices. Egypt is also expected to gain mainly from improvements in tis terms of trade (US$67 million). Unlike Turkey and Egypt, which will gain $79 million and $113 million, respectively, Lebanon and Syria will incur small welfare losses, driven by terms-of-trade declines as export prices decline. Despite terms-of-trade losses, Jordan and Iraq will gain overall because the removal of import tariffs on agricultural and farm products will generate beneficial allocative efficiency effects. The reform is unlikely to generate sizable trade diversion effects. Turkey, Jordan, Lebanon, and Syria are expected to incur welfare losses of less than US$1 million, while Iraq and Egypt will gain less than half a million US$ from changes in import prices.

Table 8 Welfare effects of reforms associated with LEZ (US$ million)

	Agricultural liberalization	Reducing AVEs of NTMs	Improving transport logistics	Services liberalization	Cumulative welfare
Turkey	79	179	389	9154	9802
	0.01%	*0.03%*	*0.07%*	*1.61%*	*1.72%*
Egypt	113	119	103	11665	11999
	0.10%	*0.11%*	*0.09%*	*10.59%*	*10.89%*
Jordan	3	15	11	1035	1064
	0.02%	*0.09%*	*0.07%*	*6.33%*	*6.51%*
Lebanon	-5	140	64	543	743
	-0.02%	*0.61%*	*0.28%*	*2.38%*	*3.25%*
Syria	-4	237	99	2992	3323
	-0.02%	*0.82%*	*0.34%*	*10.40%*	*11.55%*
Iraq	2	14	177	2354	2546
	0.01%	*0.09%*	*1.15%*	*15.37%*	*16.63%*

Reducing the restrictiveness of NTMs on trade within the Levant is expected to boost Turkey's exports of petroleum and coal products to Lebanon and Syria, its exports of other manufactures to Egypt, and its exports of agricultural commodities, resource-based manufactures, equipment, vehicles, and machinery, and metal products to Syria (Table 9). The results suggest that increases

will range from 43% in the case of equipment, vehicles, and machinery to Syria to above 1092% in the case of other manufactures to Egypt. Exports of metal products from Turkey to Syria are expected to increase by 51 percent and those of resource-based manufactures are expected to more than double (Table 9). Egypt will also have an opportunity to increase exports of a broad range of products to Turkey, and resource-based, chemical, and other manufactures to Syria (Table 9). Jordan will likely scale up its agricultural, food, and manufactured exports to Turkey, agricultural, resource-based, and equipment exports to Egypt, petroleum exports to Lebanon, and manufactured exports to Syria. Lebanon's exports to Turkey and Syria will expand in a wide range of products, and so will its exports of agricultural products to Egypt, resource-based goods to Egypt and Jordan, metal products to Jordan, and other manufactures to Iraq. Syria and Iraq will likely increase exports of a broad range of goods to Turkey, exports of agricultural commodities, resource-based manufactures, and equipment and vehicles to Egypt, exports of petroleum products to Lebanon, and resource-based manufactures to each other's markets. Iraq will also scale up its exports of agricultural and resource-based products and manufactures to Jordan.

Despite the significant effects on the exports of some products, overall exports from the LEZ countries will grow little in volume terms (Table 5). Turkey's exports are expected to expand by US$406 million or 0.3%, largely reflecting a boost to exports of petroleum, resource-based and other manufactures, and agricultural products. Egypt's exports will grow by 0.1% or US$40 million, boosted by growth in exports of chemicals and processed food. Syria's exports will likely increase by US$54 million or 0.3%, reflecting a boost in exports of crude oil, petroleum and chemicals, but also a broad based increase of exports of agricultural and manufactured goods. Exports from Lebanon will increase by US$29 million or 0.5%, mainly driven by an increase in exports of chemicals, resource-based and other manufactures. Jordan's exports will likely

advance by US$14 million or 0.2%, helped by export expansion in metals and resource-based industries. Iraq's export gains in this scenario are negligible.

Since NTMs are most restrictive in Syria, its welfare gain of US$237 million or about 0.8% in per capita terms is the largest among the Levant group of countries (Table 8). Lebanon follows closely with gains in per capita terms of 0.6%. These gains will stem mostly from cost reductions associated with the removal of some NTMs on petroleum products. Jordan, Iraq, and Egypt will also benefit in this reform scenario, but their gains are relatively small in per capita terms. The gains are expected to be small because in nearly all cases the initial AVEs of NTMs are below 10% so these countries make significant new concessions in just a few sectors. Turkey makes minor improvements in access in a sector-neutral way and benefits mostly from improved market access to the Levant. Its welfare gain under this reform scenario is therefore small.

Efficiency improvements in the transport sectors of the Levant countries are expected to lower trade-related transport costs with the region and result in an economic expansion. The reform complements the liberalization of intra-Levant trade in agricultural goods and processed foods which tend to be bulky or require specialized handling, and therefore have large transport margins. All Levant countries will likely benefit from such a reform due to efficiency gains associated with lower transport costs, and in the case of net oil importers, due to positive terms-of-trade effects. The gain to Turkey will be largest in absolute terms (US$389 million), but small in per capita terms (0.07%) (Table 8). Iraq and Syria will gain about US$177 and US$99 million, respectively. For landlocked Iraq this gain is considerable in per capita terms and represents a welfare improvement of slightly more than 1% of GDP. Lebanon will gain US$64 million (0.3%), while Egypt and Jordan will gain US$103 and US$ 11 million, respectively.

Table 9 Change in bilateral export volumes due to reductions in the restrictiveness of NTMs in the Levant Quartet (%)

	Exports from Turkey to:					Exports from Egypt to:					Exports from Jordan to:				
	Egypt	Jordan	Lebanon	Syria	Iraq	Turkey	Jordan	Lebanon	Syria	Iraq	Turkey	Egypt	Lebanon	Syria	Iraq
Primary Agriculture	0.1	20.4	2.3	238.5	1.3	11.8	-0.4	1.5	-0.6	0.1	50.9	26.8	1.8	9.3	0.0
Processed food	5.7	0.4	1.9	-1.2	0.3	31.6	0.0	1.1	25.7	-0.1	12.8	-0.2	1.1	4.1	-0.2
Gas extraction & distr.	0.0	0.0	0.0	0.0	0.0	110.4	-3.6	1.4	-2.8	-10.7	0.0	0.0	0.0	0.0	0.0
Oil extraction	0.0	0.0	0.0	0.0	0.0	23.6	-0.2	-7.3	-0.8	-2.1	0.0	0.0	0.0	0.0	0.0
Other natural resources	0.2	0.0	2.0	0.7	0.5	5.5	-0.3	1.6	0.2	0.1	0.0	0.3	2.5	0.8	0.7
Petroleum and coal	0.9	0.9	222.7	222.1	0.9	9.4	-0.2	-12.8	33.1	-0.4	0.0	-0.2	155.6	-8.6	-0.3
Electricity	0.0	0.8	-5.1	-2.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & metallurgy	0.2	0.1	0.5	-2.5	-1.1	18.6	-0.7	-0.3	58.4	-1.6	22.9	-0.1	0.1	-6.4	4.3
Textiles and apparel	0.3	-0.2	0.7	-0.7	0.0	19.5	-1.1	-0.4	-1.7	-1.1	28.6	0.1	0.6	37.3	-0.3
Res. based manufactures	21.4	-2.2	0.7	119.1	16.4	18.9	-1.1	0.4	127.3	-8.7	19.5	13.4	0.7	61.2	-7.0
Equipment and vehicles	-0.4	-0.1	0.5	44.5	0.0	22.7	-0.3	0.3	8.1	-0.2	21.8	17.0	0.2	20.1	-0.5
Metal products	18.1	-0.1	0.4	51.0	-1.4	22.1	-1.1	-0.6	-18.6	-2.3	21.0	-1.0	0.0	120.9	8.3
Other manufactures	1092.1	-0.1	-0.1	-14.0	20.2	21.3	-0.5	-0.5	89.1	-4.3	21.3	-14.5	-0.3	219.7	2.4
Construction	0.1	0.1	2.0	2.1	0.2	-0.6	-0.5	1.9	2.0	-0.5	-0.2	-0.1	2.0	2.2	0.0
Transport	0.0	0.1	0.0	0.8	0.0	-0.6	-0.7	-0.9	0.2	-0.7	-0.3	-0.4	-0.5	0.5	-0.4
Trade	0.2	0.1	2.1	1.3	0.0	-0.8	-0.8	1.6	0.8	-0.8	-0.5	-0.4	2.1	1.2	-0.4
Communications	0.0	0.0	1.7	1.4	-0.1	-1.3	-1.6	1.5	1.0	-1.5	-0.6	-0.5	2.0	1.6	-0.6
FIRE	0.2	0.0	2.3	1.4	-0.1	-1.3	-1.9	2.1	0.8	-1.8	-0.5	-0.2	2.5	1.4	-0.6
Public services	-0.1	0.0	1.6	1.3	0.0	-0.5	-0.4	1.0	0.7	-0.5	-0.4	-0.3	1.2	0.9	-0.3
Other Business services	0.1	-0.2	0.9	0.5	-0.1	-1.3	-1.1	0.4	-0.1	-1.2	-0.6	-0.2	0.8	0.3	-0.6
Tourism and others	-0.1	-0.2	0.9	0.4	-0.2	-0.8	-0.9	0.3	-0.3	-0.9	-0.4	-0.4	0.8	0.2	-0.4

	Exports from Lebanon to:					Exports from Syria to:					Exports from Iraq to:				
	Turkey	Egypt	Jordan	Syria	Iraq	Turkey	Egypt	Jordan	Lebanon	Iraq	Turkey	Egypt	Jordan	Lebanon	Syria
Primary Agriculture	7.8	22.7	-3.1	7.6	-3.1	9.1	19.8	-2.8	-1.1	-2.5	16.1	69.6	91.9	1.6	11.8
Processed food	13.7	-2.6	-2.1	1.4	-2.1	16.8	-2.2	-1.8	-0.8	-1.7	20.1	-0.2	-0.1	1.8	6.1
Gas extraction & distr.	0.0	0.0	0.0	0.0	0.0	47.2	0.0	0.0	0.0	0.0	33.7	-0.2	0.1	2.2	1.3
Oil extraction	0.0	0.0	0.0	0.0	0.0	41.4	1.0	1.0	-6.7	-0.4	34.6	-0.7	-0.4	-8.3	-4.7
Other natural resources	5.1	-0.6	-0.8	-0.2	-0.5	5.2	0.0	-0.2	1.7	0.3	5.7	-0.2	-0.4	1.3	0.1
Petroleum and coal	17.2	4.1	3.9	-6.3	4.2	9.9	0.4	0.4	159.8	0.3	9.6	-0.2	-0.1	164.4	-12.5
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & metallurgy	21.6	3.5	3.2	-2.9	5.1	29.1	2.6	2.3	2.6	3.1	22.3	1.5	-0.2	0.2	-10.7
Textiles and apparel	20.6	-1.8	-2.2	40.0	-2.2	19.0	-1.1	-1.5	-0.7	-1.4	38.5	2.1	-0.3	0.5	35.5
Res. based manufactures	18.4	12.6	33.9	60.0	2.5	19.6	13.7	1.9	1.3	13.8	23.6	18.5	593.8	1.7	93.8
Equipment and vehicles	19.9	14.7	-1.9	17.8	-2.3	28.0	16.2	-0.7	-0.1	-0.7	25.1	34.1	-0.3	1.4	25.5
Metal products	20.7	-1.5	6.6	115.2	-1.9	22.6	-0.2	0.2	0.7	-0.7	28.1	-1.0	-0.4	0.2	606.4
Other manufactures	32.9	-9.8	11.8	267.6	118.7	29.6	-9.5	5.9	5.8	3.9	26.2	-18.5	23.5	0.0	247.9
Construction	-1.8	-2.5	-1.8	-0.2	-2.1	-0.5	-0.4	-0.3	2.4	-0.2	0.0	0.3	0.3	3.3	3.4
Transport	1.8	2.6	3.0	3.3	2.6	-0.4	-0.5	-0.4	-0.6	-0.4	-0.3	-0.3	-0.2	-0.4	0.8
Trade	-2.3	-4.2	-2.9	-1.6	-2.4	-2.3	-4.1	-2.8	-0.9	-2.3	-0.4	0.1	0.0	3.5	2.1
Communications	-3.4	-4.7	-4.5	-2.5	-4.3	-3.5	-4.8	-4.6	-1.7	-4.4	-0.6	-0.4	-0.5	3.7	3.0
FIRE	-2.6	-3.8	-4.2	-2.1	-3.8	-2.7	-3.7	-4.2	-0.5	-3.9	-0.4	0.0	-0.4	4.0	2.3
Public services	-2.8	-3.0	-2.8	-1.8	-3.1	-1.7	-1.8	-1.7	-0.3	-1.9	-0.2	-0.1	0.0	1.2	1.0
Other Business services	-3.9	-3.1	-3.1	-2.6	-3.5	-3.0	-2.3	-2.5	-1.1	-2.7	-0.5	0.0	-0.5	1.3	0.7
Tourism and others	-1.6	-2.4	-1.9	-1.5	-1.9	-0.5	-0.5	-0.5	0.6	-0.5	-0.2	-0.1	-0.2	1.3	0.5

As expected the reform is especially favorable to trade in products with high transport margins, such as agricultural commodities, chemicals and resource-based products, and equipment and vehicles (Table 10). Exports from Turkey to its Levant partners are expected to grow by about US$ 722 million. Sixty percent of this increase will come from increases of exports to Iraq (US$ 455 million) (Table 10) and will stem mainly from an expansion of petroleum, chemical, and manufactured exports. Egypt's exports to the Levant will likely increase by US$335 million, with half of the estimated increase due to an expansion of exports to Turkey and another third to Syria, and a boost to exports of chemicals, natural gas, and processed foods (Table 10). Jordan's exports within the Levant will rise by only about US$0.8 million as Jordan's exports shift away from Iraq and towards Turkey and Syria. Lebanon's exports are expected to increase by US$39 million, with the majority of the increase stemming from increased agricultural commodities and manufactured exports to Syria (Table 10). Syria's exports to other Levant countries will jump by about US$121 million, with a large share of this increase explained by an increase of exports of crude oil and chemicals to Turkey. Finally, Iraq's exports to the Levant are expected to expand by US$398 billion, largely due to an expansion of crude oil exports to Syria, and to some extent, to an increase of exports of agricultural and manufactured products to Egypt and Turkey. In all countries except Syria, the increase in aggregate exports will be negligible (Tables 5). The spillover effect to the rest of the world are expected to be small and occur mainly through the downward effect on global energy prices as Levant countries consume less fuels. Net energy importing countries are expected to gain while net energy exporting countries are expected to lose as demand for energy products moderates. The biggest beneficiary in absolute terms is the EU which gains about US$450 million, followed by the US and Turkey.

Table 10 Impact of reform in transport on bilateral export volumes (2007 US$ million)

	Exports from Turkey to:					Exports from Egypt to:					Exports from Jordan to:				
	Egypt	Jordan	Lebanon	Syria	Iraq	Turkey	Jordan	Lebanon	Syria	Iraq	Turkey	Egypt	Lebanon	Syria	Iraq
Primary Agriculture	2.3	0.4	1.6	0.2	25.5	2.1	-0.1	5.6	9.2	0.3	3.5	0.0	2.4	9.6	-1.0
Processed food	1.4	0.4	1.8	1.1	103.6	28.2	0.3	4.3	17.2	-0.1	0.2	0.0	0.9	2.3	-10.3
Gas extraction & distr.	0.0	0.0	0.0	0.0	0.0	80.3	4.2	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0
Oil extraction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other natural resources	0.9	0.2	0.4	4.8	0.7	1.8	0.0	0.2	-0.2	0.8	0.3	0.0	0.1	0.2	0.5
Petroleum and coal	1.2	2.8	54.6	92.1	4.6	6.3	0.0	3.1	-0.1	0.0	0.6	0.0	-0.1	0.0	0.0
Electricity	0.0	0.0	0.0	-0.1	0.7	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & metallurgy	27.6	1.9	9.3	15.1	128.6	45.1	-0.1	41.7	66.6	-0.4	5.0	-0.7	0.5	4.7	-18.1
Textiles and apparel	7.5	1.6	3.2	1.4	18.0	4.6	0.0	0.3	1.3	0.1	2.4	-0.2	0.6	0.8	0.7
Res. based manufactures	2.4	1.3	0.4	1.2	30.4	1.3	0.1	1.3	1.9	0.0	0.1	0.0	0.4	3.0	-5.7
Equipment and vehicles	10.3	0.8	0.8	6.8	105.0	1.4	0.4	0.6	3.8	0.2	0.2	0.0	0.7	3.8	-0.2
Metal products	6.2	1.0	0.2	0.1	36.3	0.4	0.0	0.3	0.6	0.2	0.0	0.0	0.1	0.8	-7.7
Other manufactures	1.2	0.1	0.1	0.0	1.4	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.1
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transport	0.0	0.0	0.1	0.0	0.2	-0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Trade	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public services	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Business services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tourism and others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	60.9	10.3	72.5	122.7	455.2	171.3	4.4	57.4	100.6	1.7	12.3	-0.9	5.6	25.3	-41.5

	Exports from Lebanon to:					Exports from Syria to:					Exports from Iraq to:				
	Turkey	Egypt	Jordan	Syria	Iraq	Turkey	Egypt	Jordan	Lebanon	Iraq	Turkey	Egypt	Jordan	Lebanon	Syria
Primary Agriculture	0.2	2.0	1.8	4.0	4.9	0.5	-1.9	1.4	1.8	-2.4	3.0	20.2	1.8	0.6	5.8
Processed food	0.3	0.7	0.8	3.4	-0.5	1.0	1.2	0.7	1.7	-9.5	1.3	6.4	0.4	1.5	2.3
Gas extraction & distr.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil extraction	0.0	0.0	0.0	0.0	0.0	90.9	0.0	0.2	0.2	0.1	31.3	0.0	0.1	0.0	200.5
Other natural resources	0.6	0.0	0.0	0.2	0.4	1.2	0.1	0.1	0.3	0.4	1.6	0.0	0.0	0.0	-0.1
Petroleum and coal	1.4	0.0	0.0	0.1	0.2	5.1	0.0	0.1	0.1	0.5	1.2	0.0	0.0	0.0	4.0
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & metallurgy	0.5	0.1	1.4	6.3	-3.7	15.8	8.6	3.0	4.4	-8.4	10.8	35.1	1.2	0.7	9.1
Textiles and apparel	1.2	3.3	0.2	1.0	0.3	2.2	-3.3	1.0	0.6	0.0	7.1	29.2	0.5	0.0	0.2
Res. based manufactures	0.2	-0.1	0.2	3.3	-1.3	0.9	0.4	0.8	1.0	-3.9	1.3	1.5	2.6	1.0	2.6
Equipment and vehicles	0.2	0.1	0.5	4.1	-0.6	1.3	1.0	1.0	0.8	0.3	0.9	4.2	1.3	1.2	0.2
Metal products	0.0	0.1	0.1	0.3	-0.8	0.2	0.3	0.3	0.4	-2.5	0.2	0.5	0.4	0.3	3.6
Other manufactures	0.1	0.1	0.0	0.3	0.4	0.2	0.2	0.0	0.0	0.3	0.2	0.3	0.0	0.0	0.2
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transport	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	-0.1	-0.1	0.0	0.0	0.0
Trade	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Business services	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.2	0.0	0.0	0.0
Tourism and others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	4.7	6.2	5	23	-0.7	119.2	6.5	8.8	11.3	-24.9	58.7	96.9	8.4	5.4	228.5

Unlike the other reform initiatives, the opening up of the service sectors to foreign competition is likely to lead to sizable welfare gains in all Levant countries (Table 8). Competition is expected to boost productivity and lower production costs as well as the costs of importing services from countries within the greater Levant region. The results, however, differ by country because of the

differential impact of the productivity improvements. Turkey is already a productivity leader in most services sectors so any further productivity gains will affect relatively few sectors (Table 3). Still, Turkey's estimated welfare gain of 1.7% is largest relative to the gains expected from the other potential reform initiatives considered in this paper (Table 8). Iraq will gain US$2.3 billion and its welfare gain will be largest in per capita terms (15.4%) due to the fact Iraq's service sectors are among the most inefficient in the Levant. Therefore, reforms will bring about considerable savings. Syria and Egypt are expected to accumulate welfare gains of US$3.0 billion and US$11.7 billion, each equivalent to 10.5% increase in per capita welfare, while Jordan and Lebanon will gain $1 billion (6.3%) and US$543 million (2.4%), respectively.

The largest source of welfare gain for Turkey is expected to be the liberalization of the construction sector, where Lebanon is considered the regional leader, and the liberalization of business services, where Jordan is the regional leader (Table 3). As productivity improves in construction, and to a much lesser extent, in other service sectors, construction activity will expand and the price of construction services will decline. To the extent that construction services are used as intermediate inputs into other sectors, there will be a broad-based expansion of economic activity and investment in Turkey. Since real returns to labor and capital will likely rise, domestic demand and demand for exports in the Levant will increase, driving up prices of goods made in Turkey and export prices, but lowering demand for Turkish exports in the rest of the world (Table 5). The liberalization of the services sectors in Egypt, Jordan, Lebanon, Syria, and Iraq will induce greater competition and investment within the Levant and will lift real wages (Table 7) and returns to land and capital in these countries. This reform is also expected to boost investment and economic activity across a broad range of sectors, especially services. In Egypt, Iraq, and Syria, crude oil exports and output are expected to decline slightly.

Table 11 Change in output volumes (US$ million)

	Turkey	Egypt	Jordan	Lebanon	Syria	Iraq
Primary Agriculture	251	340	50	9	492	225
Processed food	732	1157	244	-5	106	61
Gas extraction & distr.	-8	-563	-2	-3	45	102
Oil extraction	-1	100	0	0	-6	-202
Water	58	8	3	0	31	46
Other natural resources	80	21	-4	0	0	16
Petroleum and coal	197	834	378	20	913	882
Electricity	174	842	76	9	651	834
Chemicals and metallurgy	845	1477	-94	-82	62	83
Textiles and apparel	-931	775	-76	-18	-56	10
Resource based manufactu	170	469	16	-28	9	18
Equipment and vehicles	112	699	65	-54	156	109
Metal products	212	912	8	-11	19	16
Other manufactures	188	109	-6	-44	16	8
Construction	5767	5040	177	109	948	1012
Transport	1174	5298	559	250	1701	956
Trade	3895	2744	291	39	784	516
Communications	165	2408	162	75	341	341
FIRE	1151	2877	266	104	591	552
Public services	784	1205	15	20	89	178
Other Business services	543	2814	703	292	1679	1543
Tourism and others	350	855	80	9	197	170
Total	15908	30421	2911	691	8768	7476

5. Policy implications and concluding remarks

Prior to the Arab Spring, economies in the greater Levant region were considering options for deep regional trade integration agreement. However the spread of unrest that culminated into the Syrian civil war put a hold on this process. This paper assesses the medium-term economic effects of reforms aimed at deepening of trade relations in the Levant. Consistent with the literature we find that the benefits of establishing a free trade economic zone will increase with the deepening of the commitments, and the benefits will be largest when reforms stimulate the supply response in member countries. The paper considers four reform scenarios emphasizing

different aspects of trade relations among Levant countries – (i) agricultural liberalization via removal of border protection on trade within the Levant; (ii) liberalization of agriculture and manufacturing trade in the Levant via reduction in the restrictiveness of NTMs; (iii) reduction in transport costs on trade within the Levant; and (iv) services liberalization in Levant countries.

The impacts on aggregate welfare and export volumes of reforms in scenarios (i), (ii), and (iii) are estimated to be relatively small, except in the case of services liberalization. In all cases, the trade effects for some sectors are expected to be sizable. Levant countries will gain in welfare terms under nearly all policy scenarios, but the welfare gains from services liberalization will represent the lion's share of all gains associated with the four reform scenarios. The largest cumulative welfare gain of US$12 billion will accrue to Egypt, followed by Turkey with US$9.8 billion, Syria with US$3.3 billion, Iraq with US$2.5 billion, Jordan with US$1 billion, and Lebanon with US$743 million. In per capita terms, however, the gains are largest for Iraq (17%), followed by Syria (12%), Egypt (11%), Jordan (7%), Lebanon (3%), and Turkey (1.7%) (Table 16). The impact on the rest of the world is negligible under all scenarios due to the relatively small economic size of the Levant.

The impact on exports varies by country, sector, and reform instrument. In Turkey, reforms will either have no effect, or in the case of services liberalization, will have a small negative impact on aggregate exports. In other Levant countries, the impact on aggregate exports will be positive under all scenarios, but the magnitude of the effect will be sizable only in the case of services liberalization. Agricultural liberalization and improved transport logistics will boost exports of farm and processed food products among the Levant economies. Reducing the restrictiveness of NTMs will likely have a particularly pronounced effect on exports of petroleum, resource-based and other manufactures from Turkey, food and chemicals from Egypt, metals and resource-based

manufactures from Jordan, chemicals, resource-based and other manufactures from Lebanon, and farm, crude oil, petroleum and chemical goods from Syria. The effect on Iraq's exports would be negligible as it exports mainly crude oil for which the AVEs of NTMs are zero. Services liberalization will improve the supply response and encourage services exports as well as a broad-based increase in economic activity.

Some caveats are important. The welfare gains are probably understated because tariff aggregation at the product level in the model hides much of the tariff variation and the welfare gains from reducing this variation within the product aggregates (Bach and Martin 2001). When taken into account in the case of China's WTO accession, Bach and others (1996) found that the gains to China almost doubled. The analysis, therefore, should be supplemented with sector-specific case studies. The results are indicative of the changes likely to occur in the medium run when wages adjust and employment shifts occur as capital adjusts across sectors. They do not depict the short-term changes likely to occur in response to reforms.

References

Al-Atrash, H. and Yousef, T. (2000) "Intra-Arab Trade: Is it Too Little?" IMF Working Paper No. 00/10, Washington DC.

Augier, P., Cadot, O., Gourdon, J. and Malouche, M. (2012) "Non-tariff Measures in the MNA Region: Improving Governance for Competitiveness," MENA Region World Paper No. 56, World Bank, Middle East and North Africa, Washington DC, (http://siteresources.worldbank.org/ INTMENA/ Resources/WP56.pdf)

Bach, C. and Martin W. (2001) "Would the Right Tariff Aggregator for Policy Analysis Please Stand Up?" *Journal of Policy Modeling* 23:621-35.

Bach, C., Martin, W. and Stevens, J. (1996) "China and the WTO: Tariff Offers, Exemptions and Welfare Implications." *Weltwirtschaftliches Archiv* 132(3):409-31.

Burger, M., Ianchovichina, E., and Rijkers, B. (2013) "Risky Business: Political Instability and Greenfield Foreign Direct Investment in the Arab World" Policy Research Working Paper No. 6716, World Bank, Washington DC.

Freund, C. and Portugal-Perez, A. (2012) "Assessing MENA's Trade Agreements," MENA Region World Paper No. 55, World Bank, Middle East and North Africa, Washington DC, (http://siteresources.worldbank.org/INTMENA/Resources/WP56WEB.pdf).

Hoekman, B. and Sekkat, K. (2010) "Arab Economic Integration: Missing Links" CEPR Discussiong Paper No. 7807, Centre for Economic Policy Research, London. (www.cepr.org/pubs/dps/DP7807.asp)

Hoekman, B. and Messerlin, P. (2001) *Harnessing Trade for Development in the Middle East and North Africa*, New York: Council on Foreign Relations.

Hoekman, B. and Zarrouk, J. (2000) *Catching Up with the Competition: Trade Opportunities and Challenges for Arab Countries*, Ann Arbor: University of Michigan Press.

Ianchovichina, E., Loening, J., and Wood, C. (2012) "How Vulnerable Are Arab Countries to Global Food Price Shocks?" Policy Research Working Paper No. 6018, World Bank.

Ianchovichina, E., Gourdon, J., and Kee, H. (2011) "Anatomy of Nonoil Export Growth in the Middle East and North Africa Region," paper presented at the 14th Annual Conference on Global Economic Analysis, Venice, Italy.

Ianchovichina, E. and Kee, H. (2012) "How Restrictive are NTMs in MENA? New Evidence from Select Countries," mimeo.

Konan, D. (2003) “Alternative Paths to Prosperity: Economic Integration among Arab Countries,” in Galal and Hoekman (eds.) *Arab Economic Integration between Hope and Reality*. Washington DC: Brookings Institution.

Rijkers, B., Freund, C. and Nicifora, A. (2014) “All in the Family: State Capture in Tunisia,” World Bank Policy Research Working Paper No. 6810, the World Bank, Washington DC.

Rosotto, C., Sekkat, K., and Varoudakis, A. (2005) “Opening Up Telecommunications to Competition and MENA Integration in the World Economy,” *Journal of International Development* 17.

Testas, A. (1998) “The Significance of Trade Integration among Developing Countries: A Comparison between ASEAN and AMU,” *Journal of Economic Development* 23(1): 117-30.

Testas, A. (2002) “The Advantage of an Intra-Maghreb Free Trade Area: Quantitative Estimates of the Static and Dynamic Output and Welfare Effects,” *Journal of North African Studies* 7(1): 99-108.

Walmsley, T., Hertel, T. and Ianchovichina, E. (2006) “Assessing the Impact of China’s WTO Accession on Investment,” *Pacific Economic Review* 11(3): 315-39.

World Bank (2013) *Over the Horizon: A New Levant*, World Bank, Washington DC.

Zarrouk, J. (2003) “A Survey of Barriers to trade and Investment in Arab Countries,” in Galal and Hoekman (eds) *Arab Economic Integration between Hope and Reality*. Washington DC: Brookings Institution.

Appendix A: Bilateral Tariff Protection in the Middle East and North Africa

Appendix Table A1: Data sources for tariff duties

Importing country	Egypt, Arab Republic of	Tunisia	Morocco	Yemen	West Bank and Gaza
Exporting source					
Morocco	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 81.51 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 18.49 % coverage	WITS&WTO (non-MFN rates) 99.99 % coverage		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Jordan	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 54.54 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 43.41 % coverage; WITS (Inferred from exports, 2007)&WTO (MFN rates) 2.05 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 97.02 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 2.98 % coverage
West Bank and Gaza	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 60.64 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 39.36 % coverage		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	
Turkey	WITS (Inferred from exports, 2007)&Reciprocal (WITS (Inferred from exports)) 30.96 % coverage; WITS (Inferred from exports)&WTO (non-MFN rates) 28.71 % coverage; WITS (Imports, 2008)&WTO (MFN rates) 21.73 % coverage; WITS (Inferred from exports)&WTO (MFN rates) 10.72 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 6.77 % coverage; WITS (Imports, 2008)&Reciprocal (WITS (Imports, 2008)) 1.06 % coverage	WITS&WTO (MFN rates) 57.26 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 42.74 % coverage	WITS&WTO (non-MFN rates) 77.25 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 21.45 % coverage; WITS&WTO (MFN rates) 1.31 % coverage	WITS&GTAP 92.03 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 7.97 % coverage	WITS&GTAP 87.61 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 12.39 % coverage
Syrian Arab Republic	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 66.89 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 33.1 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	
Gulf Cooperation Council	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 93.87 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 5.86 % coverage	WITS&WTO (non-MFN rates) 99.99 % coverage	WITS&WTO (non-MFN rates) 99.96 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 99.72 % coverage
Egypt, Arab Republic of		WITS&WTO (non-MFN rates) 99.99 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Libya	WITS (Imports, 2008)&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	
Tunisia	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 73.71 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 26.29 % coverage		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
European Union	WITS (Inferred from exports, 2007)&Reciprocal (WITS (Inferred from exports, 2007)) 38.47 % coverage; WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 37.16 % coverage; WITS (Inferred from exports, 2007)&WTO (MFN rates) 23.1 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 0.59 % coverage	WITS&Reciprocal (WITS (Imports, 2007)) 67.5 % coverage; WITS&WTO (MFN rates) 32.5 % coverage	WITS&Reciprocal (WITS (Imports, 2007)) 53.67 % coverage; WITS&WTO (non-MFN rates) 45.29 % coverage; WITS&WTO (MFN rates) 1.04 % coverage	WITS&GTAP 81.38 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 18.62 % coverage	WITS&GTAP 67.24 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 32.76 % coverage
Iraq	WITS (Imports, 2008)&WTO (non-MFN rates) 100 % coverage		WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	
Yemen	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 90.75 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 9.25 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage		
Lebanon	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 71.2 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 28.79 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Algeria	WITS (Inferred from exports, 2007)&WTO (non-MFN rates) 97.96 % coverage; WITS (Imports, 2008)&WTO (non-MFN rates) 2.04 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	

Note: Unless specified otherwise, all information from WITS refers to imports for 2007.

Appendix Table A2: Data sources for tariff duties (contd.)

Importing country / Export source	Algeria	Libya	European Union	Gulf Cooperation Council
Morocco	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&EUROSTAT 91.89 % coverage; WITS&GTAP 4.47 % coverage; WITS&WTO (MFN rates) 3.62 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Jordan	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&EUROSTAT 96.39 % coverage; WITS&GTAP 2.24 % coverage; WITS&WTO (MFN rates) 1.37 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
West Bank and Gaza	WITS&WTO (non-MFN rates) 100 % coverage		WITS&WTO (MFN rates) 47.9 % coverage; WITS&EUROSTAT 41.1 % coverage; WITS&GTAP 11.01 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Turkey	WITS&WTO (MFN rates) 80.99 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 19.01 % coverage	WITS&Country sources 100 % coverage	WITS&EUROSTAT 90.83 % coverage; WITS&WTO (MFN rates) 8.89 % coverage	WITS&WTO (MFN rates) 80.76 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 19.17 % coverage
Syrian Arab Republic	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (MFN rates) 80.78 % coverage; WITS&EUROSTAT 16.5 % coverage; WITS&GTAP 2.72 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Gulf Cooperation Council	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (MFN rates) 98.36 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 1.62 % coverage	WITS&WTO (non-MFN rates) 99.13 % coverage; WITS&WTO (MFN rates) 0.87 % coverage
Egypt, Arab Republic of	WITS&WTO (non-MFN rates) 99.17 % coverage; WITS&WTO (MFN rates) 0.83 % coverage	WITS&WTO (non-MFN rates) 99.99 % coverage	WITS&EUROSTAT 97.48 % coverage; WITS&WTO (MFN rates) 1.65 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 0.57 % coverage	WITS&WTO (non-MFN rates) 99.99 % coverage
Libya	WITS&WTO (non-MFN rates) 100 % coverage		WITS&WTO (MFN rates) 89.44 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 10.55 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Tunisia	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&EUROSTAT 95.3 % coverage; WITS&GTAP 3.85 % coverage; WITS&WTO (MFN rates) 0.85 % coverage	WITS&WTO (non-MFN rates) 99.97 % coverage
European Union	WITS&WTO (MFN rates) 51.36 % coverage; WITS&Reciprocal (WITS (Imports, 2007)) 48.64 % coverage	WITS&Country sources 100 % coverage	WITS&WTO (MFN rates) 96.56 % coverage; WITS&GTAP 3.44 % coverage	WITS&Reciprocal (WITS (Imports, 2007)) 51.6 % coverage; WITS&WTO (MFN rates) 48.09 % coverage
Iraq	WITS&WTO (non-MFN rates) 100 % coverage		WITS&WTO (MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Yemen	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (MFN rates) 99.92 % coverage	WITS&WTO (non-MFN rates) 100 % coverage
Lebanon	WITS&WTO (non-MFN rates) 100 % coverage	WITS&WTO (non-MFN rates) 100 % coverage	WITS&EUROSTAT 90.64 % coverage; WITS&WTO (MFN rates) 7.27 % coverage; WITS&GTAP 2.08 % coverage	WITS&WTO (non-MFN rates) 99.98 % coverage
Algeria		WITS&WTO (non-MFN rates) 100 % coverage	WITS&EUROSTAT 99.42 % coverage; WITS&WTO (MFN rates) 0.56 % coverage	WITS&WTO (non-MFN rates) 100 % coverage

Note: Unless specified otherwise, all information from WITS refers to imports for 2007.

Appendix Table A3: Turkey's tariff protection by source and product

Commodity	Primary agriculture	Food processing	Gas extraction and distribution	Oil extraction	Oth. natural resource extraction	Petroleum, coal products	Electricity generation & distribution	Chemical industry	Textiles and apparel	Resource-based manu-facturing	Equipment, vehicles and machinery	Metal products	Other manu-factures	Total
Morocco	25%	24%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Jordan	67%	3%	0%	0%	0%	0%	0%	1%	3%	0%	0%	0%	0%	1%
West Bank and Gaza	0%	55%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Syrian Arab Republic	10%	24%	0%	0%	0%	4%	0%	4%	6%	9%	2%	0%	2%	3%
Gulf Cooperation Council	1%	62%	0%	0%	0%	0%	0%	3%	5%	1%	0%	1%	0%	1%
Egypt, Arab Republic of	6%	43%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%
Libya	0%	0%	0%	0%	1%	0%	0%	0%	0%	4%	0%	1%	0%	0%
Tunisia	13%	34%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
European Union	13%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Iraq	11%	12%	0%	0%	0%	0%	0%	1%	6%	1%	0%	1%	0%	0%
Iran	37%	35%	0%	0%	1%	0%	0%	2%	5%	1%	3%	0%	0%	0%
Yemen	84%	38%	0%	0%	0%	1%	0%	0%	12%	8%	2%	4%	0%	51%
Lebanon	0%	16%	0%	0%	0%	0%	0%	1%	7%	0%	1%	3%	1%	1%
Algeria	2%	5%	0%	0%	0%	0%	0%	0%	4%	1%	0%	1%	0%	0%
China	17%	49%	0%	0%	0%	0%	0%	2%	5%	3%	0%	0%	0%	2%
India	5%	54%	0%	0%	1%	0%	0%	1%	4%	1%	2%	1%	0%	3%
Japan	18%	47%	0%	0%	0%	4%	0%	4%	5%	2%	4%	3%	5%	4%
Latin America	35%	28%	0%	0%	1%	0%	0%	1%	2%	1%	1%	1%	4%	8%
Newly industrialized countries	21%	31%	0%	0%	0%	4%	0%	4%	7%	1%	3%	3%	25%	4%
Sub-Saharan Africa	8%	21%	0%	0%	0%	0%	0%	1%	5%	1%	1%	0%	0%	2%
Rest of Asia	75%	21%	0%	0%	0%	0%	0%	1%	5%	2%	2%	0%	0%	5%
Rest of Europe and FSU	22%	35%	0%	0%	0%	0%	0%	4%	4%	0%	0%	0%	0%	6%
Rest of OECD	5%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%
Russian Federation	30%	23%	0%	0%	0%	0%	0%	5%	2%	0%	1%	0%	0%	2%
USA	12%	20%	0%	0%	0%	3%	0%	2%	7%	0%	2%	2%	306%	6%

Appendix Table A4: Egypt's tariff protection by source and product

Commodity	Primary agriculture	Food processing	Gas extraction and distribution	Oil extraction	Oth. natural resource extraction	Petroleum, coal products	Electricity generation & distribution	Chemical industry	Textiles and apparel	Resource-based manufa-cturing	Equipment, vehicles and machinery	Metal products	Other manu-factures	Total
Morocco	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Jordan	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
West Bank and Gaza	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turkey	1%	9%	0%	0%	0%	0%	0%	2%	3%	3%	1%	4%	3%	2%
Syrian Arab Republic	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Gulf Cooperation Council	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Libya	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tunisia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
European Union	0%	53%	1%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	2%
Iraq	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Iran	8%	7%	0%	0%	2%	5%	0%	2%	20%	11%	15%	12%	0%	6%
Yemen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lebanon	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Algeria	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
China	10%	31%	0%	0%	2%	11%	0%	8%	29%	25%	9%	16%	15%	16%
India	10%	6%	0%	5%	4%	5%	0%	6%	15%	14%	14%	13%	21%	10%
Japan	3%	9%	0%	0%	2%	5%	0%	9%	13%	12%	23%	11%	20%	19%
Latin America	3%	5%	0%	0%	1%	9%	0%	9%	16%	10%	8%	14%	9%	6%
Newly industrialized countries	15%	5%	0%	0%	0%	7%	0%	6%	16%	13%	20%	13%	15%	15%
Sub-Saharan Africa	1%	218%	1%	0%	2%	6%	0%	2%	17%	8%	13%	13%	5%	21%
Rest of Asia	9%	11%	0%	0%	2%	6%	0%	11%	16%	14%	15%	15%	20%	12%
Rest of Europe and FSU	2%	4%	0%	1%	2%	5%	0%	2%	13%	6%	6%	11%	5%	2%
Rest of OECD	2%	17%	0%	0%	1%	4%	0%	10%	17%	9%	7%	12%	13%	9%
Russian Federation	2%	3%	0%	0%	0%	5%	0%	3%	12%	6%	11%	11%	16%	3%
USA	2%	9%	0%	0%	1%	8%	0%	8%	15%	8%	6%	12%	16%	5%

Appendix Table A5: Lebanon's tariff protection by source and product

Commodity	Primary agriculture	Food processing	Gas extraction and distribution	Oil extraction	Other natural resource extraction	Petroleum, coal products	Electricity generation & distribution	Chemical industry	Textiles and apparel	Resource-based manufa-cturing	Equipment, vehicles and machinery	Metal products	Other manu-factures	Total
Morocco	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Jordan	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
West Bank and Gaza	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Turkey	4%	12%	0%	5%	0%	3%	0%	6%	4%	6%	6%	5%	4%	5%
Syrian Arab Republic	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Gulf Cooperation Council	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Egypt, Arab Republic of	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Libya	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tunisia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
European Union	2%	7%	0%	4%	1%	4%	0%	4%	3%	3%	3%	4%	1%	4%
Iraq	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Iran	5%	7%	0%	5%	2%	2%	0%	6%	5%	4%	5%	5%	5%	5%
Yemen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Algeria	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
China	15%	14%	0%	5%	2%	0%	0%	7%	4%	15%	7%	6%	7%	7%
India	4%	4%	0%	5%	3%	2%	0%	6%	4%	12%	4%	6%	0%	3%
Japan	24%	14%	0%	5%	0%	2%	0%	4%	4%	4%	7%	5%	6%	7%
Latin America	2%	4%	0%	5%	3%	5%	0%	5%	6%	7%	6%	6%	2%	3%
Newly industrialized countries	5%	12%	0%	5%	2%	6%	0%	3%	2%	5%	9%	5%	4%	6%
Sub-Saharan Africa	6%	20%	1%	5%	0%	0%	0%	1%	5%	1%	5%	4%	5%	3%
Rest of Asia	6%	7%	0%	5%	1%	2%	0%	5%	3%	11%	9%	6%	4%	7%
Rest of Europe and FSU	3%	5%	0%	5%	0%	2%	0%	5%	5%	4%	5%	6%	7%	3%
Rest of OECD	3%	5%	0%	5%	3%	2%	0%	1%	3%	3%	5%	5%	3%	2%
Russian Federation	1%	11%	0%	5%	0%	2%	0%	5%	6%	1%	6%	5%	3%	1%
USA	1%	6%	0%	5%	2%	2%	0%	5%	3%	2%	5%	5%	3%	3%

Appendix Table A6: Jordan's tariff protection by source and product

Commodity	Primary agriculture	Food processing	Gas extraction and distribution	Oil extraction	Other natural resource extraction	Petroleum, coal products	Electricity generation & distribution	Chemical industry	Textiles and apparel	Resource-based manufa-cturing	Equipment, vehicles and machinery	Metal products	Other manu-factures	Total
Morocco	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
West Bank and Gaza	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turkey	7%	47%	30%	5%	12%	0%	0%	5%	7%	7%	9%	4%	6%	9%
Syrian Arab Republic	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Gulf Cooperation Council	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Egypt, Arab Republic of	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Libya	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tunisia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
European Union	1%	5%	30%	0%	1%	0%	0%	4%	2%	2%	1%	4%	1%	2%
Iraq	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Iran	25%	20%	30%	5%	3%	13%	0%	6%	20%	11%	7%	11%	30%	16%
Yemen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lebanon	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Algeria	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
China	18%	8%	30%	5%	6%	7%	0%	7%	5%	19%	8%	12%	25%	8%
India	24%	7%	30%	8%	2%	10%	0%	2%	8%	13%	3%	10%	25%	7%
Japan	0%	11%	30%	10%	0%	10%	0%	6%	1%	7%	8%	16%	24%	7%
Latin America	6%	9%	30%	5%	25%	10%	0%	7%	2%	6%	8%	17%	18%	8%
Newly industrialized countries	0%	10%	30%	5%	17%	10%	0%	3%	2%	12%	7%	10%	7%	6%
Sub-Saharan Africa	7%	100%	30%	5%	10%	10%	0%	2%	3%	5%	13%	14%	24%	54%
Rest of Asia	3%	4%	30%	5%	9%	10%	0%	8%	4%	7%	11%	9%	16%	8%
Rest of Europe and FSU	1%	11%	30%	5%	0%	11%	0%	4%	20%	0%	2%	15%	30%	3%
Rest of OECD	5%	23%	30%	5%	15%	10%	0%	3%	6%	10%	7%	3%	15%	9%
Russian Federation	0%	48%	30%	5%	0%	29%	0%	0%	30%	1%	17%	8%	30%	0%
USA	2%	4%	19%	5%	2%	10%	0%	3%	7%	2%	4%	13%	12%	4%

Appendix Table A7: Syrian Arab Republic's tariff protection by source and product

Commodity	Primary agriculture	Food processing	Gas extraction and distribution	Oil extraction	Other natural resource extraction	Petroleum, coal products	Electricity generation & distribution	Chemical industry	Textiles and apparel	Resource-based manufa-cturing	Equipment, vehicles and machinery	Metal products	Other manufactures	Total
Morocco	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Jordan	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
West Bank and Gaza	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Turkey	4%	13%	5%	0%	1%	3%	0%	5%	7%	4%	8%	6%	6%	5%
Gulf Cooperation Council	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Egypt, Arab Republic of	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Libya	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tunisia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
European Union	3%	13%	5%	0%	5%	9%	0%	5%	11%	5%	14%	12%	10%	9%
Iraq	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Iran	18%	23%	5%	0%	6%	9%	0%	6%	13%	23%	25%	6%	5%	18%
Yemen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lebanon	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Algeria	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
China	6%	17%	5%	0%	5%	6%	0%	5%	13%	18%	16%	13%	10%	11%
India	18%	7%	5%	5%	5%	9%	0%	4%	8%	10%	10%	10%	7%	8%
Japan	1%	28%	5%	0%	3%	5%	0%	6%	12%	1%	28%	9%	17%	24%
Latin America	7%	8%	5%	0%	1%	9%	0%	6%	7%	1%	22%	12%	6%	8%
Newly industrialized countries	5%	4%	5%	0%	3%	9%	0%	3%	9%	2%	30%	9%	8%	21%
Sub-Saharan Africa	7%	14%	5%	0%	3%	8%	0%	9%	7%	6%	23%	9%	24%	7%
Rest of Asia	7%	7%	5%	0%	2%	9%	0%	5%	9%	4%	25%	14%	8%	9%
Rest of Europe and FSU	4%	2%	5%	0%	1%	9%	0%	2%	11%	3%	13%	23%	25%	2%
Rest of OECD	1%	8%	5%	0%	1%	9%	0%	2%	7%	3%	9%	12%	25%	7%
Russian Federation	3%	3%	5%	0%	0%	9%	0%	2%	21%	2%	15%	7%	24%	8%
USA	2%	12%	5%	0%	3%	5%	0%	4%	7%	4%	14%	6%	26%	3%

Appendix Table A8: Iraq's tariff protection by source and product

Commodity	Primary agriculture	Food processing	Gas extraction and distribution	Oil extraction	Other natural resource extraction	Petroleum, coal products	Electricity generation & distribution	Chemical industry	Textiles and apparel	Resource-based manufa-cturing	Equipment, vehicles and machinery	Metal products	Other manufa-ctures	Total
Morocco	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Jordan	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
West Bank and Gaza	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Turkey	6%	17%	0%	10%	13%	5%	10%	9%	15%	14%	11%	12%	8%	12%
Syrian Arab Republic	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Gulf Cooperation Council	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Egypt, Arab Republic of	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Libya	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Tunisia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
European Union	5%	22%	10%	8%	13%	5%	10%	7%	13%	12%	8%	11%	12%	9%
Iran	8%	43%	10%	9%	2%	10%	10%	6%	19%	11%	17%	11%	3%	15%
Yemen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lebanon	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Algeria	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
China	2%	14%	10%	1%	19%	5%	10%	9%	17%	19%	16%	11%	16%	15%
India	10%	11%	10%	1%	6%	5%	10%	9%	18%	15%	9%	11%	26%	9%
Japan	75%	47%	10%	10%	1%	5%	10%	9%	13%	12%	14%	9%	22%	14%
Latin America	8%	15%	10%	1%	4%	4%	10%	9%	7%	19%	9%	15%	30%	14%
Newly industrialized countries	3%	26%	10%	1%	3%	7%	10%	9%	24%	11%	13%	9%	8%	16%
Sub-Saharan Africa	14%	28%	10%	1%	1%	6%	10%	11%	9%	17%	10%	8%	16%	10%
Rest of Asia	10%	13%	10%	1%	2%	6%	10%	9%	18%	16%	20%	10%	16%	14%
Rest of Europe and FSU	10%	21%	10%	1%	2%	4%	10%	5%	21%	13%	11%	7%	9%	7%
Rest of OECD	1%	15%	10%	1%	1%	5%	10%	5%	7%	8%	8%	8%	18%	3%
Russian Federation	6%	80%	10%	7%	0%	7%	10%	3%	19%	5%	12%	7%	3%	8%
USA	2%	7%	10%	10%	3%	5%	10%	10%	7%	14%	10%	13%	13%	7%

Appendix Table B1: Regional and Industry Aggregation

Economies/regions	GTAP region	Industry	GTAP commodity
1. Turkey (TUR)	Turkey	1. Primary agriculture (PRIMAGRI)	PDR, WHT, GRO, V_F, OSD, C_B, PFB, OCR, CTL, OAP, RMK, WOL, FRS, FSH
2. Egypt (EGY)	Egypt	2. Food processing (FOODPROC)	CMT, OMT, VOL, MIL, PCR, SGR, OFD, B_T,
3. Jordan (JOR)	from Rest of Western Asia	3. Gas extraction and distribution (GASDISTR)	Gas, GDT
4. West Bank & Gaza (PSE)	from Rest of Western Asia	4. Oil extraction	Oil
5. Lebanon (LBN)	from Rest of Western Asia	5. Water	WTR
6. Syria (SYR)	from Rest of Western Asia	6. Other natural resource extraction (OTHNATRE)	COA and OMN
7. Iraq (IRQ)	From Rest of Western Asia	7. Petroleum, coal products	P_C
8. Iran (IRN)	Iran	8. Electricity generation and distribution	ELY
9. Yemen (YEM)	from Rest of Western Asia	9. Chemical industry and metallurgy (CHEMMETA)	CRP, NMM, I_S, NFM
10. GCC (GCCC)	Kuwait, Qatar, Bahrain, Saudi Arabia, UAE, and Oman	10. Textiles and apparel (TEXTAPPA)	TEX, APP
11. Morocco (MAR)	Morocco	11. Resource based manufacturing (RESBAMAN)	LEA, LUM, PPP,
12. Tunisia (TUN)	Tunisia	12. Equipment, vehicles and machinery (EQUIVEHI)	ELE, OME, MVH, OTN,
13. Libya (LBY)	from Rest of North Africa	13. Metal products	FMP
14. Algeria (DZA)	From Rest of North Africa	14. Other manufactures	OMF
15. EU27 (EU27)	All 27 member states, XNA (all EU member territories), XTW (all except Antarctica are EU territories)	15. Construction	CNS
16. USA (USA)	USA	16. Transport	OTP, WTP, ATP
17. Japan (JPN)	Japan	17. Trade	TRD
18. NIEs (NIES)	Korea, Hong Kong (China), Singapore, Taiwan (China)	18. Communication	CMN
19. China (CHN)	China	19. Finance, Insurance, Real Estate	OFI, DWE, ISR
20. India (IND)	India	20. Public services	OSG
21. Russia (RUS)	Russia	21. Business services	OBS
22. Rest of Asia (RASI)	Rest of East Asia (XOC, Mongolia, XEA, KHM, IDN, LAO, MYS, PHL, THA, VNM, XSE) and Rest of South Asia (BGD, NPL, PAK, LKA, XSA)	22. Tourism and other services	ROS
23. SSA (AFRC)	All countries in SSA		
24. LAC (LATA)	All countries in LAC (including XSM, XCA, XCB)		
25. Rest of OECD (OECD)	Australia, New Zealand, Canada, Switzerland, XEF		
26. Rest of Europe & FSU (EFSO)	Albania, Belarus, Croatia, UKR, XER, KAZ, KGZ, XSU, ARM, AZE, GEO		