Economic Effects of the Syrian War and the Spread of the Islamic State on the Levant

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1. INTRODUCTION

On the eve of the Arab Spring, six countries in the greater Levant – Turkey, the Syrian Arab Republic, Iraq, Jordan, Lebanon and the Arab Republic of Egypt – were considering reforms that would have deepened their trade ties and accelerated economic growth, diversification and job creation. Specific attention was placed on liberalising agricultural trade with Turkey, reducing the restrictiveness of non-tariff measures, improving transport logistics and liberalising intra-Levant trade in services. These reforms were considered essential for stimulating regional trade and were the main components of a reform package that would have been negotiated and implemented as part of a new Levant economic zone (World Bank, 2014).\textsuperscript{1} The negotiations of a regional trade agreement among Turkey, Syria, Jordan and Lebanon were particularly advanced as reflected in the Joint Declaration on Establishing Close Neighbors Economic and Trade Association Council (CNETAC), signed in July 2010 (Aydin and Yanar, 2011; World Bank, 2014).\textsuperscript{2}

In 2011, however, many of the Arab countries embarked on political transitions that took priority over other issues. In Syria, initial demonstrations quickly turned into an uprising which grew into a civil war and resulted in widespread devastation with spillovers to neighbouring countries. This war and the subsequent advance of the Islamic State of Iraq and Syria (ISIS) – collectively referred to in this paper as the Levant conflict or war – imposed enormous human, social and economic costs and halted the regional trade integration process, thus undermining development with serious implications for the future of the Levant.

Despite the attention given to the Levant war, this is the first paper to undertake a systematic general equilibrium assessment of the war’s regional and country-specific economic effects, factoring in both the effects of war and the associated disintegration of regional trade. The paper is related to and combines features of two distinct literatures – on trade reform and...
restrictions (Trela and Whalley, 1990; De Melo and Winters, 1993; Yang et al., 1997; Ianchovichina and Martin, 2004; Anderson et al., 2006; Walmsley et al., 2006) and on natural disasters and wars (Grobar and Gnanselvam, 1993; Collier, 1999; Rose and Liao, 2005; Okuyama, 2007). Grobar and Gnanselvam (1993) use a case study approach relying on national accounts data to examine the economic effects of the Sri Lankan civil war and the potential future costs associated with a continuation of the conflict. Collier (1999), who provides an ex post assessment of all civil wars between 1960 and 1990, finds that war affects not only the level but also the composition of economic activity, especially for manufacturing and some service sectors in Uganda. Input–output (IO) models, as in Rose et al. (1997), are the most widely used modelling tools for ex ante assessments of the higher-order effects of both natural and man-made disasters. The popularity of these models is based mainly on their ability to reflect the interdependencies within a regional economy and their simplicity, but they have rigid structure with respect to substitution among inputs and imports. These models also lack explicit resource constraints and responsiveness to price changes (Rose, 2004).

Unlike these approaches for evaluation of disasters, this paper relies on a global computable general equilibrium (CGE) framework, documented in Hertel (1997). The model, discussed in the next section, is well suited for analysis of disasters as well as global, regional and country-specific trade liberalisation agreements. It offers advantages in terms of ensuring consistency through explicit constraints while including important sectoral detail, such as input and import substitutability and price responsiveness.

Although widely used and comprehensive in many ways, the GTAP 8 database has insufficient information on the Levant economies. Therefore, we modify the database and add to it input–output, trade and protection data on Lebanon, Syria, Iraq, Jordan and several other Middle East and North African (MENA) economies, including West Bank and Gaza, Yemen, Algeria and Libya. This major modification required balancing both bilateral trade flows and macroeconomic country aggregates in the global database and was warranted in order to reflect accurately the regional spillover effects of the Levant war. We also adjusted trade preferences in all MENA countries in order to reflect accurately existing global, regional and bilateral trade agreements and avoid overestimating the trade-related effects of foregone reforms.

Simulation results reported in the paper indicate the qualitative changes likely to occur as a result of the conflict and regional trade disintegration, while the magnitudes of the direct war effects reflect the intensity and scope of the conflict as of mid-2014. The results suggest that Syria and Iraq bear the brunt of the direct war costs, losing 14 and 16 per cent in per capita welfare, respectively. The embargo on trade with Syria is a major factor behind this country’s real GDP decline, which is estimated at 30 per cent and is much larger than its per capita output decline of 13 per cent, due to the effect of Syrian refugees and war casualties on the population size. All other Levant economies lose in per capita terms, but not in aggregate terms because the inflows of refugees boost the number of people living in these countries, and therefore aggregate consumption, investment and labour supply. Lebanon’s per capita welfare losses are largest and reach close to 11 per cent, while those of Turkey, Egypt and Jordan do not surpass 1.5 per cent. The difference between aggregate and per capita welfare effects are most pronounced in Lebanon, where the increase in the refugee-to-citizen ratio is greatest, and minimal for Turkey and Egypt, where refugees account for a small share of the population.

The direct effects of the Levant war are an understatement of the real economic costs of the Levant conflict. Recall that these countries were embarking on a process of regional trade
integration just before the outbreak of war. In other words, if the war had not happened, regional trade integration would have proceeded as envisioned in the Joint Declaration on CNETAC. If the foregone benefits of this integration, especially those associated with failed services liberalisation, are included, then the total costs of war for Syria and Iraq are almost double, reaching 23 and 28 per cent, respectively, and increase to 10 per cent for Egypt and 9 per cent for Jordan. Furthermore, the average welfare effects are not indicative of the distributional effects of the war within countries. In Syria, all economic groups are hurt but landowners lose the most as people abandon their homes and farms in search of security. By contrast, in Lebanon and Turkey, land and capital owners benefit while workers lose because the large number of refugees put pressure on demand and augments labour supply.

The remainder of this paper is structured as follows. Section 2 presents the features of the CGE model and the data modifications. Section 3 discusses the simulation design, including the main features of the pre-war plans for trade integration reforms and the war scenario. Section 4 presents the simulation results focusing on welfare, sectoral outputs and factor prices. Finally, we summarise and offer concluding remarks in Section 5.

2. FEATURES OF THE CGE MODEL AND DATA MODIFICATIONS

The multicountry, multisector CGE model, used in this paper and documented in Hertel (1997), is widely used for quantitative, ex ante investigations of the effects of trade reform and restrictions and well suited for disaster assessment, especially those with regional spillover effects. In this model, firms in each country are differentiated by sector and are assumed to 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 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 countries. Land, physical capital, skilled and unskilled labour, 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 and has an 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 behavioural linkages constrain outcomes in ways not possible in other types of models. Each country’s exports of a particular good equal total imports of this good in other countries, net of shipping costs; global investment equals global savings; aggregate output determines aggregate income in each country; global supply and demand for individual goods balance; demand equals supply for each factor in a country; increases in total factor productivity which raise competitiveness also raise factor prices and help offset the original increase in competitiveness. The results obtained with the general equilibrium model are indicative of medium-term outcomes as returns adjust to changes in economic conditions, and factor inputs are perfectly mobile across sectors but not across countries. However, the model permits cross-border labour mobility reflecting cross-border refugee flows.

The global CGE model used in the paper allows for interaction of markets which could lead to significant non-linearities and sizable feedback effects in response to equilibrium price changes, even when underlying preferences and production processes are well behaved. Thus,
simpler linear approaches would misstate the ‘true’ effects of war as they will not capture the pure general equilibrium effects of war. Appendix C discusses in detail the importance of the pure general equilibrium effects of the Levant war.

The paper extends the GTAP 8 database by separating Lebanon, Jordan, Syria, Iraq and West Bank and Gaza from the rest of the Western Asia aggregate and Algeria and Libya from the rest of North Africa. Kuwait, Qatar, Bahrain, Saudi Arabia, UAE and Oman are aggregated into a GCC composite group. In addition, the 57 sectors in the GTAP 8 database are aggregated into 22 sectors based on their importance for the countries in the MENA region (Table 1). The resulting MENA-specific database contains 26 countries, including the six Levant economies of interest in this paper (Turkey, Lebanon, Syria, Iraq, Jordan and Egypt) and the rest of the developing MENA countries (Table 1).

The procedure used to construct the individual country information employs data from several sources. The UN Statistics Division data for 2007 is the source for the six components of GDP – 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). We sourced bilateral trade value data from WITS and bilateral tariff data from a medley of sources, presented in Appendix Table A1.

As part of this procedure, all entries pertaining to the two composite regions (rest of Western Asia and rest of Northern Africa) were split and assigned the split values to the newly created economies, while all entries for the two composite regions were removed from the GTAP 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 Table 1. For internal consistency purposes, the required accounting relationships were imposed on the split database using iterative proportional fitting and the procedure was repeated until the database was balanced and consistent with all external targets.

Another important modification was the implementation of the Pan-Arab Free Trade Area (PAFTA), the bilateral preferences associated with the Euromed Association Agreements (AAs), and the bilateral FTAs with Turkey into the tariff rate structure of the GTAP 8 database. 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, Eurostat (see Appendix Table A1). 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

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3 PAFTA led to the removal of tariffs on intra-regional trade in manufactured and agricultural products in the mid-2000s.

4 During the 2000s, most MENA countries negotiated these agreements with the objective of extending the free trade area created by PAFTA to the North by including two major markets and potential locomotives of growth – the European Union (EU) and Turkey.
| 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, Arab Rep. (EGY) | Egypt, Arab Rep. | 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 and Gaza (PSE) | From rest of Western Asia | 4. Oil extraction | Oil |
| 5. Lebanon (LBN) | From rest of Western Asia | 5. Water | WTR |
| 6. Syrian Arab Republic (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, United Arab Emirates 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. EU-27 (EU-27) | 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, Rep.; Hong Kong SAR, 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 |
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 22 sectors in the paper using bilateral import data from WITS for 2007. Whenever such data were not available, import values were inferred from export values for 2007 or from WITS data for 2008.

These tariff rate modifications were essential for our analysis as suggested by the substantial differences between the tariff rates available in the GTAP 8 database and the updated tariff rates, presented by country, product and source in Appendix Tables B1–B6, especially in the cases of Jordan, Iraq, Lebanon and Syria (Figure 1). Since the GTAP tariffs attributed to Jordan, Iraq, Lebanon and Syria are composite rates, they do not correspond to the actual trade profile of these countries. Therefore, the new tariff rates differ from the GTAP ones both because of differences in the tariff lines and trade composition. By contrast, the tariff information on Egypt and Turkey in the GTAP 8 database represents relatively accurately existing preferences (Figure 1).

### 3. SIMULATION DESIGN

The pre-war efforts for deeper trade integration in the Levant are reflected in the pre-simulation analysis. Starting from the newly constructed database, the pre-simulation analysis implements the deep trade initiatives discussed by the Levant countries prior to the onset of the Syrian war in 2011. The context for these reforms and the shocks associated with each of these reforms are presented in Section 3a. The updated database from the pre-simulation analysis, which represents the Levant in a peaceful alternative world, is the starting point for the simulation analysis of the Syrian conflict and the spread of ISIS as well as the disintegration of the deep regional trade ties. Using this starting point is appropriate since if the war had not occurred, regional trade integration would have proceeded as envisioned in the Joint Declaration on CNETAC. The design of the war and disintegration scenarios are presented in Section 3b.

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5 This year was chosen in order to match the benchmark year of the GTAP 8 database.
FIGURE 1
GTAP 8 Database and Modified Protection Rates in the Levant Countries

Importing Country: Iraq
- New Rate
- GTAP Rate

Importing Country: Jordan
- New Rate
- GTAP Rate

Importing Country: Lebanon
- New Rate
- GTAP Rate

Importing Country: Syrian Arab Republic
- New Rate
- GTAP Rate

Importing Country: Egypt Arab Republic
- New Rate
- GTAP Rate

Importing Country: Turkey
- New Rate
- GTAP Rate

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a. Construction of the Pre-Simulation Database

On the eve of the Arab Spring, the Levant economies were eager to move forward with plans for a new Levant Economic Zone (LEZ) which would have enforced deep trade concessions and therefore generated potentially bigger gains than those associated with past shallow trade agreements. It would have removed tariffs on agricultural and processed foods trade between Turkey and the five Levant countries and would have liberalised transport and trade in other services within the LEZ. Reforms were aimed at addressing the constraints to a strong supply response by reducing the negative effect of public monopolies in key service sectors, harmonising business and investment climate rules and regulations, especially those governing investments in services, improving domestic and cross-border infrastructure and logistics and the implementation capacity in junior partner countries. These reforms would have enabled convergence towards best practices and would have advanced private sector development in the greater Levant area.

Importantly, the regional trade 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 Turkey’s pre-existing agreements. Turkey would have been unable to make further concessions on manufactured goods’ tariffs because of its customs union with the European Union. Therefore, it was assumed that other Levant countries would be reluctant to open further their markets for manufactured imports from Turkey. However, because the customs union excludes agricultural trade, Turkey would have been able to remove or significantly reduce its agricultural and food tariffs on trade within the Levant. The concessions would have been sizable as tariffs on Turkey’s imports of agricultural goods and processed foods from many of the Levant economies were much higher than tariffs on manufactured imports from these same countries (see Appendix Table A1).

This momentum for deep trade reform is reflected in the pre-simulation scenario in the following way. Tariffs on imported food and agricultural products are set to zero in the six Levant economies. Any tariff revenue loss due to this reform is assumed to be compensated by a consumption tax increase so as to keep the tax revenue constant as a share of income. Improvements in transport logistics are assumed to result in cost reductions associated with a more efficient process of shipping goods within the Levant area. The shocks are proportionate to the reductions needed to bring down the transport cost of a standard container unit exported to and from these countries to those of the lowest cost developing country in the Mediterranean Basin.

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6 In MENA, the benefits of trade liberalisation, involving mainly tariff removal on manufactured goods, have been limited (Al-Atrash and Yousef, 2000; Freund and Portugal-Perez, 2012; Testas, 1998, 2002). Konan (2003) and Ben Hammouda et al. (2006) argued that the benefits would increase with deepening of the commitments, especially the opening of the services sectors. Barriers to trade in services were higher than in economies with similar incomes in other parts of the world (Hoekman and Sekkat, 2010) and their removal was expected to lead to a significant productivity boost in services and the broader economy (Hoekman and Messerlin, 2001).

7 See, for example, studies by Hoekman and Zarrouk (2000) and Rosotto et al. (2005).

8 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 per cent of the value of transported cargo. Prohibitions, arbitrary changes in documentary requirements, surcharges and discriminatory taxes imposed severe costs on intra-Arab trade.

9 Recent assessments suggest that progress has been made in terms of reducing the frequency and restrictive power of non-tariff measures (NTMs) (Augier et al., 2012).
Information on transport costs comes from the World Bank’s 2014 Doing Business database.\textsuperscript{10} In the case of exporting a container, Morocco was the lowest cost developing country in the Mediterranean Basin. In the case of importing a container, Egypt was the lowest cost country, while Jordan was the lowest cost country without access to the Mediterranean Sea.

Since the GTAP model does not differentiate across firms based on their ownership structure, as in Tarr and Rutherford (2010), cross-border service trade liberalisation is reflected following Walmsley et al. (2006) who represent the opening of the service sectors to foreign competition as an efficiency improvement. Doytch and Uctum (2011) show that service FDI spurs growth in the sector while a number of papers (Markusen et al., 2005; Haskel et al., 2007) show a positive association between a firm’s productivity and the extent of foreign ownership of the firm. Haskel et al. (2007) find a robust and significant positive correlation between the productivity of British firms and the extent of foreign ownership, whereas Markusen et al. (2005) argue that foreign presence in services provides substantial benefits to domestic firms. The efficiency boost to service companies engaged in cross-border service trade is implemented as a productivity shock which lowers the effective prices of imported services. In order to estimate the size of the productivity shocks, services productivity $\Pi$ is represented as a function of the trade restrictiveness policies affecting this sector, given by index $\Psi$, and other factors, represented as $\Omega$. This way productivity $\Pi$ is given by $\Pi(\Psi, \Omega)$ and the percentage change in productivity is $\frac{\Delta \Pi}{\Pi} = \varepsilon \Psi$, where $\varepsilon$ is the elasticity of productivity $\Pi$ to change in the index $\Psi$. With the elasticity $\varepsilon$ equal to 1, changes in the trade restrictiveness index $\Psi$ translate into changes in productivity.\textsuperscript{11,12} Using the World Bank’s Services Trade Restrictions (STR) database, which contains values of the STR index (STRI) for several service sectors in the Levant countries, and assuming that trade liberalisation will reduce the STRI to the minimum of the corresponding indexes in the Euromed area, we compute the implied productivity changes. Sectoral STRIs 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 STRI, and in the case of Syria, data were not available so we assigned the average regional STRI to each sector. The shocks differ in size and suggest that the liberalisation-associated efficiency improvements are smallest for Turkey (Table 2), as Turkey’s service sectors are the most open and productive in the region.

The opening of the service sectors to foreign investment and competition is also expected to boost value-added productivity in some service sectors, resulting in convergence to the highest value added per worker in the region. This process will be gradual and complete convergence is expected to occur only by the end of a 20-year period.\textsuperscript{13} Since results are representative of what is likely to happen in a 3 to 5-year timeframe, we first compute the productivity shocks required for complete convergence over a 20-year period, then annualise

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\textsuperscript{10} Unlike Balistreri et al. (2014), we cannot employ the database on ad valorem equivalents of the costs of time in exporting and importing as this database does not have information on four of the six Levant economies of interest to us – Lebanon, Jordan, Syria and Iraq.

\textsuperscript{11} This approach allows us to assess the effect of services liberalisation without estimating the ad valorem tariff equivalents of the policies restricting trade in services. The process of computing the tariff equivalents is complex and requires additional information which was not available for the Levant countries.

\textsuperscript{12} Although the services trade restrictions indexes are not constructed with regard to a specific factor such as productivity, their construction takes into account supply implications and thus the productivity levels in the sector.

\textsuperscript{13} We exclude from the analysis all government-related services.
| Services            | Turkey | Jordan | Lebanon | Egypt | Iraq | Syria |
|---------------------|--------|--------|---------|-------|------|-------|
|                     | Import | Value  | Import  | Value | Import | Value |
|                     | Augmenting | Added | Augmenting | Added | Augmenting | Added |
| Construction        | 0.0    | 12.9   | 9.3     | 29.7  | 9.3   | 0.0   |
| Transport           | 0.0    | 0.0    | 26.8    | 25.8  | 25.0  | 0.0   |
| Trade               | 0.0    | 4.4    | 25.0    | 21.8  | 25.0  | 0.0   |
| Communication       | 0.0    | 0.0    | 25.0    | 25.8  | 25.0  | 0.0   |
| FIRE                | 0.0    | 0.0    | 39.0    | 19.3  | 39.0  | 8.1   |
| Business Services   | 15.9   | 0.0    | 0.0     | 19.3  | 7.9   | 8.1   |
| Tourism & Other     | 0.0    | 4.4    | 9.3     | 21.8  | 9.3   | 0.0   |
| Services            | 27.3   | 21.6   | 9.3     | 62.5  | 9.3   | 19.6  |

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them and finally cumulate them to represent the productivity growth expected only in the span of three years. The resulting productivity shocks are shown in Table 2. They suggest that in the Levant, Turkey is expected to be a productivity leader in transport, communication, finance, insurance and real estate and business services, while Lebanon leads in construction and retail trade activities.

The macroeconomic closure for this simulation is consistent with the medium-term time-frame and assumes a constant level of employment, with perfect mobility of skilled and unskilled labour between sectors and none between countries or regions. Since the model does not keep track of differences between foreign and domestic assets, we assume that Levant countries’ trade balances are fixed as a share of the size of the economy.

**b. Simulation Scenario of War and Trade Disintegration in the Levant**

Starting from the database obtained from the pre-simulation scenario of deep trade liberalisation, we implement shocks that completely reverse the deep trade reforms discussed in 3a as well as shocks reflecting the direct effects of war. The latter include the following: (i) changes in population and labour force due to loss of life in Syria; (ii) changes in population and labour force due to refugee movements across countries; (iii) infrastructure destruction in Syria; (v) the trade embargo on Syria; (vi) the productivity deterioration in Iraq; and (iv) trade cost increases in the Levant. We then assess the implications of these shocks on other economic variables in the model.

In order to accommodate the massive cross-border movement of refugees in the model, we adjust the population and labour force of both refugee-receiving and refugee-sending countries, using information from UNHCR Population STATICS and ILOSTAT Database. Syria’s population and labour force were adjusted downward in order to reflect: (i) the loss of life since 2011; (ii) the number of Syrian refugees who fled the country during the period from 2011 to 2014; and (iii) the number of Iraqi refugees who left Syria during the same period. At the same time, the population and labour force of the refugee-receiving countries were adjusted upward in order to reflect the inflow of refugees from Syria. Adjustments were also made in order to reflect the return of Iraqi refugees to their home countries.

**TABLE 3**

Population, Labour Force and Transport Cost Shocks Due to the Levant War (%)

| Transport Costs | Population | Labor Force | Turkey | Egypt | Jordan | Lebanon | Syria | Iraq |
|-----------------|------------|-------------|--------|-------|--------|---------|-------|------|
| Turkey          | 0.9        | 0.8         | 0.0    | 3.5   | −18.3  | −35.2   | −18.4 | −11.1|
| Egypt           | 0.2        | 0.1         | 5.9    | 0.0   | 12.2   | −10.2   | 2.5   | 3.6  |
| Jordan          | 2.5        | 2.3         | −19.5  | 11.1  | 0.0    | −32.9   | −15.7 | −8.5 |
| Lebanon         | 19.5       | 15.4        | −16.2  | 10.9  | −11.3  | 0.0     | −13.4 | −7.3 |
| Syria           | −20.7      | −19.0       | −23.8  | −4.9  | −20.2  | −33.4   | 0.0   | −12.5|
| Iraq            | 7.3        | 7.6         | −9.2   | 4.2   | −6.5   | −15.0   | −8.1  | 0.0  |

14. We make this adjustment in order to assess accurately the medium-term effects of war and reflect the fact that the majority of Syrian refugees plan to return to Syria only upon the fall of the Assad regime.
15. This adjustment is based on data from UNHCR.
country during the period 2007–13. In the absence of information on the skill mix and participation rates of Syrian refugees, we assume that skilled and unskilled workers are equally affected by the war and that labour force participation rates among refugees are, respectively, the minimum of the participation rates in Syria and each refugee-receiving country. The shocks to the Levant countries’ population and labour endowments are shown in Table 3. Although adjustments were made in all countries/regions in the model, we show only those applying to the Levant as the magnitudes for countries outside the Levant are negligible.

We use the World Bank’s 2014 Doing Business data on the costs of importing and exporting a standard container and ESCAP World Bank International Trade Costs data on international shipping costs to compute the increase in transport costs due to the Levant war. The escalation of transport costs is represented as deterioration in the efficiency of shipping goods from each of the six Levant economies. The numbers in Table 3 reflect the fact that during the period between 2007 and 2014, the costs of importing and exporting goods and shipping them across borders within the Levant increased substantially, except in the case of Egypt.

Oil exports from Syria are assumed to decline dramatically (by 90 per cent) due to a combination of factors, including sanctions imposed by the EU and the USA and loss of infrastructure. We assume that 20 per cent of Syria’s physical capital has been destroyed – a decline as large as the decline in Syria’s labour force. In Iraq, we assume the advance of ISIS has led to a 5 per cent decline in total productivity. The decline in oil exports from Syria and Iraq is offset by a corresponding increase in the production of oil by the GCC countries so that the effect on the world oil price is negligible. This is a realistic assumption because Saudi Arabia has the spare capacity to fully offset a drop in Iraqi and Syrian oil exports. We also assume that Syria’s non-oil exports are affected by restrictions on trade between USA and Syria and EU and Syria in specific categories, including equipment and vehicles, chemicals, metals and capital goods.

4. SIMULATION RESULTS

a. Welfare Effects

The results suggest that Syria and Iraq bear the brunt of the direct war losses as the conflict drags down their per capita welfare by 14 and 16 per cent, respectively. Neighbouring Levant economies lose to varying degrees, with per capita welfare declining by almost 11 per cent in Lebanon, less than 2 per cent in Jordan and only negligibly in Turkey and Egypt (Table 4). The embargo on trade with Syria has been a major factor behind the deterioration in Syria’s per capita welfare, reducing it by more than 15 per cent, while capital destruction and loss of workers are responsible for declines of more than 5 and 7 per cent, respectively. In Iraq, the per capita welfare losses are associated with the deteriorating environment and the resulting decline in productivity. In Lebanon, Jordan, Turkey and Egypt, the deterioration in per capita incomes reflects the increase in population due to the refugee inflows. This effect is most pronounced in Lebanon due to the large number of Syrian refugees relative to Lebanon’s population.

Syria’s direct aggregate welfare decline is much larger than its per capita welfare loss (Table 4). Syria’s economy shrinks by almost a third due to the massive outflow of Syrian refugees and war casualties. By contrast, Iraq’s aggregate welfare loss of 11 per cent is smaller than its per capita welfare decline because a large number of Iraqi refugees have returned to Iraq during the period 2010–14. All other Levant economies gain in aggregate terms as the influx of refugees boosts their population numbers, increasing demand for goods and services.
and labour supply. These effects are most pronounced in Lebanon, where the refugee-to-citizen ratio is greatest, and minimal for Egypt, where refugees account for a small share of the population. The global effects of the crisis are negligible because the conflict has no effect on the main channel of transmission – oil prices.

If in addition to the direct effects of war we include the effects of regional trade disintegration, we find that the Levant conflict hurts significantly all Levant economies (Table 4). Iraq’s direct per capita welfare losses from the conflict are as large as its losses from trade disintegration, which are largest among the Levant economies. Stated differently, Iraq’s average per capita income could have been nearly a third larger had the country managed to avoid conflict and integrate into the Levant regional economy. Syria’s trade disintegration losses are slightly lower than Iraq’s but still sizable at almost 9 per cent in per capita terms. Thus, Syria’s per capita income could have been a quarter larger had the country managed to steer away from the civil war and proceeded with its plans to integrate into the regional economy of the Levant. Trade disintegration losses are much larger than any direct war losses in the cases of Egypt, Jordan and Turkey. For example, Egypt does not lose directly from the war in the Levant, but its per capita loss from trade disintegration is 9 per cent. The difference is stark for Jordan as well. The results suggest that the medium-term economic effects of the Levant war are sizable for all Levant economies.

Consistent with the results in the literature, most of the disintegration losses stem from foregone service liberalisation, whereas those from foregone agricultural liberalisation and transport logistics reform are negligible, although the sectoral effects are sizable for some sectors, as discussed in the next section, and for landlocked Iraq, which loses 1 per cent from foregone transport logistics reform. The foregone services liberalisation generates sizable welfare losses as barriers to entry of foreign firms hurt productivity and put upward pressure

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**TABLE 4**

Welfare Effects of War and Trade Disintegration in the Levant (%)

|                      | Turkey | Egypt | Jordan | Lebanon | Syria | Iraq |
|----------------------|--------|-------|--------|---------|-------|------|
| Direct per capita effects of war | −0.5   | −0.1  | −1.4   | −10.6   | −14.0 | −16.1|
| Output effects       | 0.0    | 0.0   | 0.0    | −0.1    | −6.3  | −12.6|
| Capital destruction  | 0.0    | 0.0   | 0.0    | 0.0     | −5.4  | −0.1 |
| Trade cost escalation| 0.0    | 0.0   | 0.0    | −0.1    | −0.1  | −0.2 |
| Trade embargo on Syria| 0.0   | 0.0   | 0.1    | 0.0     | −15.4 | 0.0  |
| Labor force effects of refugees | 0.4    | 0.0   | 1.0    | 6.0     | −7.5  | 2.8  |
| Population effects of refugee movements | −0.9  | −0.2  | −2.5   | −16.4   | 20.8  | −6.1 |
| Per capita effects of trade disintegration | −1.4  | −9.0  | −5.8   | −2.2    | −8.6  | −12.0|
| Foregone agricultural liberalization | 0.0    | −0.1  | 0.0    | 0.0     | 0.0   | 0.0  |
| Foregone transport logistics reform | 0.0    | −0.1  | 0.0    | −0.2    | 0.1   | −1.0 |
| Foregone services liberalization | −1.4  | −8.8  | −5.7   | −2.1    | −8.7  | −11.0|
| Per capita cumulative effects | −2.0  | −9.1  | −7.2   | −12.8   | −22.6 | −28.1 |
| Aggregate cumulative effects | −1.1  | −8.8  | −4.7   | 3.9     | −38.3 | −23.4|
| Direct aggregate effects of war | 0.3    | 0.1   | 1.0    | 6.4     | −30.7 | −10.7|
| Trade disintegration effects | −1.4  | −8.9  | −5.7   | −2.5    | −7.5  | −12.7|

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The results for other countries are negligible in size and therefore not shown in the paper, but are available upon request.

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on production costs as well as the costs of importing services within the Levant. The results, however, differ across countries reflecting the different extent of productivity loss. As a productivity leader in the Levant, Turkey’s losses are small and stem mainly from failed liberalisation of construction and business services. By contrast, Iraq’s service sectors are among the most inefficient in the Levant area so its welfare loss from failed service liberalisation of 11 per cent is largest. Syria and Egypt also lose to a substantial degree, reflecting the fact that their service sectors are more protected and less efficient than those of Jordan and Lebanon.

b. Sectoral Effects

The direct sectoral effects of the conflict are negative and sizable across the board only in Syria and Iraq – the two countries most directly affected by the war (Table 5). In Iraq, the sectoral effects reflect the productivity decline, while in the case of Syria they are a result of the destruction of capital and loss of labour. In Jordan and Lebanon, by contrast, sectoral expansions reflect the refugees’ effect on the demand for goods and services and the supply of labour. The direct sectoral effects of conflict in Turkey and Egypt are negligible.

Regional trade disintegration, however, drags down intra-Levant trade (Figure 2), services productivity as well as the cost of producing and importing services within the Levant area with negative effects for output of services in all Levant economies (Table 5). To the extent that services are used as intermediate inputs into other sectors, the Levant economies see broad-based contraction of economic activity. The effects, however, differ by country. Turkey’s economy is relatively unscathed by the trade disintegration because it has the most open service sectors in the Levant (Table 2). It suffers losses mostly because of foregone opening of business services and construction. Given its size, however, Turkey’s trade losses are largest in dollar terms as it foregoes nearly US$1.6 billion in exports to Levant countries (Figure 2).

By contrast, trade disintegration worsens considerably the economic decline in Syria and Iraq, hurting especially the prospects for commercial services which are heavily protected. In both economies, hardest hit are business services, communications, finance, insurance and real estate and transport, but other sectors also experience double-digit declines (Table 5). Jordan’s and Lebanon’s output losses from regional trade disintegration are most pronounced in services. In Jordan, business services and communication contract by almost 30 per cent, while tourism and transport services lose 15 per cent. In Lebanon, business services and communication decline by 10 and 14 per cent, respectively.

Trade disintegration is also accompanied by increases in transport costs on trade to and from the Levant countries. These increases have most detrimental effect on output and intra-Levant trade in bulky products with high transport margins, such as agricultural goods, processed foods, natural resources and metals. In sum, regional trade disintegration as part of the Levant conflict deprives all six economies of opportunities to trade, transform the structure of their economies and create quality jobs in services and manufacturing. These results are in line with papers which find a negative association between political instability and foreign direct investment flows to MENA (Meon and Sekkat, 2012; Burger et al.,

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17 According to the STRI data, Lebanon and Jordan have the least restrictive policies in terms of foreign presence in construction and business services in the Levant, respectively.

18 The inflow of refugees has created serious challenges, among which overcrowding in certain areas and a strain on public systems for delivering basic services. This analysis does not factor in these challenges nor provides estimates of the financing needed to address them.

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| Sector                          | Turkey | Egypt | Jordan | Lebanon | Syria | Iraq |
|--------------------------------|--------|-------|--------|---------|-------|------|
|                                | Conflict | Disintegration | Conflict | Disintegration | Conflict | Disintegration | Conflict | Disintegration | Conflict | Disintegration | Conflict | Disintegration |
| Primary agriculture            | 0       | -1    | 0      | -3      | 8     | 0    | -12    | -4    | -3    | -7    |
| Processed food                 | 0       | -1    | 0      | -7      | 1     | -3   | 10     | 0     | -15   | -4    | -2    | -4    |
| Gas extraction & distr.        | 2       | -1    | 0      | 3       | 0     | 1    | 5      | 2     | -10   | -6    | 1     | -18   |
| Oil extraction                 | 1       | 0     | 0      | -2      | 1     | -2   | 3      | -1    | -50   | 0     | -2    | -1    |
| Water                          | 0       | -2    | 0      | -10     | 1     | -4   | 6      | -1    | -26   | -6    | -5    | -11   |
| Other natural resources        | 0       | -1    | 0      | -3      | 0     | 1    | 1      | 0     | -23   | 4     | -5    | -7    |
| Petroleum and coal             | 0       | -3    | 0      | -7      | 1     | -7   | 3      | 0     | -29   | -6    | -3    | -23   |
| Electricity                    | 0       | -2    | 0      | -9      | 1     | -7   | 5      | -1    | -25   | -10   | -3    | -20   |
| Chemicals and metallurgy       | 0       | -2    | 0      | -8      | 2     | 4    | 4      | 6     | -39   | 3     | -13   | -13   |
| Textiles and apparel           | 1       | -1    | 0      | -6      | 2     | 3    | 10     | 2     | 21    | -4    | -9    | -29   |
| Resource based manufactures    | 0       | -2    | 0      | -8      | 3     | -3   | 11     | 5     | -8    | -4    | -7    | -16   |
| Equipment and vehicles         | 0       | -2    | 0      | -8      | 2     | -3   | 11     | 6     | -8    | -5    | -10   | -11   |
| Metal products                 | 0       | -2    | 0      | -13     | 4     | 1    | 12     | 5     | -18   | -2    | -6    | -7    |
| Other manufactures             | 0       | -1    | 0      | -12     | 1     | 2    | 2      | 7     | -39   | -2    | -20   | -8    |
| Construction                   | 0       | -2    | 0      | -14     | 1     | -9   | 4      | -2    | -25   | -9    | 0     | -9    |
| Transport                      | 0       | -1    | 0      | -26     | 1     | -16  | 3      | -9    | -21   | -19   | -9    | -32   |
| Trade                          | 0       | -3    | 0      | -14     | 1     | -9   | 5      | -1    | -27   | -8    | 0     | -16   |
| Communications                 | 0       | -1    | 0      | -25     | 1     | -26  | 7      | -14   | -7    | -31   | 4     | -54   |
| FIRE                           | 0       | -1    | 0      | -20     | 1     | -16  | 4      | -5    | -19   | -22   | -6    | -33   |
| Public services                | 1       | -1    | 0      | -5      | 2     | 0    | 13     | 0     | -20   | -3    | -3    | -6    |
| Other Business services        | 0       | -2    | 0      | -27     | 1     | -28  | 3      | -10   | 11    | -47   | 4     | -57   |
| Tourism and others             | 0       | -3    | 0      | -15     | 1     | -15  | 8      | -1    | -19   | -13   | -4    | -26   |
| Total real output              | 0       | -2    | 0      | -11     | 1     | -8   | 7      | -2    | -30   | -8    | -8    | -11   |

Note:
Integration results reflect cumulative changes due to all trade reform initiatives.
Importantly, Burger et al. (2015) find that political instability does not have an effect on greenfield investments in resources and non-tradables but inhibits investments in tradable activities such as commercial services and non-oil manufacturing, thereby slowing structural transformation.

c. Distributional Effects

The average welfare effects presented in Section 3a are not indicative of the distributional effects of the Levant war across different groups of people or economic agents within a country (Table 6). In Lebanon and Turkey, the direct effects of war on real returns to land and physical capital are positive, although the magnitudes of these effects differ considerably due to the much larger share of refugees in the Lebanese population. Consequently, real land rents rise by close to 40 per cent in Lebanon and by just 2 per cent in Turkey. Asset owners benefit because the inflow of refugees increases derived demand for land and physical capital and the supply of labour. By contrast, workers in these two countries lose as refugees compete for jobs and put downward pressure on wages. In Syria, although all economic groups lose in real terms, landowners are hardest hit as people flee the country in search of safety. The results suggest that the war in Syria has triggered a nearly 50 per cent decline in real rental rates and about 20 per cent decline in wages and capital rental rates. The conflict is also associated with a rise in resource rents to varying degrees in the Levant, except in Syria where the embargo limits returns to resources.

While in Syria, the Levant war has a much stronger effect on real returns of different factors in the model (land, labour, capital) than the associated trade disintegration, elsewhere in the Levant the opposite is observed (Table 6). The foregone services integration is the main reason for the significant drop in rental and wage rates in Iraq, Egypt, Jordan, Lebanon and Turkey. As barriers to trade in services increase, factor productivity deteriorates leading to declines in real factor returns, especially land and resource rents.
|                  | Turkey | Egypt | Jordan | Lebanon | Syria | Iraq |
|------------------|--------|-------|--------|---------|-------|------|
|                  | Disintegration | Conflict | Disintegration | Conflict | Disintegration | Conflict | Disintegration | Conflict | Disintegration | Conflict | Disintegration | Conflict |
| Land             | -4.1   | 1.6   | -19.3  | -0.8    | -17.9 | 2.5   | -4.1   | 39.5     | -15.1   | -48.4   | -34.7   | -6.7   |
| Unskilled Labour | 0.2    | -0.5  | -7.3   | -0.1    | -5.1  | -1.5  | -2.2   | 9         | -4.5    | -18.6   | -5.9    | -20.6  |
| Skilled Labour   | -0.6   | -0.5  | -8.3   | -0.1    | -6.4  | -1.3  | -2.4   | -9.7      | -6.9    | -19     | -11.2   | -20.2  |
| Physical Capital | 1.1    | 0.2   | -7.7   | 0.1     | -5.3  | 0.7   | -2.5   | 3         | -2.2    | -18.2   | -7.2    | -12.3  |
| Natural Resources| 4.8    | 1.8   | -12.0  | 0.5     | -17.0 | 3.1   | -8.6   | 30.1      | -18.0   | -16.4   | -12.8   | 5.3    |
5. SUMMARY AND CONCLUSIONS

The paper quantifies the economic effects of the Levant conflict using a global computable general equilibrium model with new details on the Levant economies. The analysis factors in both the direct economic effects of the Syrian war and the advance of ISIS and the opportunity costs due to foregone deep trade integration initiatives in the region. Unlike less formal approaches, the CGE framework ensures consistency, includes important sectoral detail and captures second-order feedback effects, which are most significant for Syria and Iraq. In addition, the paper develops a modified version of the GTAP database with economic and trade detail pertinent to the Levant economies and accurately reflecting trade preferences on the eve of the Syria war.

The analysis suggests that Syria and Iraq bear the brunt of the direct war costs, losing 14 per cent and 16 per cent in per capita welfare, respectively. All other Levant economies lose in per capita terms, but not in aggregate terms because the inflows of refugees boost population numbers, and therefore consumption, investment and labour supply. Lebanon’s per capita welfare losses reach close to 11 per cent, while those of Turkey, Egypt and Jordan do not surpass 1.5 per cent. The difference between aggregate and per capita welfare effects has been most pronounced in Lebanon, where the increase in the refugee-to-citizen ratio is greatest, and minimal for Turkey and Egypt, where refugees have remained a small share of the population.

The direct effects of the Levant war are an understatement of the real economic costs of disintegration in the Levant. If the costs of foregone regional trade integration are included, then the total costs of war for Syria and Iraq are almost double, reaching 23 and 28 per cent, respectively, and increase to 10 per cent for Egypt and 9 per cent for Jordan. The failed services liberalisation is a major source of trade-related losses. Furthermore, the average welfare effects are not indicative of the distributional effects of war within countries. In Syria, all economic groups are hurt, but landowners lose the most as derived demand for land declines dramatically reflecting the outflow of refugees. By contrast, in Lebanon and Turkey land and capital owners benefit while workers lose because the inflows of refugees puts pressure on demand for goods and services and depresses wages by augmenting labour supply.

Some caveats are important. The simulation results are indicative of the qualitative changes likely to occur as a result of conflict and the absence of deep trade integration in the region. There is less certainty about the magnitudes of the changes due to the lack of accurate information on some aspects of the conflict, particularly the extent of infrastructure destruction which by mid-2014 may have been greater than that represented in the paper. For this reason, we explore the sensitivity of the results to the size of the negative shock to Syria’s existing physical capital stock. An increase in the negative shock by 10 percentage points, translating into a decline in the physical capital stock by 30 per cent instead of 20 per cent, leads to an additional income loss of 2 percentage points in Syria and no changes to the results elsewhere. Thus, the results are not extremely sensitive to changes in the magnitude of the physical capital shock.

In addition, we ignore the effects of war on expectations and risk perceptions which have implications for investment and may amplify the effects discussed in this paper. The losses to Turkey, Jordan and Lebanon may also be bigger than those presented here as we do not factor

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19 We choose 30 per cent as an upper bound because based on satellite images it appears unlikely that by mid-2014 more than a third of the Syrian capital stock was destroyed.
in the distortions associated with the increased consumption of subsidised public services and the costs associated with security and national defence.

Finally, the magnitude of the shocks imposed in the model reflects events as of mid-2014. The magnitude of the effects will change depending on the course of the war. In this assessment, we assume that ISIS has not captured the main oil extractive facilities in Southern Iraq. If this were to happen, Iraq’s welfare, output and export losses would be much larger in magnitude than those portrayed here.

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## APPENDIX A: DATA SOURCES

### TABLE A1
Data Sources for Tariff Duties

| Importing Country | Arab Republic of Egypt | 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) 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 | 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 (non-MFN rates) 51.46% coverage | WITS & WTO (MFN rates) 57.26% coverage; WITS & Reciprocal (WITS (Imports, 2007)) 21.45% | WITS & WTO (non-MFN rates) 77.25% coverage; WITS & Reciprocal (WITS (Imports, 2007)) 7.97% 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 |
| Importing Country | Arab Republic of Egypt | Tunisia | Morocco | Yemen | West Bank and Gaza |
|-------------------|------------------------|---------|---------|-------|-------------------|
| **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 | 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 |
| **Arab Republic of Egypt** | WITS (Imports, 2008) & WTO (non-MFN rates) 100% coverage | 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 | WITS & WTO (non-MFN rates) 100% coverage |
| Importing Country | Arab Republic of Egypt | Tunisia | Morocco | Yemen | West Bank and Gaza |
|-------------------|------------------------|---------|---------|-------|-------------------|
| 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) 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 | 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 | 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 |
| Importing Country       | Tunisia                        | Morocco                | Yemen                      | West Bank and Gaza |
|------------------------|--------------------------------|------------------------|---------------------------|---------------------|
| 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 |
| 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 |
| 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 |
| 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 |

| Importing Country       | Algeria                        | Libya                    | European Union               | Gulf Cooperation Council |
|------------------------|--------------------------------|--------------------------|-----------------------------|--------------------------|
| Export source          | Morocco                        | 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 |
| Export source          | Jordan                         | 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 |
| Export source          | 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 |
| Export source          | Turkey                         | WITS & WTO (MFN rates) 80.99% coverage; WITS & Reciprocal (WITS (Imports, 2007)) 19.01% 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 |
| Importing Country     | Algeria                                                                 | Libya                                                                 | European Union                                                                                   | Gulf Cooperation Council                                                                 |
|-----------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 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     | 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        |
| Arab Republic of Egypt| 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                                                |
| Importing Country | Algeria | Libya | European Union | Gulf Cooperation Council |
|-------------------|---------|-------|----------------|--------------------------|
| 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 (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 & 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 |

| Import Destination | Iraq | Jordan | Lebanon | Syrian Arab Republic | Turkey |
|--------------------|------|--------|---------|----------------------|-------|
| Export Source      | 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) 59.08% coverage; WITS & WTO (MFN rates) 40.28% coverage |
| Import Destination | Jordan | Lebanon | Syrian Arab Republic | Turkey |
|--------------------|--------|---------|---------------------|--------|
| 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 | Reciprocal (WITS (Imports, 2007)) 0.64% coverage |
| West Bank and Gaza | WITS (Inferred from exports, 2007) & WTO (non-MFN rates) 100% coverage | WITS & WTO (non-MFN rates) 100% coverage | WITS & WTO (non-MFN rates) 80.73% coverage; WITS & Reciprocal (WITS (Imports, 2007)) 11.59% coverage; WITS & WTO (MFN rates) 7.68% 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 (Imports, 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 |
| Import Destination | Iraq | Jordan | Lebanon | Syrian Arab Republic | Turkey |
|--------------------|------|--------|---------|----------------------|--------|
| 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 |
| Arab Republic of Egypt | 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 (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 |
| Import Destination | Iraq | Jordan | Lebanon | Syrian Arab Republic | Turkey |
|--------------------|------|--------|---------|----------------------|--------|
| 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)) 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 (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 |
| 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 |
| Lebanon            | WITS (Inferred from exports, 2007) & 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 (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.
### APPENDIX B: BILATERAL TARIFF PROTECTION IN THE MIDDLE EAST AND NORTH AFRICA

#### TABLE B1
Turkey’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 Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | Total |
|----------------------------|---------------------|-----------------|----------------------------------|----------------|-----------------------------------|--------------------------|----------------------------------------|-------------------|----------------------|-------------------------------|----------------------------------|----------------|-------------------|-------|
| Morocco                    | 25                  | 24              | 0                                | 0              | 0                                 | 0                        | 0                                      | 0                 | 0                    | 0                             | 0                  | 0               | 1     |
| Jordan                     | 67                  | 3               | 0                                | 0              | 0                                 | 1                        | 3                                      | 0                 | 0                    | 0                             | 0                  | 0               | 1     |
| West Bank and Gaza         | 0                   | 55              | 0                                | 0              | 0                                 | 0                        | 0                                      | 0                 | 0                    | 0                             | 0                  | 0               | 0     |
| Syrian Arab Republic       | 10                  | 24              | 0                                | 0              | 0                                 | 4                        | 6                                      | 9                 | 2                    | 0                             | 2                  | 3               | 3     |
| Gulf Cooperation Council   | 1                   | 62              | 0                                | 0              | 0                                 | 0                        | 3                                      | 5                 | 1                    | 0                             | 1                  | 0               | 1     |
| Arab Republic of Egypt     | 6                   | 43              | 0                                | 0              | 0                                 | 0                        | 0                                      | 0                 | 0                    | 0                             | 0                  | 0               | 7     |
| Libya                      | 0                   | 0               | 0                                | 0              | 0                                 | 1                        | 0                                      | 0                 | 4                    | 0                             | 1                  | 0               | 0     |
| Tunisia                    | 13                  | 34              | 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     |
| Iraq                       | 11                  | 12              | 0                                | 0              | 0                                 | 0                        | 1                                      | 6                 | 1                    | 0                             | 1                  | 0               | 0     |
| Iran                       | 37                  | 35              | 0                                | 0              | 1                                 | 0                        | 2                                      | 5                 | 1                    | 3                             | 0                  | 0               | 0     |
| Yemen                      | 84                  | 38              | 0                                | 0              | 0                                 | 1                        | 0                                      | 12                | 8                    | 2                             | 4                  | 51              | 51    |
| Lebanon                    | 0                   | 16              | 0                                | 0              | 0                                 | 0                        | 1                                      | 7                 | 0                    | 1                             | 3                  | 3               | 1     |
| Algeria                    | 2                   | 5               | 0                                | 0              | 0                                 | 0                        | 4                                      | 1                 | 3                    | 0                             | 1                  | 0               | 0     |
| China                      | 17                  | 49              | 0                                | 0              | 0                                 | 0                        | 2                                      | 5                 | 3                    | 0                             | 0                  | 2               | 2     |
| India                      | 5                   | 54              | 0                                | 0              | 1                                 | 0                        | 1                                      | 4                 | 1                    | 2                             | 1                  | 0               | 3     |
| Japan                      | 18                  | 47              | 0                                | 0              | 0                                 | 4                        | 4                                      | 5                 | 2                    | 4                             | 3                  | 5               | 4     |
| Latin America              | 35                  | 28              | 0                                | 0              | 1                                 | 0                        | 1                                      | 2                 | 1                    | 1                             | 4                  | 8               | 8     |
TABLE B1 Continued

| 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 Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | Total |
|----------------------------------------|---------------------|-----------------|---------------------------------|----------------|----------------------------------|-------------------------|--------------------------------------|-------------------|----------------------|-----------------------------------|--------------------------------------|----------------|-------------------|-------|
| Newly industrialised countries            |                     |                 |                                 |                |                                  |                         |                                      |                   |                      |                                   |                                      |                |                   |       |
| Sub-Saharan Africa                        | 21                  | 31              | 0                               | 0              | 0                                | 4                       | 0                                    | 4                 | 7                    | 1                                | 3                              | 3              | 25                | 4      |
| Rest of Asia                             | 8                   | 21              | 0                               | 0              | 0                                | 1                       | 5                                    | 1                 | 1                    | 1                                | 0                              | 0              | 2                 |       |
| Rest of Europe and FSU                   | 75                  | 21              | 0                               | 0              | 0                                | 1                       | 5                                    | 2                 | 2                    | 0                                | 0                              | 0              | 5                 |       |
| Rest of OECD                             | 22                  | 35              | 0                               | 0              | 0                                | 4                       | 4                                    | 0                 | 0                    | 0                                | 0                              | 0              | 6                 |       |
| Russian Federation                       | 5                   | 19              | 0                               | 0              | 0                                | 0                       | 0                                    | 0                 | 0                    | 0                                | 0                              | 11             | 0                 |       |
| USA                                     | 30                  | 23              | 0                               | 0              | 0                                | 5                       | 2                                    | 0                 | 1                    | 0                                | 0                              | 2              | 2                 | 306    |

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| Commodity            | 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 Manufacturing | 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                       | 0                                | 0              | 0                 | 0     |
| Turkey               | 1           | 9              | 0                   | 0            | 0                              | 2                     | 3                                    | 3                | 1                   | 4                       | 3                                | 2              | 0                 | 0     |
| 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                                    | 1                | 1                   | 0                       | 1                                | 1              | 2                 | 2     |
| Iraq                 | 0           | 0              | 0                   | 0            | 0                              | 0                     | 0                                    | 0                | 0                   | 0                       | 0                                | 0              | 0                 | 0     |
| Iran                 | 8           | 7              | 0                   | 2            | 5                              | 2                     | 20                                   | 11               | 15                  | 12                      | 0                                | 6              | 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                   | 2            | 11                             | 8                     | 29                                   | 25               | 9                   | 16                      | 15                               | 16             | 0                 | 0     |
| India                | 10          | 6              | 0                   | 5            | 4                              | 6                     | 15                                   | 14               | 14                  | 13                      | 21                               | 10             | 0                 | 0     |
| Japan                | 3           | 9              | 0                   | 2            | 5                              | 9                     | 13                                   | 12               | 23                  | 11                      | 20                               | 19             | 0                 | 0     |
| Latin America        | 3           | 5              | 0                   | 1            | 9                              | 9                     | 16                                   | 10               | 8                   | 14                      | 9                                | 6              | 0                 | 6     |
### TABLE B2  Continued

| Commodity               | Primary Agriculture | Food Processing | Gas Extraction and Distribution | Oil Extraction | Other Natural Resource Extraction | Petroleum, Gasol Products | Electricity Generation & Distribution | Chemical Industry | Textiles and Apparel | Resource Based Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | Total |
|-------------------------|---------------------|-----------------|---------------------------------|----------------|-----------------------------------|---------------------------|----------------------------------------|-------------------|----------------------|-------------------------------|-----------------------------------|---------------|-------------------|-------|
| Newly industrialised    | 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              | 5                                 | 0                         | 3                                      | 12                | 6                    | 11                           | 11                  | 11             | 16                | 3     |
| USA                     | 2                   | 9               | 0                               | 0              | 1                                 | 8                         | 0                                      | 8                 | 15                   | 8                            | 6                   | 12             | 16                | 5     |
| 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 Manufacturing | 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                            | 0                                | 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     |
| Arab Republic of Egypt | 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     |

TABLE B3
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 Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | Total |
|-----------------------------------|---------------------|-----------------|-------------------------------|----------------|----------------------------------|--------------------------|-------------------------------------|--------------------|---------------------|-------------------------------|-------------------------------|---------------|---------------------|-------|
| Newly industrialised 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     |
| 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 Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | 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     |
| Arab Republic of Egypt  | 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     |
TABLE B4 Continued

| 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 Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | Total |
|--------------------|---------------------|-----------------|---------------------------------|----------------|----------------------------------|--------------------------|---------------------------------------|-------------------|----------------------|-------------------------------|---------------------------------|---------------|------------------|-------|
| Newly industrialised 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 |
TABLE B5
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 Manufacturing | 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 | 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 |
| Arab Republic of Egypt | 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              | 9                               | 0                       | 4                                      | 8                | 10                  | 10                               | 10                                   | 7             | 8                | 8    |
| Japan     | 1                   | 28              | 5                               | 0              | 3                               | 5                       | 0                                      | 6                | 12                  | 1                                | 28                                   | 9             | 17               | 24   |
| Latin     | 7                   | 8               | 5                               | 0              | 1                               | 9                       | 0                                      | 6                | 7                   | 1                                | 22                                   | 12            | 6                | 8    |

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| 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 Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | Total |
|-----------------------------------|---------------------|-----------------|-------------------------------|----------------|----------------------------------|--------------------------|--------------------------------------|------------------|---------------------|-------------------------------|----------------------------------|----------------|---------------------|-------|
| Newly industrialised 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     |
## TABLE B6
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 Manufacturing | 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                 | 1                    | 0                            | 0                                | 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     |
| Arab Republic of Egypt     | 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    |
| 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 Manufacturing | Equipment, Vehicles and Machinery | Metal Products | Other Manufactures | Total |
|---------------------------------|---------------------|-----------------|-------------------------------|----------------|----------------------------------|--------------------------|--------------------------------------|------------------|-------------------|-----------------------------|-------------------------------|----------------|---------------------|-------|
| Newly industrialised countries  |                     |                 |                               |                |                                  |                          |                                      |                  |                   |                             |                               |               |                     | 16    |
| Sub-Saharan Africa              | 14                  | 28              | 10                            | 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 C: PURE GENERAL EQUILIBRIUM EFFECTS

The pure general equilibrium (GE) effects are defined as the difference between the non-linear and linear solutions of the model. The size of the pure GE results reveals to what extent the CGE model enables us to assess more precisely the effects of war and trade disintegration shocks on different aspects of the Levant economies by capturing the feedback effects between markets. Large pure GE effects would signal that the feedback effects due to changes in prices associated with the war shock are substantial and should not be ignored in such assessments. Furthermore, if the sign of the pure GE effects varies, this would indicate that the linear approach misstates the effects, sometimes overestimating and other times underestimating the ‘true’ effects of war. Thus, it would be difficult to determine the direction of bias.

Appendix Table 1C shows the pure GE effects of the Levant war, reflecting both the impact of direct conflict and trade disintegration. The results in the table suggest that the value added of using the CGE model grows with the size of the direct shock. The pure GE effects are small in the case of Turkey because the shock is small relative to the size of the economy. However, there are substantial differences between the linear and GE solutions for Iraq and Syria, where the shocks are large, giving rise to large changes. The pure sectoral output effects are large in Syria mostly because of the direct war shocks and in Iraq mostly because of the failed trade integration.

Furthermore, the pure GE effects differ not only in size but also in sign, suggesting that a linear solution would either underestimate or overestimate the effect of war on key indicators of interest. These differences are large in the cases of per capita welfare in Syria, real factor prices and sectoral outputs in Syria and Iraq. The linear solution significantly overstates the decline of real land prices in Syria and underestimates it in Iraq, correspondingly exaggerating and understating the expansion of sectors intensive in land use. In the case of Iraq, the linear solution overstates the decline in wages and therefore understates the decline in labour-intensive sectors. In the cases of Jordan, Lebanon and Egypt, the deviations between the results from the linear and GE solutions are mostly small (below 2 per cent).

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20 As mentioned earlier, the linear solution is a first-order approximation of the solution with data coefficients kept constant at initial levels.

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|                      | Direct War Effects | Trade Disintegration Effects | Direct War and Trade Disintegration Effects |
|----------------------|--------------------|-----------------------------|---------------------------------------------|
|                      | Turkey  | Egypt  | Jordan | Lebanon | Syria  | Iraq   | Turkey  | Egypt  | Jordan | Lebanon | Syria  | Iraq   | Turkey  | Egypt  | Jordan | Lebanon | Syria  | Iraq   |
| Per capita welfare (%)| 0.0     | 0.0    | 0.1    | 2.1     | -2.5    | 1.9    | -0.1    | -1.1   | -0.7   | 0.1     | -1.2   | -2.7   | 0.0     | -1.1   | -0.6   | 2.3     | -4.1   | -1.3   |
| Aggregate welfare (US$ m.) | 193     | 1      | 4      | -82     | 488     | 11     | -334    | -1208  | -127   | -29     | -53    | -498   | -140    | -1207  | -123   | -111    | 435    | -487   |
| Real land prices (%)  | 0.1     | 0.0    | 0.5    | 1.5     | 30.7    | -2.9   | -0.2    | -1.6   | 17.0   | -0.9    | 7.2    | -11.0  | -0.1    | -1.6   | 18.6   | 0.9     | 36.3    | -15.6  |
| Real unskilled wages (%) | 0.1    | 0.0    | 0.1    | 1.3     | -1.0    | 3.7    | 0.1     | -0.5   | -0.8   | 0.0     | -0.6   | -0.6   | 0.1     | -0.6   | -0.6   | 1.4     | -1.8    | 3.1    |
| Real skilled wages (%) | 0.1    | 0.0    | 0.2    | 1.8     | -1.5    | 3.9    | 0.0     | -0.8   | -0.8   | 0.1     | -0.7   | -1.1   | 0.0     | -0.8   | -0.6   | 2.0     | -2.4    | 3.0    |
| Real capital rental rates (%) | 0.0     | 0.0    | 0.0    | -0.5    | -2.7    | 0.7    | 0.0     | -0.6   | -0.9   | -0.3    | -0.9   | -0.3   | 0.0     | -0.6   | -0.9   | -0.8    | -3.7    | 0.4    |
| Real resource rents (%) | -0.4    | -0.2   | 0.2    | 1.6     | -8.1    | -1.9   | -1.0    | -3.7   | -2.7   | 2.4     | 1.4    | -7.8   | -1.4    | -3.9   | -2.4    | 3.6     | -8.8    | -9.2   |
| Sectoral outputs (%)  | 0.0     | 0.0    | 0.1    | -0.6    | 2.7     | -0.8   | 0.0     | -0.6   | 2.3    | 0.0     | -0.3   | -3.2   | 0.0     | -0.6   | 2.4     | -0.6   | 2.3     | -4.1   |
| Primary agriculture   | 0.0     | 0.0    | -0.1   | -0.5    | 0.8     | -1.6   | 0.2     | 1.3    | -2.8   | -0.3    | -0.8   | -8.7   | 0.2     | 1.4    | -2.8    | -0.7   | 0.0     | -10.2  |
| Processed food & distr. | -0.3    | 0.0    | -0.2   | -0.8    | 12.1    | -0.5   | -0.6   | -0.6   | -0.1   | -0.4    | 0.4     | -3.5   | -1.1    | -0.6   | -0.2    | -1.0    | 13.8    | -4.2   |
| Oil extraction        | -0.5    | 0.0    | 0.3    | -2.5    | -37.5   | -3.8   | -0.8    | -0.7   | -0.4   | 0.4     | -0.7   | -1.3   | -0.7    | -0.4   | -0.4    | -0.3    | 1.7     | -3.0   |
| Water                 | 0.0     | 0.0    | 0.0    | -0.3    | 1.2     | -0.2   | 0.0     | -1.5   | -0.4   | 0.0     | 0.2    | -2.6   | -0.1    | -1.4   | -0.4    | -0.3    | 1.7     | -3.0   |
| Other natural resources | 0.0     | 0.0    | 0.0    | -0.2    | -9.2    | -0.1   | -0.2    | -1.2   | 0.2    | -0.3    | 1.4    | -1.9   | -0.1    | -1.1   | 0.2     | -0.5    | -7.2    | -2.1   |
### TABLE C1 Continued

|                            | Direct War Effects | Trade Disintegration Effects | Direct War and Trade Disintegration Effects |
|---------------------------|--------------------|------------------------------|---------------------------------------------|
|                           | Turkey  | Egypt  | Jordan | Lebanon | Syria  | Iraq   | Turkey  | Egypt  | Jordan | Lebanon | Syria  | Iraq   | Turkey  | Egypt  | Jordan | Lebanon | Syria  | Iraq   |
| Petroleum and coal        | 0.8     | 0.0    | 0.0    | –1.0    | 3.9    | 0.9    | 1.1     | –1.4   | –0.7   | –1.3    | 1.5    | –3.6   | 2.0     | –1.4   | –0.7   | –2.1    | –2.2   | –2.8   |
| Electricity               | 0.0     | 0.1    | 0.0    | –0.4    | –0.2   | –0.1   | –1.4    | –0.2   | –0.2   | –0.2    | 0.3    | –2.1   | –0.2    | –1.3   | –0.2   | –0.6    | 2.2    | –2.4   |
| Chemicals and metallurgy  | 0.0     | 0.0    | 0.1    | –1.3    | –0.5   | 1.9    | –0.1    | –2.8   | 0.6    | –0.6    | –0.1   | 4.6    | –0.2    | –2.6   | 0.7    | –1.8    | –0.6   | 7.9    |
| Textiles and apparel      | –0.2    | 0.0    | 0.0    | –0.5    | 4.1    | –0.2   | –0.3    | –2.1   | –0.2   | –0.4    | –1.1   | 17.9   | –0.5    | –2.1   | –0.2   | –0.8    | 3.3    | 20.9   |
| Resource based manufactures | –0.1    | 0.0    | 0.1    | –0.5    | –2.6   | –0.1   | –0.2    | –1.5   | –0.5   | –0.3    | 0.4    | –4.5   | –0.2    | –1.5   | –0.5   | –0.8    | –2.3   | –4.9   |
| Equipment and vehicles    | –0.1    | 0.0    | 0.1    | –0.4    | –1.3   | 0.3    | –0.3    | –1.6   | –0.9   | –0.2    | 0.0    | –5.5   | –0.4    | –1.6   | –0.8   | –0.5    | –1.3   | –5.8   |
| Metal products            | –0.1    | 0.0    | 0.5    | –0.4    | –2.5   | 0.1    | –0.3    | –2.7   | 0.3    | –0.2    | 0.3    | –2.1   | –0.3    | –2.7   | 0.8    | –0.4    | –2.2   | –2.2   |
| Other manufactures        | –0.1    | 0.0    | 0.0    | –1.2    | 3.9    | 1.9    | –0.1    | –1.1   | 0.2    | –0.1    | –0.7   | –3.7   | –0.1    | –1.1   | 0.2    | –1.2    | 2.6    | 2.8    |
| Construction              | 0.1     | 0.0    | 0.0    | –0.1    | 3.0    | 0.3    | –0.1    | –2.2   | –0.8   | –0.1    | –0.4   | –1.5   | –0.1    | –2.2   | –0.8   | –0.1    | 3.0    | 1.2    |
| Transport                 | 0.0     | 0.0    | –0.1   | –0.6    | 0.9    | 4.2    | 0.0     | –3.3   | –1.6   | –1.6    | 1.7    | –5.3   | 0.1     | –3.2   | –1.7   | –2.1    | 3.7    | 0.2    |
| Trade                     | 0.0     | 0.0    | 0.0    | –0.3    | 2.2    | 0.0    | –0.1    | –1.2   | –0.5   | 0.0    | 0.2    | –2.0   | –0.1    | –1.3   | –0.5   | –0.3    | 2.7    | 2.0    |
| Communications            | 0.0     | 0.0    | –0.2   | –0.8    | 2.9    | 1.3    | –0.1    | –2.3   | 1.9    | –0.3    | 2.4    | 14.9   | –0.1    | 2.3    | 1.6    | –1.3    | 7.2    | 10.2   |
| FIRE                      | 0.0     | 0.0    | –0.1   | –0.2    | 2.4    | 1.0    | –0.1    | –0.5   | –0.4   | –0.2    | 1.2    | –1.2   | –0.1    | –0.5   | –0.5   | –0.4    | 4.9    | 0.3    |
| Public services           | 0.0     | 0.0    | 0.1    | 0.1     | 1.3    | 0.9    | –0.1    | –0.8   | 0.0    | 0.1    | 0.0    | –2.7   | –0.1    | –0.8   | 0.0    | 0.2    | 1.3    | 3.8    |
| Other Business services   | 0.0     | –0.1   | –0.3   | –0.1    | –2.5   | –0.1   | –0.1    | 0.4    | 2.1    | 0.0    | 4.9    | 11.7   | –0.1    | 0.4    | 1.5    | –0.2    | –0.6   | 10.6   |
| Tourism and others        | 0.0     | 0.0    | –0.1   | –0.3    | –0.5   | 0.9    | –0.1    | –1.6   | –0.6   | –0.1    | 0.7    | –3.1   | –0.2    | –1.6   | –0.7   | –0.4    | 0.3    | –2.1   |
| Total real output         | –0.1    | –1.4   | –0.9   | –0.2    | –0.1   | –2.0   | 0.0     | 0.0    | –0.1   | –0.3    | 4.5    | 0.3    | 0.1     | –1.6   | –1.0   | –0.5    | 4.9    | 1.9    |

Note:
(i) Changes greater than 2% are highlighted in bold. (ii) Numbers represent differences between the GE and linear solutions b calculated as \((1 + b_{GL})/(1 + b_L) - 1\) × 100, where \(L\) stands for linear solution.