FEMISE RESEARCH PROGRAMME

Fiscal Impact of Trade Liberalization: The Case of Jordan and Syria

Prof. Dr. Bernd Lucke
University of Hamburg, Germany

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Final Report

Fiscal Impact of Trade Liberalization: The Case of Jordan[1]

by
Dorothea Lucke
Lucke Consult, Winsen
Germany

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Research Team:
Dr. Dorothea Lucke, Lucke Consult, Winsen, Germany,
Prof. Dr. Bernd Lucke, University of Hamburg, Germany
Anbara Abu-Ayyash, University of Hamburg, Germany.

Introduction

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The Association Agreement between the European Union (EU) and Jordan has been signed on November 24, 1997. It includes provisions on political and security issues, specifies an economic and financial partnership as well as a partnership in social and human affairs. Our research project only treats the provisions on trade between the EU and Jordan.

The Association Agreement aims at establishing an Euro-Jordanian Free Trade Area in progressive steps by the year 2010. This covers trade of goods and services, capital movements, intellectual property rights and cooperation in all fields of the economy. Its provisions on the trade of goods and services are of main interest here. Important is the different treatment of trade in agricultural and industrial products.

For industrial products the Agreement specifies that exports to the Community originating in Jordan shall be allowed free of customs duties. Imports to Jordan originating in the Community shall - with a few exceptions - be allowed free of customs duties after a transitional period of 12 years.

As Jordanian industrial exports could enter the EU without customs´ restrictions already by virtue of the General Cooperation Agreement between the EU and Jordan in 1977 and 1979, these provisions do hardly change the status quo of the Jordanian exports. On the other hand, the implications for imports to Jordan may be large.

For agricultural products, the Agreement specifies product specific regulations on Jordanian exports to the Community concerning duties, quotas and timetables. However, no concessions have been made by Jordan for the import of agricultural commodities originating in the Community.

Part I of this research project aims at quantifying the effects of the Association Agreement between the EU and Jordan on Jordan´s economy, in particular on the government budget. In the first three sections it describes the Jordanian economy, starting with its structure in section 1. Section 2 gives detailed information on Jordan´s external trade. In the third section Jordan´s indirect tax system is presented. These features of the Jordanian economy are then introduced into a computable general equilibrium (CGE) model which is described in a nonmathematical manner in section 4 and in analytical form in section 5. In section 6 the database for the simulations in the format of a social accounting matrix for the year 1998 is laid down. Section 7 presents and explains the simulation results. In Part II, fiscal budget modifications which could help to overcome the loss of tariff revenues in the course of trade liberalization are discussed

Part I

1. The Structure of Jordan´s Economy

The Kingdom of Jordan is a developing state with a population of about 4.8 million people in 1998, growing at the rapid pace of 3.3 percent p.a. Almost 80 percent of the population is urban population. The total land area are 89.3 thousand square kilometers. Its gross domestic product (GDP) per capita was 1,565 $ in 1999 compared to 988 $ in Syria and 4,042 $ for Lebanon.

After Abdullah Hussein ascended to the throne in 1999 a period of profound economic reform began which aims at stabilizing the Jordanian economy and giving impulse for higher growth rates in GDP[2]. The major reforms concerning industry are privatization of state enterprises and liberalization of foreign trade and capital movements. These reforms will change the Jordanian economy considerably during the next years.

The (pre-reform) structure of Jordan´s economy can best be presented having first a look at its producing sectors and their weights in the economy in Table 1. In 1998, agriculture had a weight of 3.2 percent in GDP at factor costs. It has lost significance during the 1990s.[3] Although the production of cereals is subsidized, Jordan is heavily dependent on imports of all sorts of cereals. The irrigated area is not sufficient to prevent droughts as in 1999 from hitting agricultural output on a large scale. Agriculture accounted for 5.7 percent of total employment in 1999[4] which shows that its labor intensity is above average.

[2] Ministry of Finance, 2000.
[3] World Bank 1999.
[4] Data on the sectors´contribution to GDP at factor costs is not yet published for 1999 however, the only employment data which includes employment in agriculture and was available to us is from 1999.

Table 1 Gross Domestic Product at Factor Costs and Employment by Sector			
Sectors	1998		1999
	GDP at factor costs, in Mio. J.D.	Weight in GDP at factor costs, percentages	Weight in total employment, percentages
Agriculture	141.7	3.2	5.7
Mining and quarrying	169.7	3.9	13.4[5]
Manufacturing	609.8	13.8	
Food, beverages and tobacco	137.5	3.1	
Textils, apparels and leather products	38.2	0.9	
Wood, paper and printing	41.5	0.9	
Petroleum and chemicals	183.0	4.2	
Rubber and non-metallic minerals	84.5	1.9	
Base metals and fabricated metal	36.5	0.8	
Other manufactures	88.8	2.0	
Electricity and water	119.9	2.7	1.5
Construction	193.1	4.4	6.4
Trade , restaurants and hotels	549.5	12.5	20.1
Transport and Communications	704.4	16.0	10.8
Finance; insurance , real estate and business services	830.1	18.8	5.3
Social and personal services	192	4.4	31.4[6]
Government services	942.7	21.4	
Imputed bank service charge	-107.5	-2.4	-
Total	4407.7	100	100
Source: Department of Statistics, Jordan Ministry of Planning, Jordan: Jordanian Employment Breakdown by Sector, 1999.			

Jordan has no significant oil resources and only modest reserves of natural gas. Thus most of its energy demand is satisfied by imports. Mining and electricity production is mainly state owned but as part of its structural reforms the Jordanian government aims at privatizing its firms. As a growing economy relies on sufficient energy supply, the government has been seeking ways to attract foreign capital to fund additional capacity. With the new Investment Promotion Law it already lifted most limits on foreign ownerhsip of formerly state-owned companies.[7]

Manufacturing had a weight of only 14 percent in GDP at factor cost in 1998. It had been expanding on average during the first half of the 1990s but then underwent sluggish growth as

[5] Data on employment is not further disaggregated.
[6] Data on employment and GDP are not disaggregated correspondingly: 31.4% includes education and health (16,1%) and public administration and defence (15.3%).
[7] Ministry of Planning, 2000.

did the whole economy. In manufacturing, the chemical and petroleum industry has the highest weight (30 percent in 1998) and is responsible for about one fifth of Jordan´s domestic exports. The importance of this sector is due to the country´s large phosphate and potash industry which is state owned but now also earmarked for privatization.

Manufacturing of textiles and apparels, now having a weight of only 6 percent in manufacturing is projected to gain importance. In recent years much investment has been done in the textil and apparel sector. First, as Jordan is not subject to quotas under the Multi Fiber Agreement, it is a favored location for investment of multinational textile firms. Second, since 1997 the Qualifying Industrial Zones (QIZ) program, which gives products under certain conditions duty free access to the U.S. market, promotes the textile and apparels industry. Third, those exports of textiles and apparels not qualifiying for the QIZ status, hindered until now by high US import tariffs, will profit by the already signed Free Trade Agreement (FTA) between Jordan and the USA.[8] Similar impulses will be given by better access to the US market to Jordan´s jewelry and handicraft industry.

Jordan´s light manufacturing and manufacturing of electrical goods is protected partly by very high import tariffs which generated a local import substitution assembly industry. Stronger competition on Jordan´s domestic market for these products when the FTA with the US comes into force could lead to a modernization of these industries.With competitiveness thus strengthened exports are likely to expand.

The service sector had a weight of 53 percent in GDP at factor costs in 1998 and accounted for about 50 percent of Jordan´s total exports. Among the service sector, „finance, insurance, real estate and business services“ is most important, but did not develop well in recent years. „Transport and Communications“ , previously state dominated (e.g. Aquaba Railway, Royal Jordanian, Jordan Telecommunications Company), is a focal point of the government´s privatization efforts.

Even though tourism did not develop as well as had been hoped for after the peace treaty with Israel in 1994[9], the sector „trade, restaurants and hotels“ experienced growth rates above average throughout the 1990s and travel accounted for almost 50 percent of exports in non-factor services in 1998. Besides, the sector „ trade, restaurants and hotels“ is very labor intensive and thus together with its high growth rates most important for employment.

2. External Trade of Jordan

2.1 External Trade of Goods

2.1.1 Imports of Goods

In 1998, Jordan´s imports of goods and non-factor services had a nominal value of 3608.7 Mio. J.D which is 70 percent of GDP at market prices. In the years before, this percentage has been over 80 percent several times. About two thirds of these imports are imports of goods.

Jordan presents its foreign trade with goods in the Harmonized Commodity and Coding System (H.S.). Table 2 shows the imports of the H.S. top level commoditiy aggregates disaggregated into regions of origin. In Table 3 the imports of the rest of the world (ROW) are

[8] Ruebner, 2000.
[9] EIA 2000.

further disaggregated, listing the most important import countries or regions of the ROW with their imports explicitely.

Table 2

Imports of Goods
Value C.I.F. in thousand J.D., 1998

H.S. Code No.	Commodity Description	Total.	from		
			MENA	EU	ROW
I	Live animals; animal products	109753	18437	52439	38877
II	Vegetable products	310746	47045	12874	250826
III	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; prepared animal or vegetable waxes	57788	4375	7056	46356
IV	Prepared foodstuffs;beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes	155431	22116	60251	73064
V	Mineral products	272189	254948	13877	3364
VI	Products of the chemical or allied industries	272169	36929	145787	89453
VII	Plastics and articles thereof; rubber and articles thereof	121944	44287	36514	41144
VIII	Raw hides and skins, leather, furskins and articles thereof; saddlery and harness; travel goods. handbags and similiar containers; articles of animal gut (other than silk-worm gut)	2150	440	53	1658
IX	Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw of esparto or of other plaiting materials; basketware and wickerwork	32302	293	6523	25486
X	Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper or paperboard; paper and paperboard and articles thereof	75810	7763	31279	36768
XI	Textiles and textile articles	154817	23674	38344	92799
XII	Footwear, headgear, umbrellas,sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair	7026	154	2234	4639

XIII	Articles of stone,plaster, cement, asbestos mica or similar materials; ceramic products; glass and glassware	35200	9053	13357	12790
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewellery;coin	28803	950	8612	19241
XV	Base metals and articles of base metals	209910	35087	55575	119248
XVI	Machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles	397665	10054	215181	172430
XVII	Vehicles, aircraft, vessels and associated transport equipment	375703	448	150282	224972
XVIII	Optical,photographic, cinemato-graphic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof	60608	33	28404	32172
XX	Miscellaneous manufactured articles	30026	4839	9259	15928
XXI	Works of art, collectors' pieces and antiques	51	0	24	26
	Unspecified	4283	0	21	4262
	Total	2714374	520926	887946	1305502
Source:Department of Statistics, Jordan 2001. „External Trade"-Modul.					

Table 3

Imports of Goods from ROW
Value C.I.F. in thousand J.D., 1998

H.S. Code No.	Commodity Discription (shortended)	Total Imports of ROW	Imports from			
			India	Turkey	USA	East Asia[10]
I	Live animals; animal products	38877	6956	29	1245	95
II	Vegetable products	250826	4815	64256	55401	6892
III	Animal or vegetable fats and oils	46356	3	1963	11325	32151
IV	Prepared foodstuffs; beverages, tobacco	73064	12970	4716	18293	9248
V	Mineral products	3364	57	102	1263	111
VI	Products of the chemical or allied industries	89453	8556	4635	14773	21098
VII	Plastics and articles thereof; rubber and articles thereof	41144	1326	3937	2981	24704
VIII	Raw hides and skins, leather, furskins and articles thereof	1658	28	19	55	627
IX	Wood and articles of wood; wood charcoal; cork; basketware and wickerwork	25486	15	1233	763	13812
X	Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper	36768	1265	30	9710	8656
XI	Textiles and textile articles	92799	6763	10721	7981	44863
XII	Footwear, headgear, umbrellas,sun umbrellas, walking-sticks, seat-sticks,	4639	3	406	87	3677
XIII	Articles of stone,plaster, glass cement, ceramic products	12790	289	3153	817	6980
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals	19241	77	22	12	393
XV	Base metals and articles of base metals	119248	1987	11140	7560	16074
XVI	Machinery and mechanical appliances; electrical equipment	172430	1351	10023	48256	78375
XVII	Vehicles, aircraft, vessels	224972	1513	4339	61890	144058
XVIII	Optical, photographic instruments	32172	564	410	11540	9076
XX	Miscellaneous manufactured articles	15928	111	511	3416	8145

[10] China, Japan, Malaysia, Indonesia, South Korea and Thailand have been subsumed under East Asia.

XXI	Works of art, collectors' pieces and antiques	26		0	4	135
	Unspecified	4262		2	700	0
	Total	**1305502**	**48649**	**121648**	**258072**	**429171**
Source:Department of Statistics, Jordan 2001. „External Trade"-Modul.						

In Table 3, note the imports of vegetable products from the ROW. These imports are mainly imports of wheat, garley, rice and other cereals and the by far largest importer in this commodity group is Turkey followed by the USA.

The large imports of minerals are mostly oil imports as Jordan has no significant own energy sources. In 1998, Jordan purchased oil almost totally from Iraq which is possible because of a special exemption from the general U.N. embargo of Iraq.[11]

It is interesting to note that Jordan´s imports of textiles and articles thereof are many times higher than the value added of the textile industry. Jordan´s textile industry is heavily dependent on imports of its inputs. These stem to the largest part from East Asian Countries. With the prospected stronger growth in this sector the imports in this commodity group will further increase.

The largest commodity groups in imports are the H.S. categories XVI and XVI. These imports mainly come from the EU, the US and East Asian countries. Their significance for the Jordanian economy becomes obvious when compared to the domestic production in this field: In 1998, gross output of „other manufactures" which corresponds approximately to the H.S. categories XVI – XXI, was 261 Mio. J.D.

The just described picture of Jordanian imports did not change very much in recent years.

[11] EIA, 2000.

Table 4 Imports of Goods by Economic Function 1999		
Commodity Groups	Value C.I.F. in 000 J.D.	Weights in total
Total	2635206.9	1.00
First : Consumer Good	**782911.4**	**0.30**
A- Current Consumer Goods	539046.7	0.20
- Foodstuffs	254071.8	0.10
- Pharmaceutical Products	79776.0	0.03
- Other Current Consumer Goods	205198.9	0.08
B- Durable Consumer Goods	243864.7	0.09
- Small Motor Vehicles For Passengers	162090.3	0.06
- Other Durable Consumer Goods	81774.4	0.03
Second : Crude Materials And Other Intermediate Consumer Goods	**1307320.0**	**0.50**
- Fuels Including Crude Petroleum	309881.6	0.12
- Crude Potassium	44.4	0.00
- Fertilizers	9711.7	0.00
- Construction Materials	26969.5	0.01
- Other Intermediate Goods	960712.9	0.36
Third: Parts And Accessories	**205750.9**	**0.08**
- Parts And Accessories Of Aircraft	73617.2	0.03
- Parts And Accessories Of Transport Equipment Except Aircraft	52722.4	0.02
- Parts And Accessories Of Other Machines And Equipment	79411.3	0.03
Fourth: Capital Good	**327865.6**	**0.12**
- Transport Equipment Except Small Motor Vehicles	53016.9	0.02
- Other Capital Goods Including Machinery'S And Equipment'S	272555.6	0.10
- Live Animals For Breeding	2293.2	0.00
Fifth : Other Goods Not Classified Elsewhere In H.S.	**11358.9**	**0.00**
Source: Department of Statistics, Jordan. CD-ROM: External Trade 1999.		

Tables 4 and 5 confirm the strong dependence of Jordan from foreign intermediate inputs, oil and basic food stuffs.

Table 5 The 10 Most Important Commodities in Imports 1998			
Commodity description	H.S. Code No.	Tariff rate 2000	Imports in Mio. J.D.
Petroleum oils and oils obtained from bituminous minerals, crude.	270900000	5%	180433
Durum wheat	100110000	0	89851
Medicaments, other	300490000	30%	55511
Motor vehicles for the transportation of goods, weight exceeding 5 tonnes but not exceeding 20 tonnes	870422000	0	51096
Barley	100300000	0	47367
Ingots	720610000	5%	45452
Maize other than seeds	100590000	5%	43812
Parts of aeroplanes or helicopters, other	880330000	10%	40424
Refined sugar	170199100	5%	35878
Parts of powered and non-powered aircraft, other	880390000	10%	32014
Source: Department of Statistics, Jordan. CD-ROM: External Trade 1999.			

2.1.2 Exports of Goods and Sector Specific Trade Balances

Since many years Jordan has a negative trade balance. As Table 6 shows it is a net importer in almost all top level goods categories. The significant exception are chemicals and products of allied industries. Whereas on average Jordan´s industries export about 28 percent of their gross output, the chemical industry exports 40 percent of its gross output. However, to interpret these figures correctly it has to be said that 77 percent of the chemical industry´s gross output are inputs of other sectors. Thus, a large part of the chemical industry´s exports is actually value added of other sectors. Looking at the chemical industry´s most important export products makes this point more obvious: One half of its exports are fertilizers, mainly phosphates and potash. Most of the value of these products is value added of „mining and quarrying“.

Table 6 shows that reexports were 18 percent of total exports in 1998. In the commodity aggregates machinery and vehicles total exports mainly consist of reexports. Thus, to evaluate which of Jordan´s sectors are export-oriented, domestic rather than total exports are relevant.

Table 6

Exports of Goods and Trade Balance
Value in thousand J.D., 1998

H.S. Code No.	Commodity Description (shortended)	Domestic Export: Value F.O.B.	Re-Export: Value F.O.B.	Balance (Total Export - Import):
I	Live animals; animal products	45105	4509	-60140
II	Vegetable products	102163	9339	-199244
III	Animal or vegetable fats and oils	56329	2526	1068
IV	Prepared foodstuffs; beverages, tobacco	25452	7630	-122349
V	Mineral products	161697	5770	-104721
VI	Products of the chemical or allied industries	415810	25860	169501
VII	Plastics and articles thereof; rubber and articles thereof	28863	6230	-86850
VIII	Raw hides and skins, leather, furskins and articles thereof	1738	655	244
IX	Wood and articles of wood; wood charcoal; cork; basketware and wickerwork	216	650	-31436
X	Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper	41333	4451	-30026
XI	Textiles and textile articles	57037	11900	-85880
XII	Footwear, headgear, umbrellas,sun umbrellas, walking-sticks, seat-sticks,	9675	1380	4029
XIII	Articles of stone,plaster, glass cement, ceramic products	11594	2724	-20881
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals	5175	1404	-22224
XV	Base metals and articles of base metals	26135	13248	-170527
XVI	Machinery and mechanical appliances; electrical equipment	37900	54703	-305062
XVII	Vehicles, aircraft, vessels	7494	63588	-304620
XVIII	Optical, photographic instruments	1812	9305	-49492
XX	Miscellaneous manufactured articles	10551	5070	-14405
XXI	Works of art, collectors' pieces and antiques	302	109	361
	Unspecified	2	436	-3818
	Total	1046382	231517	-1436475

Source: Department of Statistics, Jordan 2001.

Note the exports of vegetables which go mainly to MENA countries. The large exports of minerals and chemicals are further described by Table 7 where domestic exports are presented according to their economic function.

Table 7

Domestic Exports, Value F.O.B in 000 J.D., 1999

Commodity Groups	Value	Weight in total
Total	1051353.5	1.00
First : Consumer Good	**417622.1**	**0.40**
A- Current Consumer Goods	**379893.9**	**0.36**
- Foodstuffs	135401.2	0.13
- Pharmaceutical Products	100653.2	0.10
- Other Current Consumer Goods	143839.4	0.14
B- Durable Consumer Goods	**37728.2**	**0.04**
- Small Motor Vehicles For Passengers	0.5	0.00
- Other Durable Consumer Goods	37727.7	0.04
Second : Crude Materials And Other Intermediate Consumer Goods	**591851.0**	**0.56**
- Fuels Including Crude Petroleum	70.8	0.00
- Crude Phosphates	115165.2	0.11
- Crude Potassium	125955.9	0.12
- Fertilizers	78316.0	0.07
- Construction Materials	32851.8	0.03
- Other Intermediate Goods	239491.3	0.23
Third: Parts And Accessories	**6528.9**	**0.01**
- Parts And Accessories Of Transport Equipment Except Aircraft	1880.1	0.00
- Parts And Accessories Of Other Machines And Equipment	4648.8	0.00
Fourth: Capital Good	**35264.5**	**0.03**
- Transport Equipment Except Small Motor Vehicles	9508.8	0.01
- Other Capital Goods Including Machinery'S And Equipment'S	25674.9	0.02
- Live Animals For Breeding	80.8	0.00
Fifth : Other Goods Not Classified Elsewhere In H.S.	**87.0**	**0,00**
Source: Department of Statisitcs, Jordan.CD-ROM:External Trade of Jordan 1999		

Table 7 shows that the chemical industry not only has a strong position in exporting intermediate goods but also that their exports of pharmaceuticals (which are mostly consumer goods) are also considerable.

Besides, Table 7 shows that Jordan´s exports do largely depend on its natural endowment with phosphates and potash and are insofar not supported by a broad industrial basis.

Table 8

Domestic Exports of Goods minus Imports of Goods versus Different Regions
Value in thousand J.D., 1998

Code	Commodity_Description	versus		
		MENA	EU	ROW
I	Live animals; animal products	25582	-52412	-37818
II	Vegetable products	48639	-8512	-248710
III	Animal or vegetable fats and oils	51818	-7045	-46232
IV	Prepared foodstuffs; beverages, tobacco	-7320	-56931	-65728
V	Mineral products	-222314	10182	101641
VI	Products of the chemical or allied industries	118924	-127938	152654
VII	Plastics and articles thereof; rubber and articles thereof	-27391	-36149	-29540
VIII	Raw hides and skins, leather, furskins and articles thereof	-169	-17	-226
IX	Wood and articles of wood; wood charcoal; cork; basketware and wickerwork	-171	-6523	-25393
X	Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper	7986	-26653	-15810
XI	Textiles and textile articles	-12100	-28229	-57451
XII	Footwear, headgear, umbrellas,sun umbrellas, walking-sticks, seat-sticks,	3321	-2234	1561
XIII	Articles of stone,plaster, glass cement, ceramic products	373	-13350	-10628
XIV	Natural or cultured pearls, precious or semi-precious stones, precious metals	-896	-8611	-14121
XV	Base metals and articles of base metals	-18482	-53045	-112248
XVI	Machinery and mechanical appliances; electrical equipment	6817	-214735	-151847
XVII	Vehicles, aircraft, vessels	2155	-150236	-220127
XVIII	Optical, photographic instruments	1343	-28393	-31746
XX	Miscellaneous manufactured articles	400	-9017	-10859
XXI	Works of art, collectors' pieces and antiques	111	-23	163
	Unspecified	0	-21	-4260
	Total	-21373	-819893	-826725

Source: Department of Statistics, Jordan 2001.

Jordan is a net importer versus all three regions. Versus the EU, Jordan has no significant positive trade balance for any of the disaggregated product groups. Even the trade balance with chemicals is negative. The high exports of the chemical industry go mainly to MENA

and ROW. Versus the ROW the positive trade balances in trade with minerals – (H.S. 25: salt, sulphur, earth and stone, plastering materials, lime , cement) and chemicals (H.S. 31: fertilizers) are remarkable.

2.2 External Trade in Services

Trade in services is documented in the balance of payments and is distinguished between trade with non-factor services and trade with factor services. Jordan´s balance of trade in non-factor services is positive since many years.[12] For one, this is due to the positive balance in travel. Unfortunately, in the balance of payments the service account is presented only at a highly aggregated level. Thus a significant surplus in the balance of non-factor services is summarized under the heading „other services".

Trade in factor services consists on the one hand on workers remittances and on the other hand on investment income. Workers' remittances to Jordan is labor income of Jordanians working abroad. If these Jordanians are still residents of Jordan the remittances are added to GDP to get GNP. In the case of Jordan, workers remittances is mainly labor income earned abroad by non-residents. The balance of investment income is negative since many years. This is not surprising as Jordan experiences a large capital inflow because of its usually negative trade balances. The efforts of the government to attract foreign direct investment in the course of privatization will most likely further increase Jordan´s net payments of investment income to foreign countries.

3. Indirect Taxation in Jordan

3.1 Import Tariffs

Jordan levies import duties on goods but not on services.[13] The tariff rates are actually at 0, 5, 10, 20, and 30 percent of the goods´ value. In only a few cases the tariff rate is based on the quantity of the imported goods. Imports that are intended for reexportation are not charged with tariffs. However, it is not possible to separate those imports going to be reexported from total imports because imports and corresponding reexports do not necessarily fall into the same year. Thus reexports in many H.S. categories are higher than the imports of the same year.

There is - to our knowledge – no evidence of significant non-tariff barriers in Jordan.

Since 1997 Jordan has shown great interest in liberalizing its external trade. It has signed free trade agreements with several countries and regions. A small scale start was in 1997, when the Qualifying Industrial Zones (QIZ) program among Jordan, Israel and the USA came into force. Under this legislation, products with a certified minimum content of Jordanian and Israeli inputs that are manufactured in specially designated qualifying industrial zones are eligible for unilateral duty-free access to the U.S. market.

In order to be admitted to the World Trade Organization (WTO) Jordan had to cut its tariff rates until 1998 to a maximum of 40 percent for all trading partners and has to end up with a maximum tariff rate of 20 percent by 2010.[14] After further reductuions in 1999 and 2000 the

[12] Department of Statisitics, 2000.
[13] Custom´s Department, Jordan: The Jordanian Customs Tariff.
[14] Jordan became member of the WTO on April 12th,2000.

maximum tariff rate is now at 30 percent. Besides, Jordan signed the Arab Free Trade Agreement in 1998 which came into force the same year. For all member states[15], it enforces a stepwise reduction of import tariffs from 1998 until 2007 such that each year all tariff rates have to be reduced by ten percent of the 1998 rate. Until November 2000, Jordan´s Ministry of Finance estimated the costs of lower import duties at 17 million JD. This amounts to 0.3 percent of GDP estimated for 2000.

In 2000, Jordan started negotiations on a Free Trade Agreement (FTA) with the USA. The proposed FTA would eventually extend reciprocal duty-free treatment to all products traded between the two countries.

Finally, there is the Association Agreement between Jordan and the European Union which has been signed in 1997 but which, pending ratification, did not yet come into force. As described in the introduction it aims at establishing an Euro-Jordanian Free Trade Area in progressive steps by the year 2010. Industrial products originating in the Community shall - with a few exceptions - be allowed to enter Jordan free of customs duties after a transitional period of 12 years. Imports of agricultural products from the EU will still be charged with duties.

To calculate import-weighted tariff rates by commodity groups and regions the actual tariff rates have to be weighted with the corresponding import values for each commodity and region. In principle, only the value of those imports staying in Jordan is relevant. However, as explained above, reexports cannot be assigned to the corresponding imports. Therefore, we use the total import value for calculating the weighted import tariffs such that the exemption of reexports from tariffs lowers the average weighted tariff rates rather than the tariff base. As data on external trade were not yet available for 1999, import data of 1998 has been used for these calculations.[16] Besides, it has to be noted that the tariff revenue resulting from multiplying the actual tariff rates by the corresponding import values exceeds the collected tariff revenues because of exemptions. Thus the average import-weighted tariff rate is 12.8 percent whereas the effective average tariff rate is 10.9 percent.

The weighted import tariff rates presented in Table 9 show the burden of taxed commodity categories for the three regions.

[15] Members are all arab states, including Sudan and Iraq, excluding Turkey and Iran.
[16] This proceeding is supported by Jordan´s customs department.

Table 9

Weighted Import Tariff Rates by Regions and Commodity Groups

	Weighted import tariffs for		
Commodity groups	MENA	EU	ROW
Agriculture	0.14	0.18	0.06
Mining and quarrying	0.06	0.20	0.11
Food, beverages, tobacco	0.25	0.20	0.19
Textils, apparels, leather products	0.20	0.17	0.20
Wood, paper, and printing	0.17	0.12	0.06
Petroleum and chemicals	0.09	0.08	0.09
Rubber and non-metallic minerals	0.07	0.15	0.18
Base metals and fabricated metal	0.13	0.16	0.11
Other manufactures	0.18	0.14	0.16
Average	0.10	0.14	0.13
Source: Department of Statistics, Jordan 1999. External Trade Statistics.			

Weighted import tariffs range from 6 percent to 20 percent. The differences in the weighted import tariffs of the three regions within a commodity group show that the composition of imports differs quite considerably among regions. Averaged over all imports, MENA countries face the lowest import tariffs. However, the weighted import tariffs of MENA countries are not minimal for each commodity group.

3.2 Sales Taxes

General Sales Tax

The main indirect tax is the General Sales Tax (GST) laid down in the General Sales Tax Law No. 6 1994. It specifies that the value of taxable local or imported goods and services shall be taxable. The taxable value of imported goods is the cif value plus duty. Locally produced or imported goods and services which are going to be exported are not charged with GST. This conforms with the international practice that such exports are taxed by the importing country.

The GST rate has been raised in 1999 from 10 percent to 13 percent to compensate for the loss of tariff revenues. Until now the GST is not a value added tax, but about 50 percent of the taxes on intermediate inputs can be deducted from the own tax load. No sales tax is levied on agriculture, trade, construction, social and private services and on government services. In addition, there is a long list of goods exempted from GST. [17] Until now this list has almost remained untouched. Also, several imported goods are not charged with GST. To further

[17] According to sectoral data of Jordan´s Department of Statistics further exemptions cause that also the sectors electricity and water, transport, storage and communications and real estate are hardly paying indirect taxes.

fulfill the WTO membership requirements, GST rates on domestic and imported goods are going to be harmonized.[18]

There is a list of goods, produced locally or imported, which are taxed at a rate of 20 percent of their value, e.g. photographic films, air conditioners, perfumes, wallpaper, video cameras, fireworks and microwave ovens.

Supplementary Sales Tax

The supplementary sales tax took effect in August 1999 and was introduced to make up for tariff revenues lost in the course of trade liberalization. First, it is levied on those imported goods which had been charged with tariff rates ranging from 50 to 180 percent before 1998[19] In these cases the supplementary sales tax rate has to be equal to the reduction of the tariff rate of that good since 1998. Second, it specifies three groups of goods, locally produced or imported, which have to be charged at a rate less than or equal to the reduction of the relevant tariff rate. The supplementary sales tax is planned to be abolished in 2001.

Specific Sales Tax

Attached to the General Sales Tax Law is a schedule of goods, imported or locally produced, e.g. carbonated beverages, alcoholic beverages, cigarettes, cement, iron and mineral oils, which are charged with specific sales taxes. These taxes are based on the type, size, weight or unit of the taxable goods. In several cases the tax rates on imported and locally produced goods differ.

Sales taxes come on top of import duties and must not be considered as „tariff equivalent“ under the EU association agreement.

Jordan´s revenues from indirect taxes amounted to 719.0 Mio. J.D. in 1998 and are estimated at 834 Mio. J.D. in 2000. The share of customs duties in indirect tax revenues has fallen from 40 percent in 1998 to (estimated) 34 percent in 2000. Sales tax revenues on imported goods are estimated to remain approximately constant at around 26 percent during this time. In contrast to the lower tax revenues from foreign trade transactions in 2000, sales tax revenues on domestic transactions are estimated to increase from 32 percent of total indirect tax revenues to 37 percent in 2000. This shift of tax burden from imports to domestic transactions is a consequence of the starting trade liberalization and the fiscal budget reform described above.

Table 10 shows the effective average tax rates of the main indirect taxes and - in case of the GST on domestic transactions - also on the level of sectors.

[18] Ministry of Finance, 2000.

[19] These goods are natural, mineral and carbonated water including soda water, carbonated beverages, beer, including non-alcoholic, wine, liquors, tobacco and tobacco products. (Schedule 5 attached to the General Sales Tax Law No.6 of 1994.)

Table 10 Effective Indirect Tax Rates, percentages	
Sectors	GST rates on domestic transactions
Agriculture	0.5
Mining and quarrying	12.6
Food, beverages and tobacco	13.0
Textils, apparels and leather products	6.8
Wood, paper and printing	2.2
Petroleum and chemicals	19.0
Rubber and non-metallic minerals	8.2
Base metals and fabricated metal	6.4
Other manufactures	8.5
Electricity and Water	0.3
Construction	0.2
Services	0.9
Government services	0.0
Average	4.1
	Sales tax rate on imports
Average	4.9
	Import tariff rate
Average	10.9

4. The Model of Jordan: A Non-Mathematical Description

A CGE model starts from the idea that the Walrasian general equilibrium structure should be used to depict an actual economy. It is thus assumed as sufficiently realistic that all markets in an economy are simultaneously in equilibrium. A certain base year is chosen to represent the benchmark equilibrium and key parameters of the model are calibrated to match this particular year's observations. Starting from the observed equilibrium, counterfactual policy changes can be modeled and their effects can be traced by analyzing the new equilibrium values of the variables.

The disaggregation of Jordan´s producing sector is firstly motivated by the classification the Department of Statisitics uses for presenting sectoral output data, secondly by the restriction that in the balance of payments services are not disaggregated in the same way as in the sectoral output statistics. Consequently, we have the following sectors and subsectors: Agriculture, mining and quarrying, manufacturing, water and electricity, construction, trade and services[20] and government services. Manufacturing has been disaggregated into seven subsectors: Manufacturing of food, beverages and tobacco, manufacturing of textiles, apparels and leather products, manufacturing of wood, paper and printing, manufacturing of petroleum and chemicals, manufacturing of rubber and other non metallic minerals, manufacturing of basic metals and fabricated metal except machinery and equipment. The seventh subsector is called `other manufactures´ and includes e.g. machinery and equipment and vehicles.

According to these sectors and subsectors goods and services have been aggregated into 13 commodity groups.

All sectors except „electricity and water", „construction" and „government services" participate in international trade. Major trading partners distinguished in this paper are the MENA region[21], the EU[22] and the Rest of the World (ROW).

[20] The sector „trade and services" includes wholesail and retail trade, restaurants and hotels, transport storage and communications, finance, insurance and business services, real estate, community, social and personal services as well as private non-profit services to households and domestic services to households. It has been aggregated that much because there is no data on exports and imports for the subsectors available and in any way imports of this aggregate are not charged with tariffs.

[21] For data reasons, the MENA region is defined here as including Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan´s Free Trade Zone, Kuwait, Lebanon, Lybia, Mauritania, Marocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates and Yemen. These are the states which joined the Arab Free Trade Agreement which came into force in 1998.

[22] To the European Union (EU 15) belong the countries Austria Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

Figure 1: The Commodity Markets

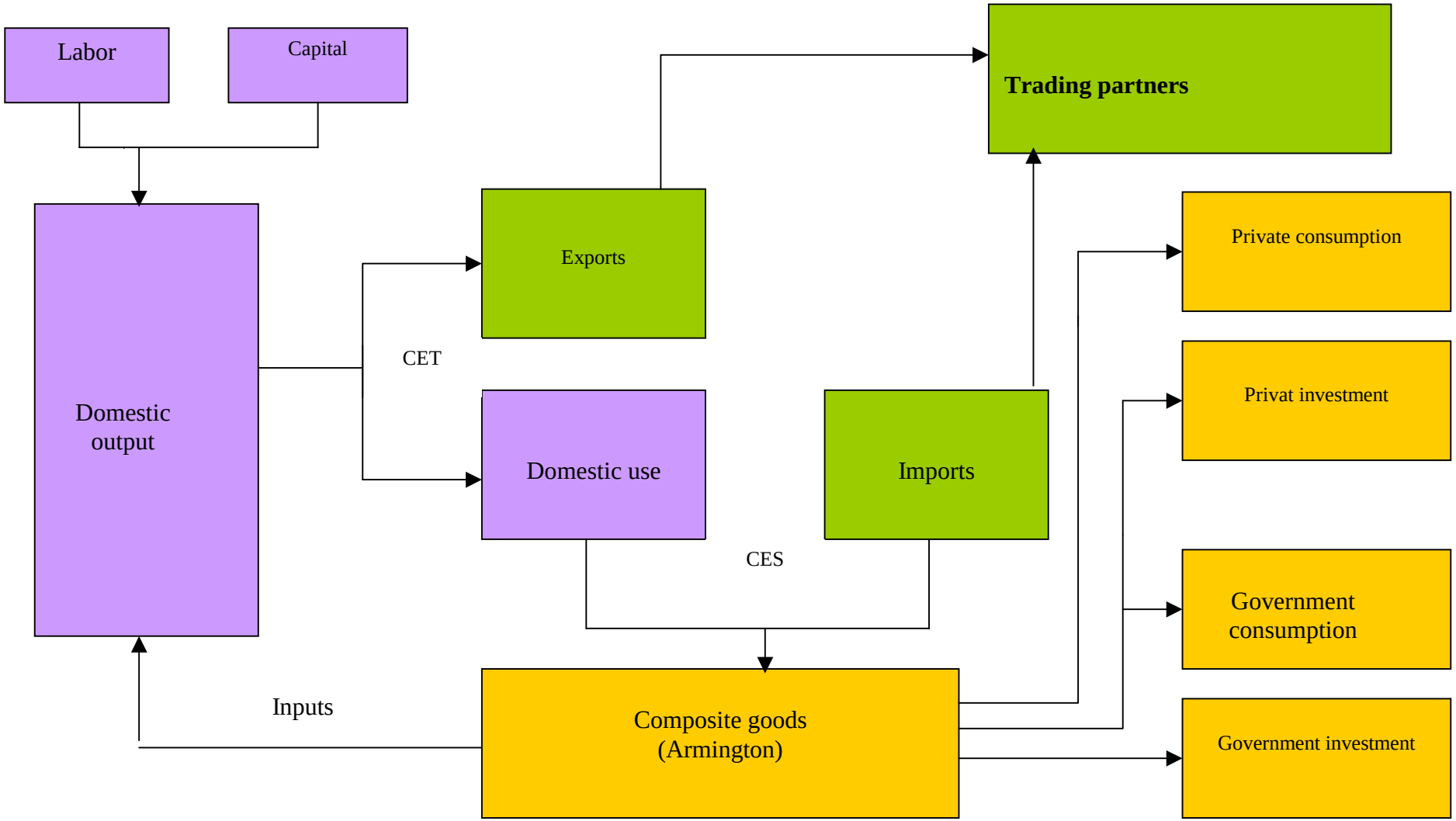
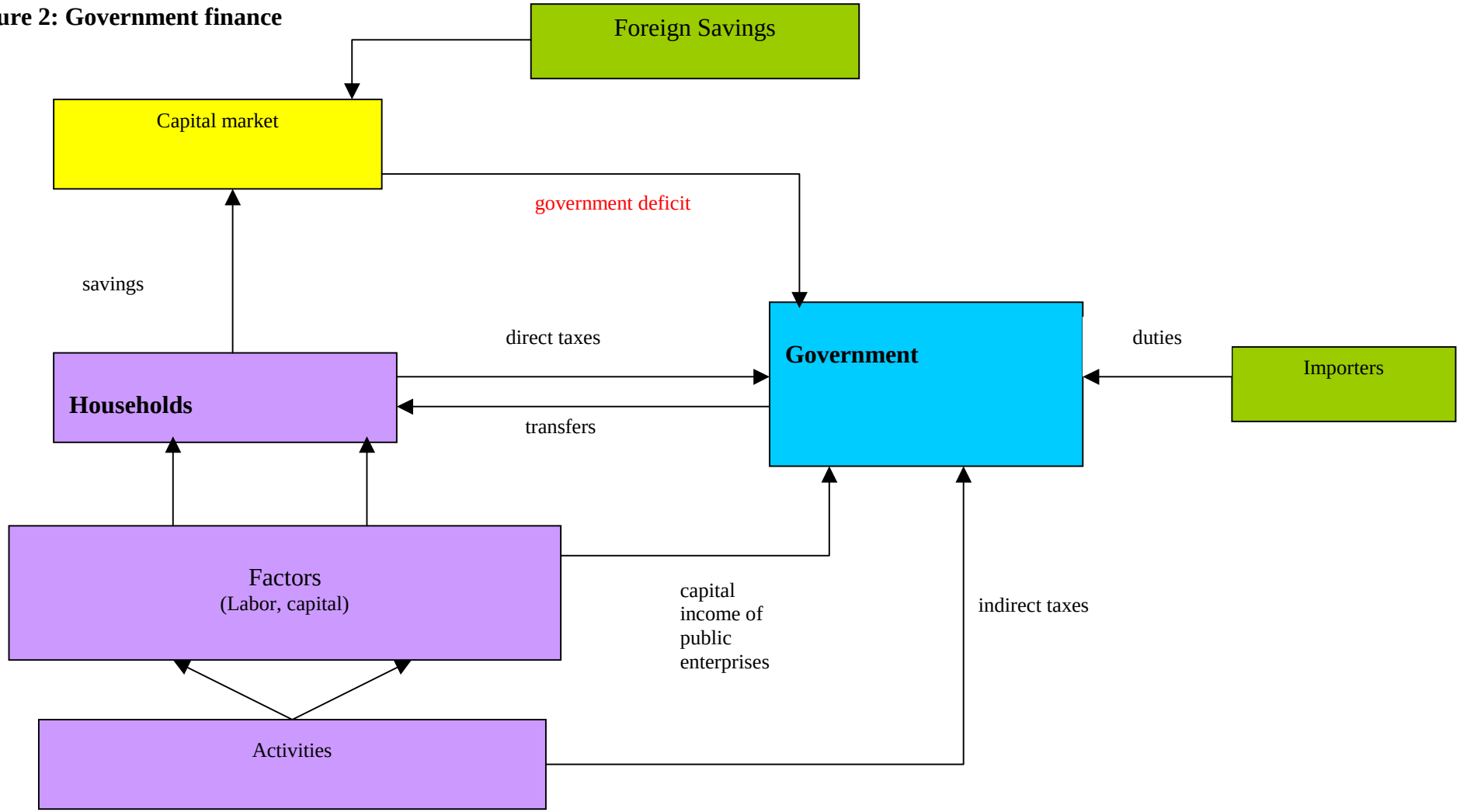


Figure 2: Government finance



5. The Analytical Model

The theoretical model for Jordan is very much in the spirit of the models of Dervis et al., 1982. As it is described in section 4., Jordan´s economy is decomposed into thirteen activities, *i*=1.....13. The activities $I^t := \{1,..,9,12\}$ export parts of their output whereas the activities $I^{nt} = \{10,11,13\}$ produce non-traded goods.

Real net value added at factor cost Q_i. *i*=1.....13 is produced under constant elasticity of substitution (CES) production functions with the inputs labor L_i and capital K_i. (Note that. unless otherwise specified variables are in capital letters with bars denoting exogenous variables. Parameters are denoted in lowercase letters).

$$Q_i = a_i \left[\alpha_i \bar{K}_i^{-\rho_i} + (1-\alpha_i) L_i^{-\rho_i} \right]^{-\frac{1}{\rho_i}}, \quad i = 1,...,13 \tag{1}$$

Assuming competitive factor markets profit maximization implies the equalitiy between nominal factor prices and marginal products. Hence factor demands are implicitly given by

$$r_i \bar{P}_i^K = P_i^Q a_i \left[\alpha_i \bar{K}_i^{-\rho_i} + (1-\alpha_i) L_i^{-\rho_i} \right]^{-\frac{1}{\rho_i}-1} \alpha_i \bar{K}_i^{-\rho_i-1} \tag{2}$$

$$w = P_i^Q a_i \left[\alpha_i \bar{K}_i^{-\rho_i} + (1-\alpha_i) L_i^{-\rho_i} \right]^{-\frac{1}{\rho_i}-1} (1-\alpha_i) L_i^{-\rho_i-1} \tag{3}$$

for all sectors. Note that this specification allows for heterogenous rates of return to capital across sectors. Further, the constant returns property of the production function implies zero economic profits for all activities:

$$P_i^Q Q_i = r_i \bar{P}_i^K \bar{K}_i + wL_i \tag{4}$$

From (2) and (3) the nominal incomes of the production factors are given by

$$Y^K = \sum_{i=1}^{13} r_i \bar{P}_i^K \bar{K}_i \tag{5}$$

$$Y^L = \sum_{i=1}^{13} wL_i \tag{6}$$

The resource constraint for the production factor labor is simply

$$\sum_{i=1}^{13} L_i = \bar{L} \tag{7}$$

where $\bar{L}$ is the total supply of labor.

In accordance with the activity aggregates we distinguish $j = 1,...,13$ commodity aggregates. The commodities $J^t = \{1,..,9,12\}$ are traded whereas the commodities $J^{nt} = \{10,11,13\}$ are not traded.

For each traded commodity aggregate a composite commodity X_j. $j \in J^t$, the so-called Armington good, is produced using the inputs domestic supply D_j and imports M_j in a CES-production function:

$$X_j = a_j^M \left[\alpha_j^M D_j^{-\rho_j^M} + \left(1-\alpha_j^M\right) M_j^{-\rho_j^M} \right]^{-\frac{1}{\rho_j^M}} \tag{8}$$

The cost minimizing input relation is given by

$$\frac{M_j}{D_j} = \left(\frac{P_j^D}{P_j^M} \frac{\left(1-\alpha_j^M\right)}{\alpha_j^M} \right)^{\frac{1}{1+\rho_j^M}}, \tag{9}$$

and the zero profit condition is

$$P_j^X X_j = P_j^D D_j + P_j^M M_j \tag{10}$$

Equation (10) describes trade creation as a function of the relative prices between domestic and imported goods. To model trade diversion, assume that for a given import value M_j Jordan minimizes the costs of imports over trading partners $k = 1,..,3$ (as defined in 2.1) under a CES technology

$$M_j = a_j^m \left[\sum_{k=1}^{3} \alpha_{jk}^m M_{jk}^{-\rho_j^m} \right]^{-\frac{1}{\rho_j^m}}. \tag{11}$$

Minimization requires

$$\frac{M_{jk}}{M_{j1}} = \left(\frac{\alpha_{jk}^m}{\alpha_{j1}^m} \frac{P_{j1}^m}{P_{jk}^m} \right)^{\frac{1}{1+\rho_j^m}} \tag{12}$$

and total costs of imports are given by

$$P_j^M M_j = \sum_{k=1}^{3} P_{jk}^m M_{jk} \tag{13}$$

Having defined the supply side of the domestic commodity market by Armington aggregates, intermediate demand for commodity j of sector i is assumed to depend linearly on gross output G_i of sector i:

$$V_{ji} = a_{ji} G_i \tag{14}$$

Total (nominal) intermediate demand of sector i is therefore

$$P_i^V V_i = \sum_{j=1}^{13} P_j^X V_{ji} \tag{15}$$

Depreciation per sector depends linearly on the capital stock:

$$O_i = \delta_i \bar{K}_i \tag{16}$$

Hence gross output at factor costs is given by

$$P_i^G G_i = P_i^Q Q_i + P_i^V V_i + \bar{P}_i^K O_i . \tag{17}$$

Equation (17) describes the value of total supply of activity *i* at producers‘ cost. To specify the demand side, let us start with exports, whose treatment is completely analogous to imports. Assume that for a given quantity of gross output G_i, producers of traded activities $i \in I^t$ maximize its nominal value

$$P_i^G G_i = P_i^D D_i + P_i^E E_i \tag{18}$$

subject to a constant elasticity of transformation (CET) choice between sales on the domestic market and exports:

$$G_i = a_i^E \left[\alpha_i^E D_i^{\rho_i^E} + \left(1-\alpha_i^E\right) E_i^{\rho_i^E} \right]^{\frac{1}{\rho_i^E}} \tag{19}$$

It is then necessary to have

$$\frac{E_i}{D_i} = \left(\frac{P_i^E}{P_i^D} \frac{\alpha_i^E}{\left(1-\alpha_i^E\right)} \right)^{\frac{1}{\rho_i^E - 1}} \tag{20}$$

Further, for a given aggregate export volume E_i, export revenue

$$P_i^E E_i = \sum_{k=1}^{3} P_{ik}^e E_{ik} \tag{21}$$

is maximized over sales to trading partners *k*=1....3 under a CET-transformation function

$$E_i = a_i^e \left[\sum_{k=1}^{3} \alpha_{ik}^e E_{ik}^{\rho_i^e} \right]^{\frac{1}{\rho_i^e}} \tag{22}$$

It is then necessary to have

$$\frac{E_{ik}}{E_{i1}} = \left(\frac{\alpha_{i1}^e}{\alpha_{ik}^e} \frac{P_{ik}^e}{P_{i1}^e} \right)^{\frac{1}{\rho_i^e - 1}} . \tag{23}$$

In fact, since we assume that world market prices are equal for all countries, equations (21) and (23) simplify to

$$E_i = \sum_{k=1}^{3} E_{ik} \tag{21'}$$

and

$$\frac{E_{ik}}{E_{i1}} = \left(\frac{\alpha_{i1}^e}{\alpha_{ik}^e} \right)^{\frac{1}{\rho_i^e - 1}} \tag{23'}$$

such that the export shares of individual trading blocks are invariant.

Disposable labor income is given by

$$Y_D^L = \left(1 - \tau^L\right) Y^L + \overline{Y}_F^L, \tag{24}$$

where effective direct tax rates are denoted τ with appropriate superscript. $\overline{Y}_L^F$ is labor income earned by Jordanians working abroad minus labor income earned in Jordan by non-residents. Disposable capital income is given by

$$Y_D^K = (1 - \pi^F - \pi^G)\left(1 - \tau^K\right)\left(Y^K + \overline{Y}_F^K\right). \tag{25}$$

where $\overline{Y}_F^K$ is capital income from abroad. π^F is the constant share of net capital income earned by foreign capital and π^G is the constant share of net capital income earned by the government.

Nominal household income consists of disposable factor incomes plus exogenous transfers from the government ($\overline{TR}^G$) and abroad ($\overline{TR}^F$):

$$Y^H = Y_D^K + Y_D^L + \overline{TR}^G + \overline{TR}^F \tag{26}$$

Nominal household savings are assumed to be a constant fraction of household income

$$S^H = s^H Y^H, \tag{27}$$

while (real) household consumption is derived from maximizing the utility function of a Stone-Geary linear expenditure system (LES)

$$\max \quad \prod_{j=1}^{12} \left(C_j^H - \gamma_j\right)^{\alpha_j^H}, \qquad \sum_{j=1}^{12} \alpha_j^H = 1 \tag{28}$$

subject to the budget constraint

$$\sum_{j=1}^{12} P_j^X C_j^H + S^H = Y^H - \overline{T}^H \tag{29}$$

where the γ_j are minimum consumption levels and $\overline{T}^H$ is a catchall for other government taxes on households. Note that households do not consume government services which is why $j=13$ is excluded in (29). Maximization yields the following demand functions:

$$C_j^H = \begin{cases} 0 & j=13 \\ \gamma_j + \dfrac{\alpha_j^H \left(\left(1-s^H\right) Y^H - \overline{T}^H - \sum_{j'=1}^{12} P_{j'}^X \gamma_{j'} \right)}{P_j^X} & j \neq 13 \end{cases} \tag{30}$$

The capital market is modeled as an institution with revenues (supply) and expenditures (demand). Capital market revenues are defined as

$$R^K = \sum_{i=1}^{13} O_i + S^H + S^G + \overline{CE}^G + S^F \tag{31}$$

where S^G denotes government savings. $\overline{CE}^G$ denotes government capital expenditure to specialized agencies and S^F is foreign savings.

Capital market expenditures are given by private investment demand and stocks $\overline{I}_j^{ST}$:

$$E^K = \sum_{j=1}^{13} P_j^X \left(I_j + \overline{I}_j^{ST} \right) \tag{32}$$

Capital market equilibrium requires that

$$R^K = E^K \tag{33}$$

Assuming that gross investment is equal to capital market revenues minus a fixed amount of stocks

$$\sum_{j=1}^{13} P_j^X \left(I_j - \overline{I}_j^{ST} \right) = R^K \tag{34}$$

makes it possible to treat foreign savings S^F as an endogenous variable. Using CES demand functions gross investment is given by

$$I_j = \begin{cases} 0 & j = 1,..,3,6,10,13 \\ \dfrac{\alpha_j^I s_I^K R^K}{\left(P_j^X\right)^{\frac{1}{1+\rho^I}} \sum_{j' \in J^{ig}} \alpha_{j'}^I \left(P_{j'}^X\right)^{\frac{\rho^I}{1+\rho^I}}} & j \in J^{ig} := \{4,5,7,..,9,11,12\} \quad \sum_{j \in J^{IG}} \left(\alpha_j^I\right)^{1+\rho^I} = 1 \end{cases} \tag{35}$$

where I_j is zero for $j \notin J^{ig}$. since these commodity aggregates do not include significant amounts of investment goods.

Revenues consolidated in the government budget are given by

$$R^G = \sum_{i=1}^{13} t_i P_i^D D_i + \sum_{j \in I^t} \sum_{k=1}^{3} (c_{jk} \overline{p}_j^m M_{jk})(1+t_j^m) + \tau^L Y^L + \tau^K \left(Y^K + \overline{Y}_F^K \right) + Y_G^K + \overline{T}^H + \overline{DEF}^F \tag{36}$$

Here t_i is the effective GST rate per sector, c_{jk} is the effective tariff rate for good *j* imported from country *k* and t_j^m is the effective GST rate on imports. Y_G^K denotes capital income from state enterprises and $\overline{DEF}^F$ are foreign grants.

Government expenditure is given by

$$E^G = P_{13}^X C_{13}^G + \sum_{j \in J^{ig}} P_j^X I_j^G + \overline{TR}^G + S^G + \overline{CE}^G + \overline{CE}_F^G \tag{37}$$

In (37). the first term on the right hand side means that the government consumes only its own goods C_{13}^G. I_j^G is government investment, $\overline{TR}^G$ denotes transfers to households. $\overline{CE}_F^G$ are capital expenditures of the government realized out of Jordan.

Nominal government consumption and investment are assumed to be constant fractions of government revenues such that

$$P_{13}^X C_{13}^G = s_C^G R^G \tag{38}$$

$$\sum_{j \in J^{ig}} P_j^x I_j^G = s_I^G R^G . \tag{39}$$

Demand functions for government investment are specified as CES functions fulfilling budget identity and homogeneitiy of degree zero:

$$I_j^G = \begin{cases} 0 & j \notin J^{ig} \\ \dfrac{\alpha_j^G s_I^G R^G}{\left(P_j^X\right)^{\frac{1}{1+\rho^G}} \sum\limits_{j' \in J^{ig}} \alpha_{j'}^G \left(P_{j'}^X\right)^{\frac{\rho^G}{1+\rho^G}}} & j \in J^{ig} \quad \sum\limits_{j \in J^{ig}} \left(\alpha_j^G\right)^{1+\rho^G} = 1 \end{cases} \tag{40}$$

The budget restriction is, of course, simply $R^G = E^G$.

Price identities complete the model: As Jordan fixes its exchange rate versus the US-Dollar, domestic prices of exports are derived from world market prices $\overline{p}_i^e$. Similiary, domestic prices for imports are derived from world market prices $\overline{p}_j^m$ adjusted for customs tariffs and GST on imports.

$$P_{ik}^e = \overline{p}_i^e \tag{41}$$

$$P_{jk}^{m} = \left(1 + c_{jk}\right) t_j^m \overline{p}_j^m \tag{42}$$

The trade (and services) balances of Jordan vis-à-vis each trading partner are simply

$$TB_k = \sum_{i \in I^t} \overline{p}_i^e E_{ik} - \sum_{j \in I^t} \overline{p}_j^m M_{jk} \tag{43}$$

and the current account *CA* (the negative of foreign savings) is given by

$$CA = \sum_{k=1}^{3} TB_k + \overline{Y}_F^K + \overline{Y}_F^L + \overline{TR}^F + \overline{DEF}^F - \overline{CE}_F^G - Y_{TF}^K . \tag{44}$$

which basically states that the current account is the sum of the trade (and services) balance plus the transfer balance plus the income balance where Y_{TF}^K is the capital income earned by foreign countries. Given equations (1) – (43), this equation is redundant by Walras´ law.

6. The Data Base

Calibration of the relevant parameters is mostly achieved by the 1998 Social Accounting Matrix (Table 11). This matrix uses national accounts, foreign trade and government budget data of 1998 provided by various Jordanian authorities (Department of Statistics, Ministry of Finance, Customs Department) and the input-output table of 1987 - which is the most recent available.[23] The usage of an outdated input-output table represents a considerable drawback for evaluating the sectoral effects of the Association Agreement. However, in order to be able to reproduce inter-sectoral effects at all, the structure of intermediate demand in the 1987 input-output table has been used to construct the SAM.

[23] See Hosoe, 1998.

Table 11
Social Accounting Matrix for Jordan
1998, in 000 J.D.

		S1	S2	S3	S4	S5	S6	S7
S	Sectors							
S1	Agriculture							
S2	Mining and quarrying							
S3	Food, beverages, tobacco							
S4	Textils, apparels							
S5	Wood, paper, printing							
S6	Petroleum, chemicals							
S7	Non-metallic minerals							
S8	Metals, base & fabricated							
S9	Other manufactures							
S10	Electricity and water							
S11	Construction							
S12	Services							
S13	Government services							
C	Commodities							
C1	Agriculture	62962	494	180937	2226	10658	106029	1287
C2	Mining and quarrying	559	40418	890	2335	11198	167247	15563
C3	Food, beverages, tobacco	156062	64	102870	913	1878	14060	431
C4	Textils, apparels	0	2	396	45981	560	531	107
C5	Wood, paper, printing	220	666	10520	547	36045	12650	6267
C6	Petroleum, chemicals	29108	37809	13675	1578	10310	149460	67274
C7	Non-metallic minerals	9859	1048	9988	1903	5001	54158	20171
C8	Metals, base & fabricated	2209	10538	19967	1367	4855	16518	7710
C9	Other manufactures	10511	17330	4167	3624	13011	104466	3261
C10	Electricity and water	5676	9431	7369	1516	4084	20300	17857
C11	Construction	49	226	101	8	16	219	14
C12	Services	139715	49424	170750	11265	24960	100100	39133
C13	Government services							
F	Factors							
F1	labor	69707	68611	46305	18422	23501	70902	38637
F2	capital	33595	46239	63747	14251	9613	76073	25385
I	Institutions							
I1	households							
I2	government							
I21	GST	2104	22592	85117	2320	2740	115370	19033
I22	GST(MENA)							
I23	GST(EU)							
I24	GST(ROW)							
I25	Duties(MENA)							
I26	Duties(EU)							
I27	Duties(ROW)							
I28	direct taxes							
I29	other revenue							
I30	gov. Consumption							
I31	gov. Investment							
CAP	Capital account							
CAP1	invest	24610	42104	31529	8302	11366	39337	26883
CAP2	stocks							
FOR	Foreign account							
FOR1	MENA							
FOR2	EU							
FOR3	ROW							
FOR4	totfact							

Table 11 cont'd
Social Accounting Matrix for Jordan
1998, in 000 J.D.

	S8	S9	S10	S11	S12	S13	C	C1	C2	C3
S										
S1								385831		
S2									179530	
S3										656391
S4										
S5										
S6										
S7										
S8										
S9										
S10										
S11										
S12										
S13										
C										
C1	18299	1944	18	4803	31465	43502				
C2	19270	2462	212	24297	21240	45500				
C3	2265	242	2	532	39018	8165				
C4	152	116	58	32	4632	9837				
C5	1664	656	651	11922	19344	12914				
C6	7208	6029	111007	30819	195494	37028				
C7	10632	35983	8	171329	27493	20727				
C8	21887	14325	654	125435	22801	15860				
C9	21282	51796	6304	28028	142037	94340				
C10	5677	1549	29927	5564	39152	20014				
C11	273	76	505	53992	28056	25476				
C12	24409	45621	11154	115148	445791	89675				
C13						126260				
F										
F1	18323	42222	55367	163313	644489	877200				
F2	10517	37972	19763	3236	1334510					
I										
I1										
I2										
I21	9044	5940	882	1629	18528	500				
I22								3619	13223	1582
I23								3711	798	3853
I24								15010	181	6847
I25								8009	13562	5637
I26								10039	2329	11097
I27								15104	309	19445
I28										
I29										
I30										
I31										
CAP										
CAP1	9587	14134	41215	25104	257369	64260				
CAP2										
FOR										
FOR1								65483	254951	26491
FOR2								65313	13877	67136
FOR3								289703	3361	119591
FOR4										

Table 11 cont'd
Social Accounting Matrix for Jordan
1998, in 000 J.D.

	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
S										
S1										
S2										
S3										
S4	34172									
S5		123146								
S6			605750							
S7				232556						
S8					141107					
S9						70232				
S10							277727			
S11								765182		
S12									2033576	
S13										1491260
C										
C1										
C2										
C3										
C4										
C5										
C6										
C7										
C8										
C9										
C10										
C11										
C12										
C13										
F										
F1										
F2										
I										
I1										
I2										
I21									44138	
I22	1396	457	1954	2836	1919	914				
I23	2318	2049	7693	3239	3084	22146				
I24	5696	3205	4734	4149	6566	24883				
I25	4091	1146	2746	3294	3885	2458				
I26	5997	3814	10461	7337	7540	46579				
I27	17021	2899	6653	11049	11301	60499				
I28										
I29										
I30										
I31										
CAP										
CAP1										
CAP2										
FOR										
FOR1	24267	8124	36929	54290	35087	16105				
FOR2	41071	37799	145755	58441	55089	403138				
FOR3	98655	62189	89485	73215	122043	444810				
FOR4									896300	

Table 11 cont'd
Social Accounting Matrix for Jordan
1998, in 000 J.D.

	F	F1	F2	I	I1	I2	I21	I22	I23	I24
S										
S1										
S2										
S3										
S4										
S5										
S6										
S7										
S8										
S9										
S10										
S11										
S12										
S13										
C										
C1					426304					
C2					107741					
C3					593998					
C4					170463					
C5					60488					
C6					221781					
C7					80512					
C8					39857					
C9					267617					
C10					94797					
C11					810					
C12					1625132					
C13										
F										
F1										
F2										
I										
I1		2218487	1081408							
I2										
I21										
I22										
I23										
I24										
I25										
I26										
I27										
I28		10613	124535							
I29			371057		192516					
I30										
I31										
CAP										
CAP1					526859					
CAP2										
FOR										
FOR1										
FOR2										
FOR3										
FOR4			315500							

Table 11 cont'd
Social Accounting Matrix for Jordan
1998, in 000 J.D.

	I25	I26	I27	I28	I29	I30	I31	CAP	CAP1	CAP2
S										
S1										
S2										
S3										
S4										
S5										
S6										
S7										
S8										
S9										
S10										
S11										
S12										
S13										
C										
C1									0	-29106
C2									0	23189
C3							0		0	-2430
C4							416		1294	108
C5							17242		53601	-570
C6							0		0	-6419
C7							576		1789	-770
C8							20775		64585	-1723
C9							79115		245906	-1030
C10									0	14814
C11							159685		496415	-739
C12							10091		31369	40276
C13						1365000				
F										
F1										
F2										
I										
I1						253600				
I2										
I21						26000				
I22										
I23										
I24										
I25										
I26										
I27										
I28										
I29										
I30										
I31										
CAP										
CAP1						-310600	66340			
CAP2										
FOR										
FOR1										
FOR2										
FOR3										
FOR4							11260			

Table 11 cont'd
Social Accounting Matrix for Jordan
1998, in 000 J.D.

	FOR	FOR1	FOR2	FOR3	FOR4
S					
S1		150182	5325	5608	161115
S2		38313	24117	105038	167468
S3		79958	3861	8119	91937
S4		26592	10516	45277	82385
S5		19784	5152	21714	46650
S6		174424	19523	247723	441670
S7		35947	506	20002	56455
S8		26843	2728	9812	39383
S9		111730	10212	68893	190835
S10					
S11					
S12					1237842
S13					
C					
C1					
C2					
C3					
C4					
C5					
C6					
C7					
C8					
C9					
C10					
C11					
C12					
C13					
F					
F1					92100
F2					217600
I					
I1					855380
I2					
I21					
I22					
I23					
I24					
I25					
I26					
I27					
I28					
I29					202479
I30					
I31					
CAP					
CAP1					52160
CAP2					
FOR					
FOR1					
FOR2					
FOR3					
FOR4					4280

The LES specification (equation 28) requires the calibration of minimum consumption quantities, which then imply the demand elasticities. As the input-output table of 1987 provides disaggregated consumption data, we assume that minimum consumption levels in 1998 are equal to nominal consumption levels in 1987. On average, this is 44 percent of today´s consumption expenditure. The precise values are found in Table 12.

Table 12

Minimum Consumption Levels in LES

Commodities	Actual Consumption	Minimum consumption
Agriculture	426308	186064
Mining and quarrying	107742	47025
Food, beverages, tobacco	594010	259259
Textils, apparels	170465	74400
Wood, paper, printing	60523	26416
Petroleum, chemicals	221782	96798
Non-metallic minerals	80510	35139
Metals, base & fabricated	39786	17365
Other manufactures	267633	116810
Electricity and water	94797	41375
Construction	810	354
Services	1625132	709297
Government services	-	-

The remaining parameters to be specified are various elasticities of substitution and transformation. Elasticities of substitution between domestic products and imports and elasticities of transformation between domestic supply and exports have been estimated by various authors, see, e. g., Devarajan et al., 1999[24]. Gunter, 1995, suggests that a range from 0.8 to 2.5 might be appropriate for developing countries. On this basis an elasticity of transformation between domestic and exported goods of 1.5 was specified for Jordan.[25] The elasticity of transformation between exports to the different regions has been set at 3.0 on the assumption that differences among export markets are less than those between export markets on the one side and the domestic market on the other side. For the elasticity of substitution a value of 1.5 was chosen as has been done by Martin, 2000 for Lebanon.[26] This specification should probably be treated as an upper limit since the average of the substitution elasticities estimated by Devarajan et al., 1999 is below 1. The value for the elasticity of substitution between imports from different sources was specified at 3.0. This seems justified as the imports to Jordan from the EU and ROW, especially in the case of machinery and vehicles, are substitutes rather than complements. These elasticities are assumed to be equal across sectors and commodities. We performed a sensitivity analysis for the elasticity of transformation and substitution with values ranging from 1 to 5. The sensitivity analysis did not report large qualitative differences in the simulation results.[27].

[24] For Jordan, Devarajan et al. have estimated only the elasticity of transformation. With three different estimation strategies they get elasticities of transformation between 6.1 and 7.25. These are extremely high values compared to those obtained for other countries and those obtained by other authors. We thus refrain from using them.

[25] This is also the value Martin, 2000 has specified as elasticity of transformation between domestic goods and exports in his CGE model for Lebanon.

[26] Both elasticities are assumed to be equal across sectors and commodities.

[27] Similar, Hosoe, 1998.

The model is calibrated and solved for the benchmark and the counterfactuals using the software package GAMS/MPSGE.

7. Simulation Results

To quantify the possible effects of the Association Agreement the following scenarios have been simulated:

Scenario SC 1: 50 percent decrease in import duties on agricultural products imported from the EU.
Scenario SC 2: 100 percent decrease in import duties on agricultural products imported from the EU.
Scenario SC 3: 100 percent decrease in import duties on non-agricultural products imported from the EU (SC 3).
Scenario SC 4: Scenario 1 and scenario 3.
Scenario SC 5: Scenario 2 und scenario 3.
Scenario SC 6: Scenario 5 and zero duties on all imports from other MENA countries.
Scenario SC 7: Scenario 6 and zero duties on all imports from the ROW.

The benchmark equilibrium is denoted as scenario SC 0. The extent of trade liberalization increases from scenario SC 1 to SC 7 with SC 7 representing a fully liberalized foreign trade regime. All prices have been normalized to one hundred in the benchmark. The consumer price index is used as numéraire such that its value is one hundred throughout all simulations. Thus the counter-factual values of prices should be interpreted as index values relative to the consumer price index. Real values have been obtained by deflating nominal values by the corresponding Laspeyres-price indices.

With reduced tariffs on imports, the domestic prices of imported goods fall. As imports and domestic products are imperfect substitutes, Jordanians switch from domestic products to imports. Imports increase and the more they compete with domestic products the more the domestic prices of domestic products fall. Therefore the producers of traded goods switch from domestic supply of goods to exports. As Jordan fixes its exchange rate versus the US-dollar and is treated as a small country, export prices do not change. Tables 22 and 23 show the average changes of these price variables but - as the consumer price index is numéraire - only to the extent as they differ from the movements in the consumer price index.

Decreasing import and domestic prices reduce the costs of intermediates and increase demand of consumers. Thus the more trade is liberalized the stronger is the incentive to increase production. However, as the labor force and the capital stock are fixed in any given period, net domestic product at factor costs (NDPF) does not change throughout the simulations in real terms.[28] Factor prices increase on average (Table 21) and so does nominal NDPF.

Real gross domestic product at market prices (GDPM) more or less stagnates in scenarios 1 and 2 and decreases slightly in scenarios 3 to 7. On the one hand, real public consumption and real public investment go down because trade liberalization withdraws government revenues. In addition, the direct effect of trade liberalization on imports is larger than the indirect effect

[28] In the paper „ Fiscal Impact of Trade Liberalization: The Case of Jordan“ the model allowed the capital stock to increase in the same period such that liberalizing trade not only increased nominal but also real NDPF which has consequences for all other variables. This feature of the model was abandoned in order to make the results comparable with the results of trade liberalization obtained for Syria.

on exports. Therefore the trade deficit (which is already at 21 percent of GDPM in the benchmark) increases further. On the other hand, real private consumption and real private investment go up the more trade is liberalized.

Tables 13 and 14 show that nominal and real effects of liberalizing only the trade with agricultural products versus the EU are negligible. This is the case because imports of agricultural products from the EU are not very significant in total imports. As soon as non-agricultural products are also exempted from tariffs, the changes become significant. As almost 50 percent of Jordan‘s imports come from the ROW, including the ROW into the trade liberalization scheme has large effects.

Table 13

Effects of Trade Liberalization on Main Aggregates,
Variables in Volume,
Percentage Deviations from Benchmark in Brackets

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
NDPF	3811.9	3811.9 (0.00)	3811.9 (0.00)	3811.9 (0.00)	3811.9 (0.00)	3811.9 (0.00)	3811.9 (0.00)	3811.9 (0.00)
GDPM	5180.0	5180.9 (0.02)	5180.4 (0.01)	5171.2 (-0.17)	5171.6 (-0.16)	5170.9 (-0.17)	5168.1 (-0.23)	5170.6 (-0.18)
CPRIV	3689.5	3702.4 (0.35)	3718.4 (0.78)	3843.6 (4.18)	3856.6 (4.53)	3872.9 (4.97)	3953.4 (7.15)	4172.6 (13.09)
CPUB	1365.0	1362.7 (-0.17)	1359.2 (-0.43)	1299.5 (-4.80)	1297.0 (-4.98)	1293.2 (-5.26)	1265.3 (-7.31)	1187.9 (-12.97)
IPRIV	895.0	895.2 (0.03)	895.5 (0.06)	912.1 (1.91)	912.3 (1.94)	912.6 (1.97)	918.8 (2.67)	938.9 (4.91)
IPUB	287.9	287.4 (-0.18)	286.6 (-0.46)	279.6 (-2.87)	279.1 (-3.07)	278.2 (-3.37)	273.3 (-5.08)	263.0 (-8.65)
Imports	3608.7	3618.0 (0.26)	3630.5 (0.60)	3750.3 (3.92)	3759.7 (4.18)	3772.5 (4.54)	3843.8 (6.51)	4023.6 (11.50)
Exports	2515.7	2515.3 (-0.02)	2515.0 (-0.03)	2549.5 (1.34)	2548.9 (1.32)	2548.7 (1.31)	2563.0 (1.88)	2590.7 (2.98)
Trade Balance	-1093.0	-1102.8 (0.90)	-1115.5 (2.06)	-1200.8 (9.86)	-1210.8 (10.78)	-1223.8 (11.97)	-1280.8 (17.19)	-1432.9 (31.10)

Table 14

Effects of Trade Liberalization on Main Aggregates,
Variables in Value, Mio. J.D.

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
NDPF	3811.9	3816.5	3821.9	3886.6	3891.4	3896.9	3934.4	4041.1
		(0.12)	(0.26)	(1.96)	(2.08)	(2.23)	(3.21)	(6.01)
GDPM	5180.0	5181.1	5180.7	5132.5	5133.2	5132.6	5121.9	5087.7
		(0.02)	(0.01)	(-0.92)	(-0.90)	(-0.92)	(-1.12)	(-1.78)
CPRIV	3689.5	3702.4	3718.4	3843.6	3856.6	3872.9	3953.4	4172.6
		(0.35)	(0.78)	(4.18)	(4.53)	(4.97)	(7.15)	(13.09)
CPUB	1365.0	1362.8	1359.1	1292.1	1289.6	1285.8	1256.4	1176.0
		(-0.16)	(-0.43)	(-5.34)	(-5.52)	(-5.80)	(-7.95)	(-13.85)
IPRIV	895.0	895.4	895.8	888.9	889.2	889.7	891.1	885.5
		(0.04)	(0.09)	(-0.68)	(-0.64)	(-0.59)	(-0.43)	(-1.05)
IPUB	287.9	287.4	286.7	272.5	272.0	271.2	265.0	248.0
		(-0.16)	(-0.43)	(-5.34)	(-5.52)	(-5.80)	(-7.95)	(-13.85)
Imports	3608.7	3618.0	3630.5	3750.3	3759.7	3772.5	3843.8	4023.6
		(0.26)	(0.60)	(3.92)	(4.18)	(4.54)	(6.51)	(11.50)
Exports	2515.7	2515.3	2515.0	2549.5	2548.9	2548.7	2563.0	2590.7
		(-0.02)	(-0.03)	(1.34)	(1.32)	(1.31)	(1.88)	(2.98)
Trade Balance	-1093.0	-1102.8	-1115.5	-1200.8	-1210.8	-1223.8	-1280.8	-1432.9
		(0.90)	(2.06)	(9.86)	(10.78)	(11.97)	(17.19)	(31.10)

Table 15

Effects of Trade Liberalization on Government Budget and Capital Accumulation,
Variables in Value, Mio. J.D.

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
Tariff Revenue	294.3	289.8	283.3	184.3	179.7	172.9	127.3	0.0
		(-1.52)	(-3.73)	(-37.38)	(-38.95)	(-41.24)	(-56.75)	(-100.0)
Sales tax domest.	285.8	286.0	286.3	284.6	284.8	285.1	284.2	284.2
		(0.08)	(0.19)	(-0.42)	(-0.34)	(-0.24)	(-0.56)	(-0.57)
Sales tax imports	192.2	192.4	192.7	193.8	194.0	194.3	195.6	198.1
		(0.12)	(0.28)	(0.81)	(0.93)	(1.09)	(1.74)	(3.09)
Ind.taxes total	772.3	768.3	762.4	662.7	658.5	652.3	607.0	482.3
		(-0.52)	(-1.28)	(-14.20)	(-14.74)	(-15.53)	(-21.40)	(-37.55)
Direct taxes	135.2	135.4	135.8	139.9	140.1	140.5	142.7	148.9
		(0.20)	(0.45)	(3.49)	(3.70)	(3.95)	(5.58)	(10.18)
All taxes	907.5	903.7	898.2	802.5	798.6	792.8	749.7	631.2
		(-0.41)	(-1.02)	(-11.56)	(-11.99)	(-12.63)	(-17.38)	(-30.44)
Govern. Revenue	1699.5	1696.7	1692.1	1608.8	1605.7	1600.9	1564.3	1464.2
		(-0.17)	(-0.44)	(-5.35)	(-5.53)	(-5.81)	(-7.96)	(-13.86)
Govern. deficit	310.6	310.7	310.8	313.1	313.2	313.3	314.3	317.1
		(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Househ. savings	526.9	527.6	528.5	536.9	537.7	538.5	543.9	558.9
		(0.15)	(0.31)	(1.91)	(2.05)	(2.21)	(3.24)	(6.07)
Current account	-52.2	-62.6	-76.2	-171.9	-182.6	-196.4	-259.0	-426.7
		(20.10)	(46.11)	(229.53)	(250.06)	(276.59)	(396.63)	(717.98)

Table 15 shows that the losses in tariff revenues are also small as long as only the tariffs on agricultural products from the EU are abolished. The low import share outweighs the high tariff rates that agricultural products from the EU bear.

The GST does not refer to nominal value added but to domestic sales of domestically produced goods. In scenarios 3 to 7 the positive effect of the increased nominal NDPF on GST revenues is more than offset by the negative effect which is caused as producers switch from domestic sales to exports. Thus, altogether GST revenues on domestic sales fall.

GST revenues on imports go up because of the increasing import values. Direct taxes go up because of the increased compensation of production factors. All in all, tax revenues decrease by 30 percent in the case of full trade liberalization. The variable which is more decisive for the government´s scope of action is the government revenue. This is only reduced by 14 percent in the case of full trade liberalization because the government´s capital income increases with trade liberalization. The government deficit stays almost constant because government consumption and investment are cut proportionally to the fall of government revenue.

The rise in the current account deficit reflects mainly the rise in the trade deficit. Even though its enormous percentage increase is qualified by the almost balanced current account of the benchmark period it has to be judged as negative that Jordanians use the cheaper imports far more for additional private consumption than investment. In the case of full trade liberalization the current account deficit would amount to about 8 percent of nominal GDPM. With the opening of Jordan´s capital market to foreigners it is at least possible to finance this current account deficit by private capital imports.

Table 16

Imports by Product and Origin
Variables in Volume and Value (CIF, Mio. J.D.)

Commodities	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
Imports by product group								
Agriculture	420.5	423.6	428.4	428.5	431.6	436.5	445.6	464.3
		(0.73)	(1.87)	(1.89)	(2.63)	(3.79)	(5.98)	(10.41)
Mining	272.2	272.6	273.2	275.8	276.3	276.8	284.4	289.6
		(0.17)	(0.37)	(1.33)	(1.50)	(1.71)	(4.50)	(6.39)
Food	213.2	213.1	213.0	233.7	233.6	233.5	242.1	267.2
		(-0.05)	(-0.09)	(9.61)	(9.55)	(9.50)	(13.54)	(25.34)
Textiles	164.0	164.4	164.9	171.2	171.5	172.0	175.6	183.7
		(0.23)	(0.52)	(4.37)	(4.60)	(4.90)	(7.07)	(12.01)
Wood	108.1	108.2	108.3	111.0	111.1	111.2	112.3	114.5
		(0.09)	(0.20)	(2.67)	(2.77)	(2.88)	(3.88)	(5.95)
Chemicals	272.2	272.3	272.5	282.3	282.4	282.6	284.3	291.6
		(0.05)	(0.11)	(3.72)	(3.77)	(3.84)	(4.44)	(7.15)
Rubber	186.0	186.1	186.2	191.9	192.0	192.2	195.0	202.1
		(0.08)	(0.16)	(3.18)	(3.25)	(3.34)	(4.87)	(8.68)
Metals	212.2	212.2	212.3	216.3	216.3	216.3	218.4	222.7
		(0.01)	(0.02)	(1.91)	(1.92)	(1.92)	(2.92)	(4.92)
Other	864.1	864.8	865.6	889.0	889.8	890.6	895.5	916.4
		(0.09)	(0.18)	(2.89)	(2.98)	(3.07)	(3.64)	(6.06)
Services	896.3	900.7	906.1	950.7	955.2	960.7	990.5	1071.5
		(0.49)	(1.09)	(6.07)	(6.57)	(7.19)	(10.51)	(19.54)
Imports by country of origin								
MENA	521.7	520.5	519.1	501.4	500.1	498.6	596.1	567.3
		(-0.24)	(-0.51)	(-3.90)	(-4.15)	(-4.44)	(14.26)	(8.73)
EU15	887.6	901.0	917.9	1092.8	1106.6	1123.9	1099.1	975.4
		(1.51)	(3.41)	(23.12)	(24.67)	(26.62)	(23.82)	(9.89)
ROW	1303.1	1295.8	1287.4	1205.4	1197.9	1189.2	1158.1	1409.4
		(-0.55)	(-1.20)	(-7.49)	(-8.07)	(-8.74)	(-11.13)	(8.16)

Let us have a closer look at the foreign trade effects of trade liberalization. Two different effects must be distinguished, trade creation and trade diversion.

Trade creation measures the total increase of imports after tariffs have been lowered. This effect depends on the elasticities of substitiution between domestic products and imports and on the distribution parameters in the sectoral CES functions. Given the elasticity of substiution, the distribution parameter in the CES-function, α_j^M, is the higher the smaller is the import share in a commodity aggregate. This has two effects working in opposite directions. On the one hand, the higher α_j^M, the less domestic goods are replaced by imports given a certain reduction in import prices. On the other hand, the smaller α_j^M, the more the domestic price of the domestically produced supply adapts to the domestic price of imports and thereby reduces the incentive to switch from domestically produced goods to imports.

As shown in Table 9 in section 3.1, imports of food products and textiles bear on average the highest tariff rates. Thus with trade liberalization their domestic prices fall the most. Products

of the food industry have among all sectors the highest α_j^M . However, the effect of the fall in import prices outweighs the effect of the high α_j^M such that imports of food products increase by 25 percent in scenario 7. This is different for textiles. Here the share of domestically produced goods in total domestic supply is small such that α_j^M is close to zero. Domestic prices of domestically produced textiles adapt much more to the domestic prices of imported textiles so that the increase in imports is lower than in the case of food. This effect of an α_j^M close to zero is also working in the commodity aggregate „other“. Although the tariff rate is about average in the status quo, the increase of imports is far below average when trade is liberalized.

At first glance, the strong increase of imports of services is surprising as imports of services are already now exempted from tariffs. However factor costs increase in the domestic service sector so that the domestic price of domestic services increases. Thus consumers switch to imported services.

Trade diversion measures the changes in the import structure across trading partners as Jordanians substitute imports from other regions with imports for which trade has been liberalized. The trade diversion effect is presented for total imports in Table 16 and in Table 17 disaggregated for each import category.

Table 17

Trade Diversion of Jordanian Imports

	Agricult.	Mining	Food	Textiles	Wood	Chem.	Rubber	Metals	Other
Percentage Changes of Imports in Scenario SC 1									
MENA	-2.74	0.17	-0.05	0.23	0.09	0.05	0.08	0.01	0.09
EU15	19.60	0.17	-0.05	0.23	0.09	0.05	0.08	0.01	0.09
ROW	-2.74	0.17	-0.05	0.23	0.09	0.05	0.08	0.01	0.09
Percentage Changes of Imports in Scenario SC 2									
MENA	-5.95	0.37	-0.09	0.52	0.20	0.11	0.16	0.02	0.18
EU15	44.42	0.37	-0.09	0.52	0.20	0.11	0.16	0.02	0.18
ROW	-5.95	0.37	-0.09	0.52	0.20	0.11	0.16	0.02	0.18
Percentage Changes of Imports in Scenario SC 3									
MENA	1.89	-1.64	-7.38	-7.35	-8.07	-7.70	-9.00	-9.16	-12.89
EU15	1.89	56.66	46.56	39.44	22.66	13.63	29.75	33.48	20.93
ROW	1.89	-1.64	-7.38	-7.35	-8.07	-7.70	-9.00	-9.16	-12.89
Percentage Changes of Imports in Scenario SC 4									
MENA	-0.91	-1.47	-7.42	-7.14	-7.98	-7.66	-8.94	-9.15	-12.82
EU15	21.86	56.93	46.49	39.76	22.77	13.69	29.85	33.49	21.03
ROW	-0.91	-1.47	-7.42	-7.14	-7.98	-7.66	-8.94	-9.15	-12.82
Percentage Changes of Imports in Scenario SC 5									
MENA	-4.18	-1.27	-7.47	-6.88	-7.89	-7.60	-8.86	-9.15	-12.73
EU15	47.15	57.24	46.42	40.16	22.90	13.76	29.95	33.50	21.15
ROW	-4.18	-1.27	-7.47	-6.88	-7.89	-7.60	-8.86	-9.15	-12.73
Percentage Changes of Imports in Scenario SC 6									
MENA	30.55	2.78	58.14	40.67	33.83	12.00	5.13	19.21	33.26
EU15	41.81	40.13	40.27	32.68	20.17	11.20	25.63	27.83	20.80
ROW	-7.65	-12.02	-11.35	-11.85	-9.93	-9.68	-11.90	-13.01	-12.98

Trade diversion brings about that the percentage fall of tariff revenues is larger than the share of benchmark duties of the region with which trade is going to be liberalized in total tariff revenues. In scenarios 1 and 2, however, this effect is negligible. In scenarios 3 to 6 it is about 5 percent.

The changes in exports by sectors caused by trade liberalization are given in Table 17. They increase the stronger domestic prices of domestically produced goods fall. How much changes in the domestic prices affect exports depends on the distribution parameter α_i^E of the CET-function in equation (20). α_i^E is higher the larger is the share of exports in that sector‘s total supply. The larger α_i^E, the stronger is the effect of a given change in domestic prices on exports. The highest α_i^E is found in the sectors „manufacturing of textiles“ and „other manufacturing“ followed by mining and the chemical industry. Exports of „manufacturing of textiles“ would increase by 20 percent with fully liberalized trade. Thus, trade liberalization

causes a restructuring of exports such that they rely on a broader industrial basis. Exports of services decrease because the domestic price of domestically supplied services increases.

The additional exports are distributed proportionally among the regions of destination as it is assumed that world market prices are equal for all countries.

Table 18

Exports by Activity and Destination
Variables in Volume and Value (FOB, Mio. J.D.)

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
Exports by activity								
Agriculture	161.1	160.5	159.8	166.0	165.4	164.6	165.5	169.0
		(-0.39)	(-0.84)	(3.06)	(2.66)	(2.19)	(2.70)	(4.92)
Mining	167.5	167.4	167.4	171.9	171.8	171.7	172.1	175.3
		(-0.03)	(-0.05)	(2.62)	(2.58)	(2.56)	(2.77)	(4.66)
Food	91.9	92.3	92.8	92.7	93.1	93.6	94.3	95.6
		(0.42)	(0.94)	(0.85)	(1.26)	(1.79)	(2.57	(3.95)
Textiles	82.4	82.4	82.4	87.2	87.2	87.2	89.9	99.3
		(0.01)	(0.05)	(5.86)	(5.86)	(5.89)	(9.09)	(20.50)
Wood	46.7	46.7	46.8	47.9	48.0	48.1	48.8	50.2
		(0.16)	(0.35)	(2.69)	(2.84)	(3.05)	(4.67)	(7.60)
Chemicals	441.7	442.8	444.2	458.5	459.6	461.1	475.1	494.4
		(0.25)	(0.57)	(3.81)	(4.07)	(4.40)	(7.58)	(11.94)
Rubber	56.5	56.5	56.5	57.3	57.3	57.3	57.9	57.9
		(0.00)	(0.01)	(1.57)	(1.56)	(1.57)	(2.57)	(2.48)
Metals	39.4	39.5	39.6	40.1	40.2	40.3	40.8	41.5
		(0.19)	(0.43)	(1.84)	(2.03)	(2.28)	(3.64)	(5.31)
Other	190.8	190.7	190.6	198.1	197.9	197.8	198.9	205.8
		(-0.07)	(-0.14)	(3.81)	(3.72)	(3.65)	(4.21)	(7.83)
Services	1237.8	1236.5	1235.0	1229.7	1228.4	1226.9	1219.7	1201.8
		(-0.11)	(-0.23)	(-0.65)	(-0.77)	(-0.89)	(-1.47)	(-2.91)
Exports of goods by country of destination								
MENA	663.8	664.0	664.3	684.1	684.2	684.6	694.1	715.0
		(0.03)	(0.08)	(3.06)	(3.08)	(3.13)	(4.57)	(7.71)
EU15	81.9	82.0	82.1	84.7	84.8	84.8	86.1	89.3
		(0.05)	(0.14)	(3.38)	(3.43)	(3.52)	(5.04)	(9.00)
ROW	532.2	532.8	533.6	551.0	551.6	552.4	563.1	584.6
		(0.12)	(0.27)	(3.53)	(3.64)	(3.80)	(5.81)	(9.85)

Table 19

Value Added by Activity
Variables in Volume

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
Agriculture	103.3	102.7	102.0	106.0	105.4	104.7	104.7	106.0
		(-0.59)	(-1.29)	(2.63)	(2.03)	(1.32)	(1.38)	(2.59)
Mining	114.9	114.9	114.9	117.1	117.1	117.1	116.1	118.2
		(0.01)	(0.05)	(1.94)	(1.95)	(1.98)	(1.09)	(2.88)
Food	110.1	110.3	110.6	110.7	111.0	111.3	111.6	112.0
		(0.22)	(0.49)	(0.61)	(0.83)	(1.10)	(1.40)	(1.80)
Textiles	32.7	32.7	32.7	34.2	34.2	34.2	35.0	37.6
		(0.04)	(0.11)	(4.66)	(4.69)	(4.75)	(7.13)	(14.96)
Wood	33.1	33.2	33.2	33.3	33.4	33.4	33.7	34.1
		(0.13)	(0.30)	(0.66)	(0.79)	(0.96)	(1.77)	(3.04)
Chemicals	147.0	147.3	147.6	150.2	150.5	150.8	153.8	157.9
		(0.20)	(0.45)	(2.17)	(2.37)	(2.62)	(4.64)	(7.43)
Rubber	64.0	64.0	64.1	63.8	63.8	63.8	63.9	62.9
		(0.03)	(0.07)	(-0.37)	(-0.35)	(-0.31)	(-0.12)	(-1.75)
Metals	28.8	28.9	28.9	28.7	28.8	28.8	28.9	28.6
		(0.12)	(0.27)	(-0.40)	(-0.28)	(-0.13)	(0.05)	(-0.76
Other	80.2	80.2	80.1	82.3	82.2	82.2	82.6	84.4
		(-0.05)	(-0.10)	(2.58)	(2.52)	(2.47)	(2.96)	(5.23)
Electricity, water	75.1	75.2	75.3	76.3	76.4	76.5	77.1	78.6
		(0.13)	(0.29)	(1.52)	(1.65)	(1.80)	(2.64)	(4.63)
Construction	166.5	166.5	166.4	165.8	165.7	165.6	165.8	164.7
		(-0.03)	(-0.08)	(-0.47)	(-0.50)	(-0.56)	(-0.47)	(-1.11)
Services	1979.0	1980.5	1982.5	2006.3	2007.8	2009.7	2020.8	2050.7
		(0.08)	(0.18)	(1.38)	(1.45)	(1.55)	(2.11)	(3.62)
Government services	877.2	875.6	873.5	836.2	834.7	832.4	815.4	768.4
		(-0.18)	(-0.43)	(-4.68)	(-4.85)	(-5.10)	(-7.05)	(-12.41)

Table 19 shows that even though the aggregate NDPF does not change in real terms when trade is liberalized, the sectors´ real value added changes considerably. Value added of government services goes down as government consumption is cut proportionally to the decline in government revenue. Value added decreases also in construction. On the one hand this is due to the reduction in government investment. On the other hand real private investment in construction grows below average because the market prices in construction are not affected by trade liberalization in contrast to the prices of most other investment goods.

As the sectors „manufacturing of rubber and other non metallic minerals“ and „manufacturing of base metals and fabricated metal“ depend heavily on the demand of the construction sector, value added of those declines as well.[29]

Real value added increases most in the textile and the chemical industry as their exports grow significantly and the domestic demand increases as well due to the sharp fall in domestic prices.

[29] Similar are the results of Hosoe, 1998.

Table 20

Value Added by Activity
Variables in Value (Mio. J.D.)

Sectors	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
Agriculture	103.3	102.4	101.4	107.5	106.6	105.5	105.8	108.4
		(-0.85)	(-1.86)	(4.11)	(3.22)	(2.17)	(2.47)	(4.94)
Mining	114.9	114.9	115.0	118.8	118.9	118.9	117.4	121.7
		(0.05)	(0.13)	(3.44)	(3.49	(3.56)	(2.24)	(5.98)
Food	110.1	110.7	111.4	111.8	112.4	113.2	114.2	116.0
		(0.55)	(1.22)	(1.62	(2.18)	(2.85)	(3.81)	(5.44)
Textiles	32.7	32.7	32.8	35.5	35.6	35.6	37.2	42.9
		(0.10)	(0.25)	(8.73)	(8.82)	(8.97)	(13.83)	(31.33)
Wood	33.1	33.2	33.3	33.5	33.5	33.6	34.1	34.9
		(0.22)	(0.47)	(1.08)	(1.30)	(1.55)	(2.91)	(5.39)
Chemicals	147.0	147.6	148.4	154.0	154.7	155.5	162.5	173.3
		(0.44)	(0.99)	(4.77)	(5.23)	(5.80)	(10.55)	(17.92)
Rubber	64.0	64.1	64.1	63.7	63.8	63.8	64.1	62.8
		(0.08)	(0.16)	(-0.47)	(-0.40)	(-0.32)	(0.20)	(-1.89)
Metals	28.8	28.9	29.0	28.7	28.8	28.8	29.0	28.8
		(0.22)	(0.47)	(-0.47)	(-0.26)	(-0.01)	(0.48)	(-0.20)
Other	80.2	80.1	80.1	84.3	84.3	84.2	85.2	89.4
		(-0.07)	(-0.15)	(5.17)	(5.08)	(4.99)	(6.19)	(11.54)
Electricity. water	75.1	75.3	75.5	76.8	77.0	77.1	78.2	80.7
		(0.20)	(0.43)	(2.22)	(2.43)	(2.66)	(4.02)	(7.47)
Construction	166.5	166.5	166.5	166.0	166.0	165.9	166.4	166.3
		(0.00)	(-0.04)	(-0.33)	(-0.34)	(-0.38)	(-0.08)	(-0.13)
Services	1979.0	1984.2	1990.8	2068.4	2073.8	2080.5	2121.7	2239.5
		(0.26)	(0.59)	(4.52)	(4.79)	(5.13)	(7.21)	(13.16)
Government services	877.2	875.9	873.8	837.4	836.2	834.1	818.6	776.2
		(-0.15)	(-0.38)	(-4.54)	(-4.68)	(-4.92)	(-6.68)	(-11.52)

Table 21

Compensation of Production Factors,
Indices

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
Wage rate								
All sectors	100.00	100.03	100.04	100.15	100.18	100.20	100.40	101.01
Gross return to capital								
Agriculture	100.00	99.15	98.14	104.11	103.22	102.17	102.47	104.94
Mining	100.00	100.05	100.13	103.44	103.49	103.56	102.24	105.98
Food	100.00	100.55	101.22	101.62	102.18	102.85	103.81	105.44
Textiles	100.01	100.10	100.25	108.73	108.82	108.97	113.83	131.33
Wood	100.00	100.22	100.47	101.08	101.30	101.55	102.91	105.39
Chemicals	100.00	100.44	100.99	104.77	105.23	105.80	110.55	117.92
Rubber	100.00	100.08	100.16	99.53	99.60	99.68	100.20	98.11
Metals	100.00	100.22	100.47	99.53	99.74	99.99	100.48	99.80
Other manufactures	100.01	99.93	99.85	105.17	105.08	104.99	106.19	111.54
Electricity. water	100.00	100.20	100.43	102.22	102.43	102.66	104.02	107.47
Construction	100.00	100.00	99.96	99.67	99.66	99.62	99.92	99.87
Services	100.01	100.26	100.59	104.52	104.79	105.13	107.21	113.16
Government services	0	0	0	0	0	0	0	0

Table 22

Prices of Domestically Produced Goods,
Indices

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
by factor costs								
Average	100.00	99.99	99.97	99.42	99.41	99.39	99.09	98.65
Agriculture	100.00	99.81	99.58	99.62	99.43	99.20	98.78	97.89
Mining	100.00	100.07	100.14	99.10	99.17	99.24	97.73	97.67
Food	100.00	99.85	99.66	99.82	99.67	99.48	99.13	98.41
Textiles	100.00	100.07	100.16	97.45	97.52	97.60	96.06	90.41
Wood	100.00	99.98	99.95	98.16	98.14	98.11	97.41	96.04
Chemicals	100.00	99.93	99.85	98.02	97.95	97.87	96.62	95.14
Rubber	100.00	100.02	100.05	98.38	98.41	98.43	97.77	96.48
Metals	100.00	99.94	99.86	98.09	98.03	97.95	96.97	94.92
Other manufactures	100.00	100.05	100.11	96.88	96.93	96.99	96.86	93.69
Electricity. water	100.00	100.01	100.02	98.54	98.55	98.56	98.14	97.27
Construction	100.00	100.02	100.04	98.57	98.60	98.62	98.07	96.71
Services	100.00	100.20	100.44	102.21	102.40	102.65	103.90	107.18
Government services	100.00	100.00	100.00	99.43	99.44	99.43	99.30	99.00
by market prices								
Average	100.00	99.97	99.93	98.93	98.90	98.86	98.42	97.30
Agriculture	100.00	99.25	98.34	99.83	99.08	98.18	96.93	94.85
Mining	100.00	100.03	100.05	99.03	99.06	99.08	95.62	95.53
Food	100.00	99.89	99.76	98.36	98.25	98.12	97.12	94.44
Textiles	100.00	100.01	100.02	96.51	96.52	96.53	94.31	86.45
Wood	100.00	99.99	99.97	97.28	97.27	97.26	96.37	94.56
Chemicals	100.00	99.95	99.90	97.42	97.37	97.32	96.19	94.48
Rubber	100.00	100.01	100.03	97.23	97.24	97.25	96.18	92.96
Metals	100.00	99.98	99.95	96.95	96.93	96.91	95.47	91.93
Other manufactures	100.00	100.00	100.01	94.92	94.93	94.93	94.67	89.04
Electricity, water	100.00	100.01	100.02	98.54	98.55	98.56	98.14	97.27
Construction	100.00	100.02	100.04	98.57	98.60	98.62	98.07	96.71
Services	100.00	100.14	100.30	101.50	101.63	101.80	102.64	104.83
Government services	100.00	100.00	100.00	99.43	99.44	99.43	99.30	99.00

Table 23

Domestic Prices of Imports by Commodity Group,
Indices

	SC 0	SC 1	SC 2	SC 3	SC 4	SC 5	SC 6	SC 7
Average	100.00	99.87	99.74	97.56	97.43	97.30	96.16	92.46
Agriculture	100.00	98.89	97.79	100.00	98.89	97.79	96.02	92.69
Mining	100.00	100.00	100.00	99.19	99.19	99.19	94.49	94.38
Food	100.00	100.00	100.00	95.55	95.55	95.55	93.29	85.49
Textiles	100.00	100.00	100.00	96.86	96.86	96.86	94.72	85.81
Wood	100.00	100.00	100.00	96.71	96.71	96.71	95.72	93.22
Chemicals	100.00	100.00	100.00	96.42	96.42	96.42	95.48	93.20
Rubber	100.00	100.00	100.00	96.47	96.47	96.47	94.88	89.56
Metals	100.00	100.00	100.00	96.79	96.79	96.79	95.14	90.33
Other manufactures	100.00	100.00	100.00	95.22	95.22	95.22	94.96	88.75
Services	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 22 shows that domestic prices of domestically produced goods (that is prices of domestically produced goods at factor costs) fall on average and in almost all sectors except for the service sector. The price increasing effect of higher factor costs is thus in most sectors offset by the price lowering effects of cheaper intermediate inputs and the stronger competition between imports and domestic goods. The prices of domestically produced goods at market prices are the prices of the Armington aggregates by sector and thus are a weighted average of the domestic prices of imports presented in Table 23 and of domestically produced goods at factor costs.

Part II

What fiscal budget modification can be performed to overcome the loss of tariff revenues?

Jordan´s recent reforms show that it is serious in liberalizing foreign trade and its economic system in general. It expects that the thereby caused restructuring of the economy increases Jordan´s international competitiveness in the medium and long run and thus real growth of GDP. Our simulation result that trade liberalization gives no impulse to GDP growth does not conflict with this view. The simulation result has to be understood as cautious forecast of the short run effects in a model where production factors are essentially given. More cause for concern are the short run consequences of trade liberalization on the Jordan´s fiscal budget. We will now discuss how the challenges of the Association Agreement in this area can be addressed.

The Association Agreement signed by the EU and Jordan comes closest to scenario 3 where non-agricultural products can enter Jordan without duties. According to the results for scenario 3, the Association Agreement would cause a fall in tariff revenues of 37 percent. However, revenue from all variable taxes together falls by only 12 percent and government revenue by 5 percent.

Abed (1998) from the Fiscal Affairs Department of the International Monetary Fund has listed key tax and tariff policy features of a modern tax system. They can be used as guidelines for the evaluation of fiscal policy responses to reduced tariff revenues. Summarized they are the following:

1. The introduction of a broad-based, modern Value Added Tax (VAT), preferably with a single rate and minimal exemptions, applicable equally to domestic products and imports.
2. The reform of excises through the introduction of ad valorem rates or other proper adjustment for inflation in order to protect real revenue. Excises should be restricted to a limited set of products, principally petroleum products, alcohol, tobacco, and some luxury items and should as well be applied equally to domestic products and imports.
3. Import tariffs should have a moderate to low average rate and, most importantly, a limited dispersion of rates. Tariff reforms should be generalized to non-EU countries to minimize the risks of trade diversion.
4. Simplification of the business profits tax through the adoption of a single rate in the neighborhood of 35 percent and the elimination of special tax exemptions.
5. Adjusting the top marginal rates for personal income tax to a level comparable to the business profits tax rate and limiting the number of deductions and exemptions.
6. Nontax revenue (to the extent that it reflects the extraction of surpluses from parastatals or profits from central banks), should decline with the development of the economy and especially with the devolution of the state´s role in productive activities.

As Jordan has already cut its import tariffs in the last years, some measures to compensate for the loss of tariffs have actually been implemented. Furthermore, the Jordanian government has thought on fiscal responses to the losses of tariff revenues still ahead going hand in hand

with their structural reforms. We will analyse in the following in how far these measures conform to the list of key tax and tariff reforms presented above.

Ad 1. The introduction of the supplementary sales tax on imports in 1999 is just a substiute for abolished tariffs and thus does not conform to the requirement of equal treatment of domestic products and imports. However, the supplementary sales tax is going to be abolished in 2001 and thus has only been introduced as a transitory measure to postpone the consequences of the tariff reform and to gain time to reform the fiscal budget. In contrast, the general raise of the GST rate in 1999 from 10 to 13 percent has no distortionary consequences between imports and home products and does compensate for tariff losses. With a general rate of 13 percent, the GST is still at the lower bound of sales taxes in an international comparison and thus opens scope for a further general increase.

The fiscal reforms intended by the Jordanian government include the conversion of the GST into a full-fledged value added tax by 2001. According to these plans the list of exemptions under the GST will be reduced substantially. This is not only sensible for fiscal reasons but also promotes the restructuring process of the local industry which is initiated by trade liberalization.

Ad 2. Excises in Jordan are not ad valorem and there is no adjustment for inflation. They are restricted to a rather small number of goods. However, locally produced goods and imports are in many cases not treated equally. To our knowledge there are so far no plans to reform the Specific Sales Tax. It thus seems sensible to us to include a reform of excises in the revenue stabilizing fiscal reform.

Ad 3. As Jordan has reformed its tariff schedule such that it will fulfill the criteria for WTO membership and is establishing Free Trade Areas with the MENA countries, the USA and the EU, Jordan has taken the right steps to minimize trade diversion and encourage efficiency gains from international trade.

Ad 4. and 5. The Jordanian government plans to reform the income tax law by 2001. The purpose is to rationalize the income tax system by harmonizing and simplifying tax rates and broadening the tax base.[30]

Ad 6. Jordan has already privatized and continues to privatize state enterprises. The government regards privatization as one of the centerpieces of its structural policy agenda[31] which is desirable for efficiency reasons. Privatization has effects on the fiscal budget working in opposite directions. On the one hand the share of non-tax revenues in total government revenue will shrink in the coming years. This will put further strain on the fiscal budget and calls for compensating measures. On the other hand the bulk of privatization proceeds is planned to be invested in financial assets or used to retire public debt.[32] These usages enlarge the government‘s fiscal scope.

The comparison shows that the tax and tariff reforms planned or already translated into action by the Jordanian government essentially conform to a modern tax system. They will increase tax revenues and even leave some scope for a further increase of tax revenues. Together with the privatization of public enterprises they will increase the efficiency and competitiveness of

[30] Ministry of Finance 2000.
[31] Ministry of Finance 2000.
[32] Ministry of Finance 2000.

the Jordanian industry and thus they are suitable to address the challenges of the association agreement with the EU.

As the simulation results show, the loss in tariff revenues can be compensated by cutting real government consumption by about 5 percent and real public investment by about 3 percent. The Ministry of Finance mentions several areas in which it sees potential for reducing public spending. Firstly, the pubic pension system poses a steadily increasing burden on the budget and thus a reform of it is planned. Besides, the Ministry of Finance aims at improving the delivery of public services especially in the areas of health and education. Finally, last year‘s fluctuations in oil prices and its negative consequences on the budget have convinced the government to adopt a strategy of relating the domestic prices of petroleum products to petroleum import prices.

These plans of Jordan´s government do also show suitable starting points to compensate for the loss of tariff revenues on the expenditure side. As they are oriented towards a strengthening of market economy mechanisms, they are in accord with trade liberalization. Therefore, imbedding the Association Agreement with the EU in a comprehensive reform strategy, will most likely enable Jordan to overcome possible negative short run effects of the Association Agreement on its fiscal budget.

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Final Report

Fiscal Impact of Trade Liberalization: The Case of Syria[1]

by
Bernd Lucke
University of Hamburg
von-Melle-Park 5
D-20146 Hamburg
Germany

email: lucke@hermes1.econ.uni-hamburg.de

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Research Team:
Prof. Dr. Bernd Lucke, University of Hamburg, Germany,
Prof. Dr. Mamdouh Alkhatib Alkswani, King Saud University, Riyad, Saudi Arabia,
Dr. Dorothea Lucke, Lucke Consult, Winsen, Germany,
Dipl.-Ing. agr. Ferdinand Pavel, Humboldt University, Berlin, Germany
Anbara Abu-Ayyash, University of Hamburg, Germany.

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Part I[2]

Section I: Brief description of Syria‘s structural features

The Syrian Arab Republic is a developing state with a population of currently approximately 16.3 million people[3], growing at the rapid pace of about 2.7 percent p. a. Its GDP per head (converted to US-dollar at the Beirut free market exchange rate) was 988 $ in 1999, significantly below comparable values of 1,565 $ for Jordan, 4,042 $ for Lebanon and 16,570 $ for Israel.

However, Syria’s physical conditions are more favorable than this apparent backwardness might suggest: 32 percent of the state territory is classified as cultivable land, with some very fertile soils especially in the western and north-eastern regions. About 74 percent of the land under crops does not require artificial irrigation. The water balance, though deficient, is supported from significant precipitation in the coastal and mountainous regions as well as from rivers, in particular the Euphrates. Syria’s proven oil reserves amount to 2.5 billion barrel; production is sufficient to cover domestic demand plus an export of about the same order of magnitude. Natural gas reserves are estimated at 238 billion cubic meters (U.S. Energy Information Administration, 2000). Thus, while natural resources are far from abundant, physical conditions are much more favorable than, say, in neighboring Jordan.

As far as infrastructure is concerned, Syria’s standards approximately match those of other Arabic countries. Three large ports are located along the Mediterranean coast (Banias, Latakia, Tartous). The country operates five major airports, the most important being Damascus and Aleppo. The length of the road net (per 1000 inhabitants) is far larger than in Jordan (2.3 km versus 1.4 km), the same is true for railways. About 75 percent of the roads are asphalted. However, Syria trails Jordan in terms motor vehicles per head and in terms of telecommunication facilities. The installed power generating capacities are comparable to Jordan’s, but production far exceeds sales due to large losses in the network. Similar conditions prevail in the production and distribution of potable water (Central Bureau of Statistics, 2000). Illiteracy is still prevalent especially in parts of the female rural population, but school attendance rates are similar to Jordan’s at all levels of the educational system. The Syrian health system also has comparable standards.

About 24 percent of gross domestic product (GDP) are produced in the agricultural sector, another 16 percent are due to mining and quarrying activities, mostly oil production. A rather large share of GDP (19 percent) is attributable to wholesale and retail trade, since this sector carries the major burden of indirect taxation, which relies on excises rather than a value added tax[4]. Transport, storage and communication accounts for 13 percent of GDP, partially because this sector contains the value added of the Syrian Company for Oil Transport (SCOT). The manufacturing sector (excluding utilities) is rather small, contributing slightly less than 10 percent to GDP. This sector, rather than being taxed, receives net subsidies from the

[2] Note: This report discusses counterfactual simulation results and policy conclusions derived from data of 1999, which was the latest available set of Syrian data at the time of compilation. Therefore, all information provided below relates to 1999, unless otherwise specified. If relevant, we explicitly mention minor changes that occured in 2000. However, the apparent determination of the President Bashar al-Assad to push for economic reforms may lead to major changes in economic policies, regulations and institutions in 2001 or thereafter. The reader should check if, at the time of reading, the information provided in this report is still accurate, as some important reform measures are currently under discussion in the Syrian parliament.

[3] Excluding Palestinian refugees.

[4] Note that net domestic product (NDP) at factor cost of this sector is only 63 percent of its GDP.

government, so that its share in NDP at factor cost is almost 12 percent. The share of government services in GDP is about 8 percent, with other activities being of minor importance.

Since the early 1990‘s, Syria has taken gradual steps to transform the country‘s then dominant economic system of central planning to a more market oriented economy. Strong fiscal incentives to private investors, both foreign and domestic, were provided by Investment Law No. 10 of 1991, basically exempting investment projects from all relevant taxes and customs duties for five to seven years. In later years, the system of multiple exchange rates was simplified and official rates were moved closer to black market rates. Simulateneously, some of the tight import controls relevant for the private sector were relaxed. In response to these measures, the private sector expanded significantly and real GDP growth averaged 8 percent from 1991 to 1995 and 5.9 percent from 1991 to 1999. According to estimates by the International Monetary Fund (IMF), „the private sector accounted for 51 percent of GDP, 72 percent of total employment, 57 percent of gross capital formation, 69 percent of non-oil exports, and 58 percent of imports“ over 1992-1997, cf. International Monetary Fund, 1999a, Box 1.

However, the state’s production activities remain substantial: Oil and natural gas activities, including refining, are predominantly government-owned, with minority shares of foreign companies[5] only. Utilities (electricity and water plants) are almost exclusively operated by the government, and the same is true for the air transport industry and all financial institutions. The telecommunications industry is also dominated by the state, but apparently opening up with recent contracts by the Syrian Telecommunications Establishment (STE) awarded to selected foreign firms[6]. „Strategic industries“ in manufacturing (some basic foods, alcohol, tobacco, yarns and cotton textiles, cement, fertilizers, serums, tractors, TV sets and electrical equipment, ceramics) are dominated or monopolized by the state. Roughly 50 percent of the construction sector and much of trade and marketing activities is also in state hands. There has been no significant privatization of public enterprises so far.

Government absorption of goods and services (excluding the Price Stabilization Fund (PSF)) accounts for about 28 percent of GDP, where 11 percent is classified as government consumption and 17 percent as „development expenditure“, i. e. government investment. The latter includes investment by state-owned companies. The largest part of government consumption are wages and salaries (of which 57 percent is spent for military and security). Nevertheless, wages in the public sector are at a demotivatingly low level, giving rise to widespread corruption. The low public sector wages also depress wages in the private sector (US Department of State, 2000). National Accounts Data do not contain information on the distribution of income, but inofficial estimates suggest that the capital share in national income is up to three times as high as the labor share, cf. Augier and Gasiorek (2000).

The basic sources of government revenues are oil-related proceeds, non-oil taxes and duties, and non-oil public enterprise surpluses. Oil-related revenues constitute a share of about 38 percent of total revenues (depending on world market prices), while the share of non-oil taxes including duties is around 48 percent. Non-oil public enterprises contribute approximately 12 percent to total revenues, which is only slightly larger than the surplus of the Syrian Petroleum Company (SPC) and associated firms. The state budget deficit (excluding PSF deficit, but including reduced reserves) amounts to 32 percent of total expenditures for the 1999 budget or 9.9 percent of GDP.

[5] Deminex, Shell, Conoco, Elf Aquitaine, Marathon.
[6] Bosch, Samsung, Siemens, and, most notably, Ericsson with a contract volume of approximately $110 million.

The Price Stabilization Fund (PSF) is not consolidated in the government budget. Under the PSF system, a general wheat subsidy is enforced, which makes bread cheaply available. In addition, each Syrian citizen is entitled to purchase a limited amount of basic foodstuffs like sugar and rice at less than the market price, cf. International Monetary Fund, 1999b. Despite own revenues from price surcharges and budgetary transfers, PSF operations cause a large deficit which increases the consolidated government sector deficit to 12.2 percent of GDP.

Investment expenditures (both public and private) benefit from extremely low import tariffs on capital goods. Similarly, raw materials for industrial use can be imported virtually at world market prices. On the other hand, consumer goods often have rather high tariff rates in accord with traditional import substitution policies. For details of the foreign trade and multiple exchange rate system, see below.

Finally, the financial sector in Syria is clearly underdeveloped, both in terms of competition and product differentiation. The Commercial Bank of Syria is the dominant player, serving mainly the government and the public enterprises. The volume of credit to private enterprises is small and an unregulated market for foreign exchange does not exist. The savings rate of private households is low (6.4 percent in 1999), thus forcing the government to finance large parts of its deficit externally. The officially acknowledged external debt was about $4.9 billion at end-1998 with an undisclosed ruble debt of possibly the same order of magnitude according to IMF estimates, totaling to about 58 percent of GDP.

Section II: External Trade Flows by product, origin, and destination

The material documented in this section is taken from Syria's Foreign Trade Statistics (Central Bureau of Statistics, 1999) and the Statistical Abstract (Central Bureau of Statistics, 2000).

II.1 Syria's 1999 foreign trade by product groups

Syria's export structure (disaggregated according to the 5-digit Standard International Trade Classification (SITC)) is dominated by crude oils from petroleum or bituminous minerals (SITC333.00), which accounts for 63 percent of the total export value. The second-most important export group is cotton (not carded or combed, SITC263.10), which has a share of 4.5 percent in total exports. There are six more commodity groups, whose share in total export value exceeds one percent, cf. Table 1:

Table 1
Most Important Exports by Product Groups, 1999

Product group	SITC code	Export value, (million US $)	Share in total export value
CRUDE OIL FROM PETROLEUM OR BITUMINOUS MINERALS	333.00	2,185	0.629
COTTON (OTHER THAN LINTERS), NOT CARDED OR COMBED	263.10	156	0.045
TOMATOES, FRESH OR CHILLED	54.40	95	0.027
FUEL OILS, N.E.S.	334.40	84	0.024
SHAWLS, SCARVES, MUFFLERS, MANTILLAS ETC, KNIT/CRO	846.93	55	0.016
SHEEP, LIVE	1.21	55	0.016
GASOLINE INCLUDING AVIATION (EXCEPT JET) FUEL	334.11	48	0.014
STONE FRUIT, N.E.S., FRESH	57.93	37	0.011

Three out of the eight most important export groups are oil-related, four are agricultural. The figures thus hint at a rather uncompetitive manufacturing sector – besides from suggesting that Syria may run into serious problems of external imbalance when domestic oil supplies are depleted. According to some estimates (cf. U.S. Energy Information Administration, 2000) proven oil reserves last for only about ten more years, so that Syria may become a net importer of oil within the next decade. This not completely unfamiliar perspective (the last time Syria was a net oil importer was 1987) underscores the necessity of immediate economic reform and trade liberalization.

This impression is reinforced by a look at total exports by one-digit SITC classification, cf. Table 2. Food, live animals, and crude materials are the main source of export revenues for the Syrian economy with export proceeds from these sources summing to 89 percent of total exports.

Table 2
Exports by Product Groups, 1999

Product group	SITC code	Export value, (million US $)	Share in total export value
FOOD & LIVE ANIMALS	0	549	0.158
BEVERAGES & TOBACCO	1	5	0.002
INEDIBLE CRUDE MATERIALS EXCEPT FUELS	2	221	0.064
MINERAL FUELS, LUBRICANTS & RELATED MATERIAL	3	2,332	0.672
ANIMAL & VEGETABLE OILS, FATS AND WAXES	4	16	0.005
CHEMICALS AND RELATED PRODUCTS	5	30	0.009
MANUFACTURED GOODS CLASSIFIED CHIEFLY BY MATERIAL	6	135	0.039
MACHINERY &TRANSPORT EQUIPMENT	7	8	0.002
MISCELLANEOUS ARTICLES	8	175	0.051
COMMODITIES AND TRANSACTIONS N.E.S.	9	0	0.000
Total		3,471	1.000

Focusing on export of manufactures only, Table 3 shows the most important export activities by the Economic Activity Classification (EAC). We can identify twelve activities whose share in total export proceeds *from manufactures* exceeds one percent. These activities contribute 89 percent of total export proceeds from manufactures. Again, oil related activities (manufacture of refined petroleum) lead the list with a large share of 22 percent. However, the shares of four textile activities sum to 31 percent and much of the remaining shares is related to garment, leather or food processing. Exports of chemicals have some importance for fertilizers and products for personal needs.

Table 3
Most Important Manufactured Exports by Economic Activity, 1999

Economic Activity	EAC code	Export value, (million US $)	Share in total value of exported manufactures
MANUFACTURE OF REFINED PETROLEUM	2320	142	0.217
MANUF OF KNITTED AND CROCH. FABRICS	1730	117	0.180
PROCESSING AND PRESERVING OF FRUIT AND VEGETABLES	1513	93	0.143
MANUF. OF WEARING APPAREL EXCEPT FUR	1810	48	0.073
MANUFACTURE OF MADE-UP TEXTILE ARTICLES, EXCEPT APPAREL	1721	39	0.060
PREPARATION AND SPINNING OF TEXTILE FIBRES	1711	38	0.058
MANUF. OF FERTILIZERS & NITR. COMP.	2412	31	0.048
MANUFACTUR OF SOAP & DETERGENTS PERFUMES	2424	22	0.034
MANUFACTURE OF FOODWEAR	1920	20	0.030
MANUF. OF VEGET. & ANIMAL OILS AND FATS	1514	16	0.025
TANNING AND DRESSING OF LEATHER	1911	8	0.012
MANUFACTURE OF OTHER TEXTILES	1729	7	0.011

Turning to imports; Table 4 shows the imported product groups with a share in total import value exceeding 1 percent. These are 23 commodity groups which account fo 45 percent of total imports. Only two of these are capital goods, namely motor vehicles for the transport of goods and milling machinery, with a consolidated import share of 6.6 percent. Most of the other main import products must be classified either as food or as material inputs. Finished goods (other than food or capital goods) are apparently of minor importance in Syria's import structure – a particlarity due to Syria's customs system, see below.

Table 4
Most Important Imports by Product Groups, 1999

Product group	SITC code	Export value, (million US $)	Share in total export value
MOTOR VEHICLES FOR THE TRANSPORT OF GOODS	782.10	184	0.050
OTHER SUGARS	61.29	152	0.041
SYNTHETIC FILAMENT YARN NOT PUT UP FOR RETAIL SALE	651.50	131	0.035
IRON AND STEEL BARS; RODS; ANGLES; SHAPES AND SECTIONS (INCLUDING SHEET PILING)	676.00	116	0.031
FLAT ROLLED PRODUCTS OF IRON OR NON ALLOY STEEL; NOT CLAD; PLATED OR COATED NES	673.50	109	0.029
OTHER SYNTHETIC FILAMENT YARN (NO SEWING THREAD)	651.59	85	0.023
MAIZE (NOT INCLUDING SWEET CORN) UNMILLED, NO SEED	44.90	75	0.020
ALLOY STEEL (EXCEPT STAINLESS) WIRE	678.29	69	0.019
CONIFEROUS WOOD SAWN OR CHIPPED LENGTHWISE SLICED OR PEELED OVER 6MM	248.20	66	0.018
BARLEY, UNMILLED	43.00	60	0.016
MACHINERY USED IN THE MILLING INDUSTRY OR FOR THE WORKING OF CEREALS OR DRIED LEGUMINOUS VEGETABLES	727.10	58	0.016
OTHER TUBES AND PIPES	679.30	56	0.015
PETROLEUM GASES AND OTHER GASEOUS HYDROCARBONS NES	344.00	53	0.014
RICE HUSKED NOT FURTHER PREPARED (CARGO OR BROWN RICE)	42.20	50	0.014
FISH, PREPARED OR PRESERVED, N.E.S.	37.16	50	0.013
WOVEN FABRICS OF SYNTHETIC FILAMENT YARN; OTHER THAN PILE AND CHENILLE FABRICS	653.10	49	0.013
TEA	74.10	45	0.012
MILK, IN SOLID FORM, FAT CONTENT, BY WEIGHTGT, NOT OVER 1.5%	22.21	43	0.012
POLYETHYLENE	571.10	42	0.011
CHEMICAL ELEMENTS & COMPOUNDS DOPED TO USE IN ELECTRONICS	598.50	41	0.011
LARD; PIG FAT NES AND POULTRY FAT, RENDERED	411.20	41	0.011
OIL-CAKE, ETC FROM OIL SEEDS & OLEAGINOUS FRUITS	81.30	41	0.011
FLAT ROLLED PRODUCTS OF IRON OR NON_ALLOY STEEL; PLATED OR COATED WITH ZINC	674.10	39	0.010

Looking at total imports, the picture changes slightly. Capital goods (mostly SITC7[1]) now show an increased import share of about 22 percent. The largest import group, however, are manufactures classified chiefly by material (SITC6), many of which, as Table 4 suggests, are semi-finished goods. The import of food and live animals with an import share of 18 percent is larger in value than the respective exports, although the latter is the most important non-oil export activity in the one digit SITC classification. Trade in chemicals (with an import share of 13 percent) is also deficient. Thus, apart from crude materials, Syria's trade balance by one-digit SITC classification is negative everywhere except for the rather small position of miscellaneous articles (SITC8).

Table 5
Imports by Product Groups, 1999

Product group	SITC code	Import value, (million US $)	Share in total import value
FOOD & LIVE ANIMALS	0	708	0.184
BEVERAGES & TOBACCO	1	11	0.003
INEDIBLE CRUDE MATERIALS EXCEPT FUELS	2	180	0.047
MINERAL FUELS, LUBRICANTS & RELATED MATERIAL	3	108	0.028
ANIMAL & VEGETABLE OILS, FATS AND WAXES	4	109	0.028
CHEMICALS AND RELATED PRODUCTS	5	482	0.125
MANUFACTURED GOODS CLASSIFIED CHIEFLY BY MATERIAL	6	1,220	0.318
MACHINERY &TRANSPORT EQUIPMENT	7	846	0.220
MISCELLANEOUS ARTICLES	8	78	0.020
COMMODITIES AND TRANSACTIONS N.E.S.	9	99	0.026
Total		3,840	1.000

It may be useful to conclude this section by looking at the foreign trade shares of Syria's public and private sectors, sorted by nature or utilization of commodities, cf. Table 6. Export data are given merely for completeness, their structure does hardly reveal new insights but basically reflects the importance of oil exports. For import data, however, we note that private sector production requires relatively more raw materials and relatively less semi-finished goods than public sector production. This is in line with the fact that the state still controls much of the technologically advanced industries, whereas the private sector is characterized by more basic productive activities. Moreover, the private sector does not necessarily catch up with the public sector, since the ratio of imported capital goods to intermediates is much less favorable for the private sector than for the government sector.

[1] 87 percent of Syrian capital goods imports are from SITC7, 10 percent from SITC6, and 3 percent from SITC8. Capital goods imports from SITC0 and SITC5 are negligible.

Table 6

Foreign Trade by Nature and Utilization of Item, 1999

Nature of item	Total export value (million US $)	Public share	Private share	Total import value (million US $)	Public share	Private share
Raw materials	2,903	0.824	0.176	437	0.076	0.924
Semi-finished	417	0.340	0.660	1,559	0.289	0.711
Finished	152	0.183	0.817	1,827	0.141	0.859
Total	3,471	0.738	0.262	3,823	0.194	0.806
Utilization of item						
Final consumption	680	0.005	0.995	638	0.118	0.882
Intermediate consumption	2,783	0.919	0.081	2,261	0.168	0.832
Capital	8	0.022	0.978	924	0.308	0.692
Total	3,471	0.738	0.262	3,823	0.194	0.806

II.2 Syria's 1999 exports by destination

The following analysis disaggregates Syria's 1999 exports by one digit SITC classification (without SITC9, which is zero) and eight major trading partners:

Arabic States (Arab)
(Algeria, Bahrein, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mouritania, Saudi Arabia, Somalia, Sudan, Tunisia, United Arab Emirates, Yemen),

European Union (EU 15)
(Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden, United Kingdom),

Formerly socialist countries (Ex-Soc.)
(Bulgaria, Byelorussia, China, Cuba, Czech Republic, Hungary, Poland, Rumania, Russia, Serbia, Ukraine),

United States of America (USA) ,

Argentina, Brasil, Chile (ABC),

Turkey,

Japan,

and the rest of the world (ROW).

Table 7

Exports by product group and destination, 1999
(million US $)

	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8	Total
Arab	412	5	44	75	11	11	73	6	91	728
EU 15	33	0	70	1.930	1	1	42	0	37	2113
Ex-Soc.	19	0	7	0	0	2	8	0	31	68
USA	5	0	12	18	0	0	1	0	8	45
ABC	4	0	0	8	0	0	0	0	1	13
Turkey	34	0	16	265	3	1	2	0	1	321
Japan	0	0	10	0	0	0	0	0	0	10
ROW	42	0	62	36	0	15	9	1	7	172
Total	549	5	221	2332	16	30	135	8	175	3471

Table 7 shows the distribution of exports across product groups and trading partners. Major destinations are the Arab countries (mostly for food and live animals), the European Union (mostly for oil-related exports), and Turkey (also mostly for oil exports).

Table 8

Export shares of product groups by trading partner, 1999

	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8	Total
Arab	0.566	0.007	0.060	0.103	0.016	0.015	0.100	0.009	0.125	1.000
EU 15	0.015	0.000	0.033	0.913	0.001	0.000	0.020	0.000	0.017	1.000
Ex-Soc.	0.285	0.001	0.105	0.003	0.001	0.028	0.123	0.004	0.450	1.000
USA	0.113	0.001	0.262	0.405	0.009	0.001	0.024	0.001	0.185	1.000
ABC	0.307	0.000	0.000	0.603	0.005	0.004	0.019	0.000	0.061	1.000
Turkey	0.106	0.001	0.049	0.823	0.008	0.004	0.006	0.001	0.004	1.000
Japan	0.000	0.000	0.975	0.000	0.000	0.024	0.000	0.001	0.000	1.000
ROW	0.245	0.000	0.363	0.208	0.002	0.087	0.051	0.005	0.039	1.000

Table 8 presents the shares of each product group for exports directed at a specific trading partner. Thus, 57 percent of exports to other Arab countries belong to SITC0, 6 percent are non-oil raw materials, and 10 percent are fuels. In addition, a substantial share of 23 percent of these exports are manufactures (SITC6, 7, and 8). For the European Union, on the other hand, all product groups but raw materials are relatively unimportant – and most of the raw materials is oil. Turkey's structure is slightly different from the EU's in that besides oil and other raw materials there is also an 11 percent share of food and live animals. All other trading blocks, as shown above, have only minor importance as destination for Syrian products.

Table 9

Export shares of trading partners by product group, 1999

	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8
Arab	0.750	0.943	0.198	0.032	0.699	0.366	0.540	0.780	0.518
EU 15	0.059	0.002	0.317	0.828	0.084	0.030	0.310	0.041	0.209
Ex-Soc.	0.035	0.012	0.033	0.000	0.003	0.062	0.062	0.032	0.175
USA	0.009	0.005	0.053	0.008	0.025	0.001	0.008	0.006	0.047
ABC	0.007	0.000	0.000	0.003	0.004	0.002	0.002	0.000	0.005
Turkey	0.062	0.033	0.071	0.113	0.160	0.039	0.014	0.026	0.007
Japan	0.000	0.000	0.046	0.000	0.000	0.008	0.000	0.001	0.000
ROW	0.077	0.005	0.283	0.015	0.024	0.493	0.065	0.113	0.038
Total	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

The share of each trading partner by product group is given in Table 9. From this, we infer that 75 % of food and live animal exports go to Arab countries, with minor shares of around five percent sold to the EU, formerly scialist countries, Turkey and the rest of the world. American countries buy virtually nothing from this product group. Beverages and tobaccos (SITC1) are also predominantly exported to Arab countries. The EU is the largest buyer of non-oil raw materials (SITC2) with a share of 32 percent, while Arab countries account for 20 percent. The remaining sales of this product group go to various countries across the world, mostly in minor shares. A large share of 83 percent of the oil-related raw materials (SITC3) is exported to the European Union, another 11 percent to Turkey. Animals and vegetables fats (SITC4) are mostly sold to Arab countries (70 percent) and Turkey (16 percent), the EU's share is 8 percent. Chemicals (SITC5) go to Arab (37 percent) and various other countries (50 percent), they are apparently bought in only very small quantities by developed countries. However, the European Union holds a significant share of 31 percent of Syria's exports of certain manufactures classified primarily by material (SITC6), only dominated by Arab countries (54 percent). For capital goods (SITC7), demand is again largest from Arab countries (78 percent), the EU buys four percent and the rest goes to various other countries. Syria's export structure for miscellaneous manufactures collected in SITC8 looks similar to the structure for SITC6 with a smaller, but still substantial EU-share of 21 percent.

Turning to imports, Table 10 gives Syrian imports 1999 by product group and origin. A particularity of the Syrian import statistics is the existence of „suitcase imports", which are imported by passengers without proper classfication. These imports are not negligible (an estimated import volume of 98 million US $ for 1999), but they are mechanically listed under imports from the rest of the world in SITC9 (commodities and transactions not listed elsewhere). Since SITC9 is economically uninformative and zero for all other trading blocks, it is not shown in Tables 10, 11, and 12 below. Consequently, however, the import total for the rest of the world is not equal to the sum of the column entries in Table 10 and the sum of the import shares in Table 11 does not yield unity in Table 11.

Table 10

Imports by product group and origin, 1999
(million US $)

	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8	Total
Arab	54	1	28	16	23	107	66	20	3	317
EU 15	230	4	31	58	7	232	237	342	26	1167
Ex-Soc.	76	0	65	14	0	37	377	66	16	651
USA	54	5	15	0	0	16	43	35	6	175
ABC	100	0	12	0	0	4	18	6	0	139
Turkey	34	0	2	7	38	13	77	18	1	190
Japan	0	1	1	0	0	5	35	107	7	156
ROW	157	0	26	13	40	67	361	248	17	1028
Total	705	11	179	108	108	479	1215	842	78	3823

Most of Syria's imports originate from the European Union, but imports from formerly socialist countries are also considerable. Arab countries rank third and lots of the imports is scattered through various other countries. Almost 30 percent of imports from the EU are capital goods, around 20 percent each are agricultural products, chemicals, and manufactures. By contrast, only 10 percent of the imports from formerly socialist countries are capital goods and only six percent are chemicals. Instead, lots of non-capital manufactures (about 60 percent of the import value in SITC6 and SITC8) are imported from this group of countries, along with about 12 percent for food and live animals and 10 percent of non-oil raw materials (SITC0 and SITC2, respectively).

Chemicals (SITC5) are the most important products imported from other Arab countries (34 percent share), followed by non-capital manufactures (22 percent) and agricultural products (17 percent). The main imports from the United States are food (31 percent), non-capital manufactures (25 percent), and capital goods (20 percent), while from the ABC countries it is primarily food (72 percent). Imports from Japan are very strongly capital oriented (69 percent) and almost all of the remaining imports is manufatures. Turkey, finally, is important as a supplier of manufactures (41 percent) and agricultural products (38 percent for SITC0 and SITC4).

Table 11
Import shares of product groups by trading partner, 1999

	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8	Total
Arab	0.171	0.002	0.087	0.051	0.071	0.336	0.208	0.064	0.009	1.000
EU 15	0.197	0.003	0.027	0.049	0.006	0.199	0.203	0.293	0.023	1.000
Ex-Soc.	0.117	0.000	0.100	0.021	0.000	0.056	0.579	0.101	0.025	1.000
USA	0.307	0.029	0.085	0.000	0.000	0.092	0.246	0.203	0.037	1.000
ABC	0.717	0.000	0.084	0.000	0.001	0.027	0.128	0.040	0.003	1.000
Turkey	0.181	0.000	0.009	0.038	0.203	0.066	0.405	0.094	0.005	1.000
Japan	0.001	0.003	0.003	0.000	0.000	0.030	0.227	0.688	0.047	1.000
ROW	0.153	0.000	0.025	0.013	0.039	0.065	0.351	0.242	0.017	0.905

Looking at import shares of trading partners disaggregated by product groups, cf. Table 12, we find the European Union as the largest supplier of food products (32 percent of all such imports, followed by the ABC countries (14 percent), formerly socialist countries (11 percent). A substantial share of 22 percent is scattered throughout the rest of the world. The United States are the leading supplier for tobaccos and beverages (48 percent), followed by the EU (37 percent). Non-mineral raw materials are mostly imported from formerly socialist states (37 percent), next come the EU with a share of 17 percent and Arab countries with a share of 15 percent in this product category. For mineral fuels, the EU is even the largest supplier (53 percent or a volume of 58 million US $). Turkey is the largest single supplier of animal and vegetable fats(36 percent), followed by Arab countries (21 percent). Chemicals are to a large part imported from the EU (48 percent import share), Arab countries are second with 22 percent. Here, surprisingly, the share of other developed countries is small. Manufactures classified in SITC6 are mostly imported from formerly socialist countries (31 percent), while the EU's share is only 20 percent. (The situation is slightly more favorable for the EU in SITC8, but note that the volume in the latter category is very low). For capital goods, finally, the EU is the predominant supplier with a share of 41 percent, followed by Japan with 13 percent and formerly socialist countries with 8 percent. The rest of capital goods imports is scattered throughout the world.

Table 12

Import shares of trading partners by product group, 1999

	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8
Arab	0.077	0.069	0.154	0.151	0.209	0.223	0.054	0.024	0.038
EU 15	0.326	0.372	0.174	0.534	0.064	0.484	0.195	0.406	0.339
Ex-Soc.	0.108	0.001	0.365	0.128	0.000	0.077	0.310	0.078	0.208
USA	0.076	0.476	0.083	0.000	0.000	0.034	0.035	0.042	0.083
ABC	0.142	0.000	0.066	0.000	0.002	0.008	0.015	0.007	0.006
Turkey	0.049	0.000	0.010	0.067	0.356	0.026	0.063	0.021	0.011
Japan	0.000	0.049	0.003	0.001	0.000	0.010	0.029	0.127	0.094
ROW	0.223	0.032	0.145	0.119	0.368	0.140	0.297	0.295	0.222
Total	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Section III: Indirect taxes

The tax system in the Syrian Arab Republic is difficult to structure, since the distinction between direct and indirect taxes for instance in the government budget plan (cf. Central Bureau of Statistics, 2000) does not follow internationally established standards. See, e. g. Corm, 1997, who also deplores this fact. Moreover, the classification used in the government budget is inconsistent with the classification of indirect taxes in the system of national accounts.

In the government budget plan, position 62 lists the expected revenue of Syria's indirect taxes. For 1999, this position amounts to 23.4 billion Syrian Pounds (LS). In the system of national accounts, however, 1999 indirect taxes (net of subsidies!) are shown as 40.6 billion LS, i. e. indirect taxes (gross of sbsidies) are even larger. In fact, a detailed analysis of the government budget shows the existence of various revenues outside of position 62 with economic designs similar or equivalent to indirect taxes. Table 13 gives an overview over indirect taxes as listed in the government budget and identifies revenues not listed under position 62, although there economic effect is similar.

Table 13
Indirect Taxes according to Budget Plan, 1999

Budget position	Type of revenue	Revenue in billion LS
61.08	Tax on television sets	0.020
61.09	Tax on Arms' permits	0.007
61.10	Exit duty	1.100
61.11	Fees on sale, transfer, and registration of property	0.500
61.12	Taxes on motor vehicles	1.800
61.13	Irrigation fees	0.120
61.14	Tax on general securities	0.230
61.15	Tax on luxury consumption	1.150
61.16	Tax on emigrants	0.150
62.01	Excise on cement	0.110
62.02	Excise on fuels	0.075
62.03	Excise on electricity consumption	0.475
62.04	Excise on sugar	0.100
62.05	Excise on alcoholic beverages	0.200
62.06	Excise on tobacco	0.800
62.07	Excise on salt	0.015
62.08	Tax on entertainments	0.040
62.09	Tax on agricultural production	0.900
62.10	Tax on cotton exportation	1.000
62.11	Fees on the notary public	0.012
62.12	Customs duties	11.100
62.13	Statistics fees	2.100
62.14	Foreign trade fees	1.150
62.15	Duties on import of radio sets	0.095
62.16	Stamp fees	4.000

62.17	Excise on hunting, fishing, and vessels	0.002
62.18	Excise on mines and quarries	0.007
62.19	Consular fees	0.920
62.20	Duties on antiquities trade	-
62.21	Taxes on commercial and industrial property protection	0.003
62.22	Justicial fees	0.300
71.05	Additions to taxes and duties for teaching buildings	1.000
73	Government royalties of joint oil fields	17.235
81.02	Transit duties	0.400
82.07	Different revenues	19.000
	Total	66.116

These are 35 sorts of indirect taxes, many of which are insignificant in terms of revenue and possibly inefficient in terms of administrative costs. Some of these positions may actually be fees in the sense that they represent the compensation paid by individuals for certain government services. It is, however, not clear, whether this compensation is appropriate in terms of the value of the delivered service. It may contain a significant tax load if the fee charged is higher than the value of the service delivered. This, in particular, seems likely for the „fees“ raised on foreign trade, namely the statistics fees (62.13) and the foreign trade fees (62.14), which, e. g. include a license fee for most imports at an ad valorem cost of about 2 percent of the import value. Since such fees have equivalent effects to customs tariffs, the Syrian budget accounting practice of listing them under indirect taxes seems justified[1].

Syria does not have a value added tax (VAT), rather, excises are raised on various selected products. Typically, these excises refer to goods for which the government controls the market. For instance, the government has a monopoly-like position for the production and/or marketing of cement, salt, sugar, tobacco, petroleum products, and electricity, mirrored by respective excises. (However, both private and public sector produce and import alcoholic beverages). Clearly, the overwhelming majority of products on Syrian markets is not subject to excises.

Foreign oil companies have to pay substantial royalties for the exploitation of joint oil fields. These royalties are not listed as taxes in the Syrian government budget, but are classified as „state property revenues“. At first sight, this is not unreasonable, since the royalties may be viewed as compensation for the usage of the production factor land. However, these obligations are linked to extraction, so that their economic effect is similar to a production tax.

The other important source of revenue not officially listed under indirect taxes, but having equivalent effects, are price surcharges. These are hidden under the heading of „different revenues“ (82.07). Such price surcharges are valid for selected consumption goods, petroleum products, and construction materials. They are not classified as taxes since they originate from the conversion of commoditiy values at different exchange rates under the multiple exchange rate system[2]. As such, these revenues tend to decrease as the Syrian government proceeds with a stepwise unification of applicable exchange rates. For instance, prior to the last major

[1] It should be noted that the Syrian authorities distinguish between fees listed under budget position 6 (Taxes and Duties) and fees listed under budget position 71 (Service Commutations). This distinction might indicate the true economic character of the respective fees.

[2] For details of the multiple exchange rate system, see the description below.

exchange rate reform, which became effective January 1, 1998, „different revenues“ of position 82.07 were much higher: The 1996 budget plan shows 31.8 million LS.

The government budget plan consolidates lower administrative units like municipalities. Nevertheless, it does not give a complete account of the indirect tax structure, since it excludes operations of the Price Stabilization Fund (PSF)[3]. The apparent reason for this design is the government's intention to separate the volume of subsidies aimed at supporting a subsistence level for the population at large from other fiscal measures. For possibly the same reason, revenues and expenditures of the PSF are not publicly disclosed. Currently, the PSF obtains revenues from price surcharges (beyond those consolidated in the official government budget) of approximately 6 billion LS. In addition, the PSF receives budgetary transfers from the central government of about 4.5 billion LS. These resources, however, are by far insufficient to cover expenditures on food subsidies, whose volume amounts to approximately 24 billion LS for wheat and wheat products, 5 billion LS for sugar and 1 billion LS for (imported) rice. Therefore, the PSF operations result in a current deficit of 19.5 billion LS.

Adding the indirect tax equivalent PSF revenues to total indirect tax collections shown in Table 13 and subtracting the food subsidies yields an indirect tax load (net of sbsidies) of about 42.1 billion LS for 1999. This is fairly close to the figure of 40.6 billion LS obtained from the 1999 system of national accounts[4].

However, these calculations do still not account for the true amount of subsidies. Besides food, the prices of fuel oil, water and electricity are at artificially low levels. As these goods are overwhelmingly supplied by state-owned enterprises, their subsidies simply reduce the respective operating surplus[5]. Due to the monopolistic market structure for utilities and fuel oil, such subsidies are not visible (and technically not counted) as negative indirect taxes. It is therefore extremely difficult to estimate the volume of these hidden subsidies. Using data for 1996, the study of Corm, 1997b, suggests that these subsidies amount to about 55 million LS. If these figures were true, an adequate accounting of net indirect taxes in the Syrian Arab Republic would result in a negative value (i. e. a net subsidy) of about 15 million LS.

Taxes on foreign trade are at the center of this research project. Foreign trade regulations are extremely complicated and badly documented, see below. The Syrian customs tariff follows the 1950 Brussel's Customs Cooperation Council's nomenclature (CCCN), an update to the Harmonized System (HS) is intended but not yet implemented. Currently, 2,622 items are listed under this classification, many of which result from a disaggregation of CCCN positions according to either specific properties or usage, see Ministry of Finance, 1989. Most of the customs rates, henceforth referred to as „basic rates“, are ad valorem and range between 0 and 200 percent. In addition to the basic rates, a surcharge is levied, called the „unified tax on imports“, cf. Syrian Arab Republic, 1980. The load of the surcharge is directly related to the basic rates, as shown in Table 14. The sum of the basic rate and the unified tax rate is referred to as „combined rate“.

[3] The relative autonomy of this fund is also emphasized by the fact that the PSF operates under the control of the Ministry of Supply and Internal Trade rather than under the auspices of the Ministry of Finance.

[4] Observe that budget data are planned revenues, whereas the national accounts data give the actual figures. In addition, PSF receipts and outlays are estimated from information that refers to 1998.

[5] Estimating the rates of return to capital (net of depreciation, but gross of income taxes) for a sectoral breakup of the Syrian economy yields merely 4 percent for utilities, while the average value for the total manufacturing sector is 6.9 percent. This may be taken as evidence for artificially low prices in utilities. Public mining activities, however, are highly profitable despite the implicit subsidy for domestic fuel; the net rate of return is estimated at 160 percent.

Table 14 Customs Rates, 1999		
Basic Rate	Unified Tax Rate (Surcharge)	Combined Rate
0%	6%	6%
1%	6%	7%
7%	13%	20%
15%	14%	29%
30%	17%	47%
50%	21%	71%
75%	27%	102%
100%	32%	132%
150%	33%	183%
200%	33%	233%

In addition to the customs rate as given by the combined rate, importers must obtain an import license from the Ministry of Economy and Foreign Trade. There is an associated fee for the import license which is degressively structured with the cif-value of imports[6]. Also, imports are subject to statistics fees of approximately 4 percent ad valorem[7]. Various exemptions apply to both the license fee and the statistics fee and in some cases these exemptions also carry over to (minor) reductions of the unified import tax.

The above account of foreign trade taxes suggest that Syria imposes very high effective tariff rates. This perception is, in fact, widespread (see e. g. MEDA-Team, 2000, p. 13, US Department of State, 1996), but it is nevertheless incorrect. The reason is that many tariff rates apply to artificially low import values, which result from a conversion of world market prices at overvalued exchange rates. Specifically, most imports of basic goods are evaluated at the customs exchange rate of 11.25 LS/$, while the free market exchange rate in Beirut is rather stable at about 51 LS/$. Effectively, the usage of such an overvalued exchange rate reduces the tariff rates to slightly more than one-fifth of their nominal level.

The Syrian customs authorities apply three different exchange rates in order to convert cif import values into Syrian pounds: Imports subject to a basic rate of not more than 15 percent are converted at 11.25 LS/$, imports with higher basic rate than 15 percent are converted at 23 LS/$. An exception from this rule are goods whose import has been liberalized since the early 1990s, these goods are currently converted at an exchange rate of 46.5 LS/$. In addition to the tariff depreciation achieved by applying various overvalued exchange rates, Investment Law No. 10 of 1991 allows for the duty-free import of machinery, capital equipment and other essential materials for projects benefiting from the provisions of this law. Moreover, such imports are exempted from all other taxes and duties both on the state and the municipal level.

[6] About 20 percent of imported goods (552 items of the tariff nomenclature) are exempted from the license fee.
[7] The value refers to the world market price converted into Syrian pounds at the applicable customs exchange rate. This is often less than one-fourth of the true value.

Unfortunately, the Syrian authorities were unable to provide a list of those imported goods whose value is converted at the rate of 46.5 LS/$ - and we have not been able to obtain accurate information on that topic from anywhere else. IMF estimates for 1995 suggest that less than 2 percent of the total import value has been converted at this exchange rate. For 1999, however, this share will be higher, since more imports have been liberalized. However, even the IMF does not know about the correct value today.

Despite these informational shortcomings, note that for the purpose of this study we merely need a weighted average of the effective tariff rates for each SITC one-digit product group. To calculate these weighted rates we proceed as follows. For each one-digit SITC group we identify the most important imported commodities disaggregated to the five-digit level. We use as many five-digit groups as are necessary to capture at least 90 percent of the total import volume for the respective one-digit level. Next, we identify the applicable tariff rates for each five-digit product from the official tariff schedule (Ministry of Finance, 1989). In many cases, the tariff rate is not unique on the five-digit SITC-level. In these cases we consider both the minimum and the maximum tariff rates applicable for products from this group.

In both cases we add the applicable surcharge rate to obtain the combined rate. for the minimum rates, we then convert the import value at the applicable exchange rate, either 11.25 LS/$ or 23 LS/$. For the maximum rates, we convert at 46.5 LS/$ in order to obtain an upper bound for the tariffs levied by the Syrian Customs Department. We then compute minimum and maximum tariff revenues accordingly. Dividing these revenues through the import volume evaluated at the free market exchange rate of 51 LS/$ then gives minimum and maximum tariff revenues for each product in the five-digit SITC classification.

Clearly, the sum of all minimum tariff revenues is smaller and the sum of all maximum tariff revenues larger then total actual tariff revenues of the Syrian government, which must be a weighted average of these ficticious revenues. We determine the appropriate weight and apply this to the minimum and maximum tariff revenues of each one-digit SITC product group to determine what we will call the average effective tariff rates. Note that these average effective rates apply to import values converted at the Beirut free market rate.

Tables 15 through .... give the corresponding results. As can be seen from Table 15, most minimum effective rates are very low, with the exception of bananas and coffee. Even the maximum rates are often at reasonable levels and, while significantly higher, usually not excessive.

Table 15

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC0

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
CANE/BEET SUGAR/CHEM PURE SUCROSE, SOLID FORM, NES	6129	7731	6.40%	26.44%
MAIZE (NOT INCLUDING SWEET CORN) UNMILLED, NO SEED	4490	3813	1.54%	6.38%
BARLEY, UNMILLED	4300	3051	1.54%	6.38%
RICE HUSKED NOT FURTHER PREP (CARGO OR BROWN RICE)	4220	2557	4.41%	18.24%
FISH, PREPARED OR PRESERVED, N.E.S.	3716	2539	1.54%	6.38%
TEA	7410	2303	4.41%	18.24%
MILK, SOLID FORM, FAT CNTNT, BY WGT, NOT OVER 1.5%	2221	2190	4.41%	18.24%
OIL-CAKE & OTHER SOLID RESIDUE (NOT DREGS)	8130	2076	1.54%	6.38%
COFFEE, NOT ROASTED	7110	1434	21.20%	42.85%
BANANAS (INCLUDING PLANTAINS), FRESH OR DRIED	5730	1230	21.20%	42.85%
SHEEP, LIVE	121	1053	1.54%	6.38%
MATE	7431	731	4.41%	42.85%
PISTACHIOS FRESH OR DRIED, WHETHER SHELLED/PEELED	5778	623	6.40%	26.44%
BUTTER AND OTHER FATS AND OILS DERIVED FROM MILK	2300	602	4.41%	26.44%
FOOD PREPARATIONS, N.E.S.	9899	518	6.40%	26.44%
Total		32450	5.23%	18.63%

Table 16

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC1

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
CIGARETTES CONTAINING TOBACCO	12220	420	21.20%	42.85%
SPIRITS OBTAINED BY DISTILLING GRAPE WINE OR MARC	11242	63	21.20%	166.85%
Total		483	21.20%	59.08%

Quite a different picture emerges from Table 16. Beverages and tobacco carry rather high tariff rates, which can become prohibitive in the case of alcoholic beverages. Not surprisingly, these imports are rather low in value.

Table 17

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC2

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
CONIF WOOD SAWN/CHIPPED LENGTHWISE SLICE/PEEL OV 6MM	24820	3348	1.54%	18.24%
SEEDS OF FORAGE PLANTS, OTHER THAN BEET SEED	29252	769	1.54%	6.38%
ALUMINUM WASTE AND SCRAP	28823	763	1.54%	6.38%
SOYBEANS	22220	678	1.54%	6.38%
SESAME (SESAMUM) SEEDS	22250	662	1.54%	6.38%
PULPS OF FIBR CELLULOS MAT, EXC SEMICHEM WOOD PULP	25192	426	1.54%	6.38%
SYNTHETIC STAPLE FIBERS, PROCESSED	26670	269	1.54%	6.38%
SULPHUR OF ALL KINDS (OTHER THAN SUBLIMED, PRECIPITATED OR COLLOIDAL SULPHUR)	27410	259	1.54%	6.38%
SYNTHETIC FILAMENT TOW	26660	240	1.54%	6.38%
SYNTHETIC STAPLE FIBERS, NOT PROCESSED	26650	191	1.54%	6.38%
SUNFLOWER SEEDS	22240	137	4.41%	18.24%
ART STAPLE FIBERS, PROCESSED FOR SPINNING	26713	131	1.54%	6.38%
WOOD IN ROUGH OR ROUGHLY SQRD TREATED WITH PAINT, STAIN ETC	24730	118	4.41%	18.24%
KAOLIN & OTHER KAOLINIC CLAYS, CALCINED OR NOT	27826	95	6.40%	26.44%
Total		8087	1.69%	11.90%

Non-mineral raw materials have almost negligible minimum tariff rates. Even if the most unfavorable rates are applied the average rate for SITC2 is merely 12 percent. Clearly, most raw materials enjoy much cheaper customs rate. For SITC3 (fuels) and SITC4 (agricultural raw materials) the picture is qualitatively similar although the rates are somewhat higher, cf. Table 18 and Table 19. For chemicals (SITC5) minimum rates are again very low, on average below 2 percent. Maximum rates average at 17 percent, which is certainly not prohibitive.

Table 18

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC3

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
GASEOUS HYDROCARBONS	34400	2691	4.41%	26.44%
GAS OILS	33430	1659	4.41%	18.24%
MEDIUM OILS FROM PETROL & BITUM MINERALS NES ETC	33429	535	6.40%	26.44%
LUBRICATING PETROLEUM OILS AND OILS OBTAINED FROM BITUMINOUS MINERALS; OTHER HEAVY PETROLEUM OILS OR OILS OBTAINED FROM BITUMINOUS MINERALS	33450	486	4.41%	18.24%
		5371	4.61%	23.16%

Table 19

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC4

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
LARD; PIG FAT NES AND POULTRY FAT, RENDERED	41120	2100	4.41%	26.44%
COTTONSEED OIL, CRUDE	42121	1281	4.41%	18.24%
SOYBEAN OIL	42110	1255	4.41%	18.24%
FATTY ACIDS, ACID OILS FROM ANIMAL OR VEG FATS ETC	43131	552	1.54%	18.24%
Total		5187	4.11%	21.56%

Table 20

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC5

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
POLYETHYLENE	57110	2144	1.54%	6.38%
CHEM ELEMENTS & COMPDS DOPED TO USE IN ELECTRONICS	59850	2106	1.54%	26.44%
HERBICIDES, ANTISPROUTING ETC PRODUCTS, RETAIL ETC	59130	1487	1.54%	18.24%
POLYPROPYLENE, IN PRIMARY FORMS	57511	1310	1.54%	6.38%
PLATES, SHEETS, FILM ETC OF PLASTICS NES	58290	1240	1.54%	42.85%
POLYACETALS, OTHER POLYETHERS AND EPOXIDE RESINS, IN PRIMARY FORMS; POLYCARBONATES, ALKYD RESINS, POLYALLYL ESTERS AND OTHER POLYESTERS, IN PRIMARY FORMS	57400	1147	1.54%	42.85%
AMIDES	51470	1047	1.54%	6.38%
PHOSPHINATES AND PHOSPHONATES AND SIMILARS	52360	827	1.54%	6.38%
POLYVINYL CHLORIDE	57310	671	1.54%	18.24%
ANTIBIOTICS; NOT PUT UP AS MEDICAMENTS OF HEADING 542	54130	653	1.54%	6.38%
SYNTH ORGANIC FLUORESCENT BRIGHTENING AGENTS	53121	539	1.54%	6.38%
NITROGEN-FUNCTION COMPOUNDS N.E.S.	51489	487	1.54%	6.38%
LACTAMS; HETEROCYCLIC COMPOUNDS WITH OXYGEN HETERO_ATOMS ONLY	51560	461	1.54%	6.38%
POLYSTYRENE IN PRIMARY FORMS	57210	457	1.54%	6.38%
MINERAL OR CHEMICAL FERTILIZERS	56220	441	1.54%	6.38%
MIXTURES, ODORIFEROUS FOR FOOD OR DRINK INDUSTRIES	55141	430	1.54%	18.24%
ORGANIC SURF-ACT AGENTS NES FOR RETAIL SALE OR NOT	55421	389	1.54%	42.85%
TITANIUM DIOXIDE PIGMENTS AND PREPARATIONS	53311	379	1.54%	6.38%
FERTILIZERS, N.E.S.	56299	332	1.54%	6.38%
BORATES; PEROXOBORATES (PERBORATES)	52384	327	1.54%	6.38%
SODIUM HYDROXIDE (CAUSTIC SODA), SOLID	52262	322	1.54%	6.38%
PIGMENT, OPACIFIER & COLOR PREP FOR CERAMICS ETC	53351	290	1.54%	26.44%
CELLULOSE & ITS CHEMICAL DERIVATIVES NES, PR FORMS	57559	274	1.54%	42.85%
ADDITIVES FOR LIQUIDS SUBSTITUTING FOR MIN OIL	59720	272	1.54%	26.44%
MEDICAMENTS	54290	262	1.54%	6.38%
POLYVINYL CHLORIDE	57300	238	1.54%	18.24%

Table 20 cont'd

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC5

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
UNSATURATED ACYCLIC MONOCARBOXYLIC ACIDS NES ETC	51379	222	1.54%	6.38%
DEPILATORIES, PERFUMERY, COSMETIC ETC PREPS	55350	222	21.20%	64.74%
ORGANO-SULFUR COMPOUNDS	51540	211	1.54%	6.38%
PROVITAMIN AND VITAMINS	54110	204	1.54%	6.38%
MINERAL OR CHEMICAL FERTILIZERS, NITROGENOUS	56210	200	1.54%	6.38%
ANTISERA & OTHER BLOOD FRACTIONS; VACCINES	54163	195	1.54%	6.38%
PAINTS & VARNISHES, WATER PIGMENTS FOR LEATHER	53340	189	1.54%	26.44%
POLYCARBOXYLIC ACIDS; ANHYDRIDES, HALIDES ETC	51380	183	1.54%	6.38%
MINERAL OR CHEMICAL FERTILIZERS, POTASSIC N.E.S.	56230	176	1.54%	6.38%
AMINO-ALCOHOLS, ETHERS ETC; SALTS THEREOF	51460	172	1.54%	6.38%
NEUTRAL SODIUM CARBONATE (DISODIUM CARBONATE)	52372	151	1.54%	6.38%
FLUORINATED ETC DERIVATIVES OF ACYCLIC HYDROCARBNS	51137	128	1.54%	6.38%
ALGINIC ACID, ITS SALTS AND ESTERS, PRIMARY FORMS	57594	122	1.54%	42.85%
LACTIC, TARTARIC, CITRIC ACIDS & SALTS & ESTERS	51391	121	1.54%	6.38%
PRINTING INK	53320	118	4.41%	18.24%
HYDROGEN CHLORIDE; CHLOROSULFURIC ACID	52231	115	1.54%	6.38%
MONOHYDRIC ALCOHOLS, N.E.S.	51219	112	1.54%	26.44%
PREPARED GLUES & ADHESIVES NES; RETAIL PKGES ETC	59229	111	6.40%	42.85%
ACYCLIC HYDROCARBONS, N.E.S.	51119	106	1.54%	26.44%
SYNTH ORGANIC COLORING MATTER NES AND PREPARATIONS	53119	98	1.54%	6.38%
SODIUM SULFATES	52345	95	1.54%	6.38%
SOAP & SURF-ACT PREPS IN BARS ETC FOR TOILET USE	55411	94	21.20%	42.85%
COLORING MATTER AND COLORING PREPARATIONS NES	53317	93	1.54%	6.38%
NATURAL POLYMERS & MODIFIED NATURAL POLYMERS, NES	57595	85	1.54%	42.85%
Total		22058	1.87%	17.07%

For SITC6 (manufactures chiefly classified by material) tariff rates are very heterogenous, ranging between minimum rates of 1.5 percent for many material inputs up to maximum effective (!) rates of 120 percent for domestic cooking appliances. But the average maximum rate is still below 25 percent and the average minimum rate is a mere 5 percent for this product group.

Table 21

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC6

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
SYNTHETIC FILAMENT YARN, NOT PUT UP FOR RETAIL SALE	65150	6663	1.54%	6.38%
BARS AND RODS, OF IRON OR NON-ALLOY STEEL	67600	5896	4.41%	18.24%
IRON & NA STEEL FL-RL NC, NES	67350	5535	1.54%	26.44%
SYNTH FILAMENT YARN (NO SEW THR) TEX NES NO RETAIL	65159	4332	1.54%	6.38%
ALLOY STEEL (EXCEPT STAINLESS) WIRE	67829	3519	4.41%	18.24%
OTHER TUBES AND PIPES	67930	2863	1.54%	26.44%
WOVEN FABRICS, SYNTHETIC FILAMENTS	65310	2498	21.20%	42.85%
IRON & NA STEEL FL-RL, ZINC	67410	1966	1.54%	26.44%
PAPER & PAPERBD, WRITING	64130	1433	6.40%	26.44%
NEW PNEUMATIC RUBBER TIRES FOR AIRCRAFT	62530	1326	6.40%	26.44%
STRUCTURES OF IRON OR STEEL	69110	1301	21.20%	64.74%
TEXT FAB IMPREG, COATED ETC WITH PLASTIC (NO T CD)	65732	1135	21.20%	42.85%
NEW PNEUMATIC RUBBER TIRES FOR BUSES AND TRUCKS	62520	1007	4.41%	18.24%
METAL TANKS ETC OVER 300 LITERS OF IRON OR STEEL	69211	960	1.54%	42.85%
PAPER & PRBD NES, UN 40G/M2 SPEC PROC, UNC, ROL SH	64125	826	1.54%	26.44%
WIRE OF IRON OR NON-ALLOY STEEL	67810	782	1.54%	42.85%
COPPER BARS, RODS AND PROFILES	68230	741	1.54%	26.44%
WOV FABRIC, SYN ST FIB, UNDER 85%	65340	671	21.20%	42.85%
IRON AND NON-ALLOY STEEL IN INGOTS OR OTHER PRIMARY FORMS,SEMI-FINISHED PRODUCTS OF IRON OR NON-ALLOY STEEL	67200	663	1.54%	18.24%
ALUMINOUS CEMENT	66123	621	6.40%	26.44%
STAINLESS STEEL WIRE	67821	609	4.41%	18.24%
IRON & NA STEEL FL-RL, PT VARN PLA COAT	67430	575	1.54%	26.44%
TOILET PAPER, CUT TO SIZE, IN ROLLS OR SHEETS	64243	544	6.40%	26.44%
IRON & NA STEEL FL-RL, OTHER METALS	67440	497	4.41%	18.24%

Table 21 cont'd

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC6

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
METAL TANKS ETC NOT OV 300 LITERS, ALUMINUM	69242	482	4.41%	26.44%
KNITTED OR CROCHETED FABRICS, N.E.S.	65529	424	6.40%	64.74%
KRAFT SACK PAPER, UNCOATED, IN ROLLS OR SHEETS	64142	411	1.54%	6.38%
TUBES AND PIPES OF HOLLOW PROFILES, SEAMLESS OF IRON OR STEEL	67910	402	4.41%	18.24%
NONWOVENS, WHETHER OR NOT IMPREGNATED, ETC. N.E.S.	65720	345	6.40%	42.85%
TUBE OR PIPE FITTINGS	67950	332	6.40%	26.44%
MOUNT, FIT ETC NES, HAT RACKS ETC, DR CLOS BA METL	69919	308	6.40%	26.44%
ARTIFICIAL FILAMENT YARN (NO SEW THREAD), FOR RETAIL SALE	65171	304	1.54%	6.38%
KRAFT PAPER, UNCOATED N.E.S. ROLLS OR SHEETS	64141	297	4.41%	18.24%
WALLPAPER BASE, UNCOATED, IN ROLLS OR SHEETS	64124	290	6.40%	26.44%
SAW BLADES	69550	282	1.54%	26.44%
ALUMINUM & ALUMINUM ALLOY PLATE, ETC OV .2MM THICK	68423	276	1.54%	26.44%
GLASS PACKING CONTAINERS, STOPPERS, LIDS ETC	66511	264	1.54%	26.44%
PADLOCKS & LOCKS, CLASPS W LOCKS, & KEYS BASE METL	69911	246	1.54%	26.44%
GUMMED OR ADHESIVE PAPER, IN STRIPS OR ROLLS	64244	244	1.54%	26.44%
CLASPS, HOOKS, BUCKLES, BEADS ETC OF BASE METAL	69933	244	4.41%	18.24%
ARTICLES OF IRON OR STEEL, FORGED OR STAMPED, NES	69965	235	4.41%	18.24%
GLASS SHEETS (FLOAT, SURF GROUND ETC GLASS)	66440	221	6.40%	93.00%
PLYWOOD NES, VENEERED PANELS & SIM LAMIN WOOD NES	63449	214	6.40%	26.44%
DOMEST COOK APPLIANCES, NONELECTRIC, IRON OR STEEL	69731	203	21.20%	120.35%
BASE METAL WIRE, RODS ETC FLUX COAT FOR SOLDER ETC	69955	202	4.41%	18.24%
WOVEN FABRICS OF ARTIFICIAL FILAMENT YARN	65350	183	21.20%	42.85%
FILTER PAPER AND PAPERBOARD	64245	179	6.40%	26.44%
FLAT-ROLLED PRODUCTS OF IRON OR NON- ALLOY STEEL, NOT CLAD, PLATED OR COATED	67320	173	4.41%	18.24%

Table 21 cont'd

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC6

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
ALUMINUM & ALUMINUM ALLOY PLATE, ETC OV .2MM THICK	68421	171	1.54%	26.44%
HOUSEHOLD ARTICLES & PARTS NES, OF IRON OR STEEL	69741	163	6.40%	42.85%
CONVEYOR OR TRANSMISSION BELTS OR BELTING, OF VULCANISED RUBBER	62920	161	4.41%	18.24%
NARROW WOVEN FABRICS NES WITH NUN 5% ELAST YN ETC	65612	159	6.40%	42.85%
REFRACTORY BRICKS ETC (NOT SILICEOUS) CON MATERIAL	66232	158	1.54%	6.38%
		54534	5.01%	23.89%

For capital goods, SITC7, the general picture seems to be that most machinery carries low tariff rates, while spare parts are taxed somewhat more heavily and rather high rates are levied on motor vehicles if these are primarily for the use of private households. (For the latter, see for instance the difference between motor vehicles for the transport of goods in line 1 of Table 22 ande motor vehicles for the transport of persons, line five of Table 22. For the latter, effective tariff rates can come close to 200 percent, while for the former they may be as low as 6.4 percent. The average effective rates (a minimum effective rate of 11 percent and a maximum effective rate of 44 percent) may hence be somewhat misleading, since it seems that they overstate the tariff load of goods imported for industrial purposes (and understate the rates of durable consumption goods, particularly cars). Moreover, exemptions for capital good imports according to Investment Law No. 10 apply.

Table 22

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC7

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
MOTOR VEHICLES FOR THE TRANSPORT OF GDS, N.E.S.	78210	9337	6.40%	26.44%
MACHRY USED IN THE GRAIN MILLING IND (NOT FARM TP), PARTS FOR GRAIN MILLING & CEREAL WORKING MACHINERY	72710	2962	1.54%	6.38%
VEHICLES SPEC DESGND FOR TRAV ON SNOW, ETC[8]	78110	1759	82.53%	197.85%
MACHRY HAVNG INDIVIDUAL FUNCTIONS, N.E.S.	72849	1567	1.54%	26.44%
MOTOR VEHICLES FOR THE TRANSPORT OF PERSONS, NES	78120	1144	59.53%	197.85%
AIR OR VACUUM PUMPS	74310	1059	4.41%	26.44%
TAPS, COCKS, VALVES AND SIM APPLIANCES, PARTS THEREOF	74700	991	6.40%	64.74%
RAILWAY OR TRAMWAY GDS VANS & WAGONS, NT SELF-PROP	79182	982	6.40%	26.44%
RECIPROCATNG PIST ENGS, CYL CAP, COMPRESSION-IGNITN ENGS (DIESEL OR SEMI-DIESEL)	71320	843	1.54%	42.85%
ELECTRIC TRANSFORMERS	77110	765	1.54%	42.85%
PULLEY TACKLE & HOISTS, WINCHES, CAPSTANS	74420	754	4.41%	18.24%
BRAKES & SERVO-BRAKES & PTS FOR MOTOR VEHICLES ETC	78433	703	21.20%	42.85%
ROAD TRACTORS FOR SEMI-TRAILERS	78320	702	6.40%	26.44%
PUMPS FOR LIQUIDS, N.E.S. LIQUID ELEVATORS	74270	648	1.54%	42.85%
PTS OF AIRPLANES OR HELICOPTERS, PTS OF SPACECRAF & ASSOC EQUIP, LAUNCH VEH	79290	643	1.54%	6.38%
PARTS OF PUMPS FOR LIQUIDS, PARTS OF LIQUID ELEVATORS	74290	600	1.54%	42.85%
ELECTRIC MOTORS EXCEEDING 37.5 W, AC, ELECTRIC GENERATORS, AC	71630	556	1.54%	26.44%
AIR CONDITIONING MACHINES NES	74155	554	1.54%	120.35%
AUTOMIC CIRCT BRAKS FR A VOLTAGE NOT EXCDNG 1000 V	77252	533	6.40%	26.44%
DATA PROCESSING EQUIPMENT	75200	530	6.40%	26.44%
BUMPERS AND PARTS THEREOF FOR MOTOR VEHICLES ETC.	78431	473	21.20%	42.85%
CENTRIFUGES	74350	470	1.54%	26.44%

[8] I would very much welcome any suggestion why Syria has a large import volume for vehicles designed for the travel on snow. However, this is what the statistics show.

Table 22 cont'd

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC7

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
ELECTRCL APP FOR SWITCH OR PROTECT NES NT EX 1000	77259	465	6.40%	26.44%
EL MOTORS EXCEEDING 37.5 W & GENERATORS, DC	71620	465	1.54%	18.24%
PARTS, N.E.S. SUITBL FOR USE WT SPK-IG INT COM ENG OR COMPRSS-IGNIT ENGS	71390	458	1.54%	42.85%
ELECTRIC, LASER OR OTHER LIGHT OR PHOTON BEAM, ULTRASONIC, ELECTRON BEAM, MAGNETIC PULSE OR PLASMA ARC SOLDERING, BRAZING OR WELDING MACHINES AND APPARATUS, WHETHER OR NOT CAPABLE OF CUTTING ELECTRIC MACHINES AND APPAR	73730	379	1.54%	42.85%
SWITCHES FOR ELECT APPARATUS NES, NT EXC 1000 VOLT	77255	358	6.40%	26.44%
CHASSIS FITTD WTH ENGS FOR MOTOR VEHICLES, ETC	78410	351	21.20%	64.74%
PTS & ACCESS OF TRACTOR, MTR VEH, SPEC PURPSE, NES	78439	325	21.20%	42.85%
LIFTNG, HANDLNG, LOADNG OR UNLOADNG MACHRY	74480	305	4.41%	18.24%
AUXILIARY PLANT FOR USE WTH BOILERS, CONDENSERS FOR STEAM OR OTH VAPOR POWER UNITS	71120	284	1.54%	6.38%
ELECTRIC MOTORS OF AN OUTPUT NT EXCEEDNG 37.5 W	71610	283	6.40%	26.44%
INSULATED ELECTRIC WINDING WIRE, COAXIAL CABLE AND OTHER ELECT COAXIAL CONDUCTORS, IGNITION WIRNG STS, ETC, KND USED IN VEHICLS, ELEC CONDUCTORS, OPTICAL FIBER CABLES	77310	275	6.40%	26.44%
RADIOBROADCAST RECEIVERS	76220	271	21.20%	42.85%
PARTS OF REFRIGERATORS, FREEZERS, EQUIPMT, ETC	74149	270	1.54%	120.35%
OTHER PRINTING MACHINERY	72660	266	1.54%	6.38%
DRY-CLEANING MACHINES FOR TEXTILES	72472	262	1.54%	93.00%
SHIPS' OR BOATS' PROPELLERS AND BLADES THEREFOR	74991	257	6.40%	26.44%
DISCHARGE LAMPS (OTH THAN ULTRAVIOLET LAMPS)	77822	254	21.20%	42.85%
PHOTOCOPYING APP	75130	246	21.20%	42.85%
INSULATNG FITTNGS FOR ELEC MACHS, CERAMICS	77326	246	6.40%	26.44%

Table 22 cont'd

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC7

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
PARTS OF ELECTRICAL APPARATUS ETC. FOR LINE TELEPHONIE	76491	246	1.54%	26.44%
SPECIAL PURPOSE MOTOR VEHICLES	78220	245	6.40%	26.44%
WEAVING MACHINES (LOOMS)	72451	240	1.54%	6.38%
DRYERS FOR AGRICULTURAL PRODUCTS	74184	232	1.54%	6.38%
TEXTILE MACHINES	72440	227	1.54%	6.38%
MACHRY FOR SORTNG, SCREENING, WASHNG,ETC ORES, ETC, FOR CRUSHNG, GRINDNG EARTH, STONE, ETC, FOR MIXNG OR KNEADNG EARTH, STONE, FOR AGGLOMERATNG, SHAPNG OR MOLDNG, PARTS OF MINERAL WASH, GRIND, SHAPING ETC MACHINRY	72830	217	1.54%	6.38%
TEXTILE MACH FOR WASHING, DYENG, PRESSNG ETC	72474	196	1.54%	93.00%
FURNACES AND OVENS FOR THE ROASTNG, ETC, OF METALS	74136	193	1.54%	26.44%
FILAMENT LAMPS (OTH THN FLSHBULBS, INFRARED, ETC.)	77821	186	21.20%	42.85%
INDUCTION OR DIELECTRIC FURNACES AND OVENS	74132	186	1.54%	26.44%
ELECTRICAL IGNITION OR STARTNG EQUIPMT	77831	184	6.40%	42.85%
GEARS AND GEARING; BALL SCREWS; GEAR BOXES, ETC	74840	180	1.54%	42.85%
MOLDS FOR RUBBER OR PLASTICS	74910	179	6.40%	26.44%
ELECTRICAL PTS OF MACHRY OR APPARATUS, N.E.S.	77889	178	6.40%	26.44%
PACKING OR WRAPPING MACHINERY NES	74527	155	1.54%	93.00%
GASKETS & SIMILAR JOINTS OF METL SHEETING	74920	155	6.40%	64.74%
KNITTING AND STITCH-BONDING MACHINES	72452	154	1.54%	6.38%
AUXILIARY TEXTILE MACHINERY MFR FIBER, YN & FABRIC, PARTS & ACCESS	72460	150	1.54%	6.38%
ELECTRIC SOUND AMPLIFIER SETS	76420	148	6.40%	42.85%
MACHRY, N.E.S. FOR THE INDUSTL PREP OF FOOD/DRINK	72722	144	1.54%	6.38%
MACHRY PTS, NT CONTAINING ELEC CONNECTORS, ETC NES	74999	144	6.40%	26.44%
SPARK-IGNITN RECIP OR ROTRY INT COM PIST ENGINE NE, COMPRESSION-IGNITIN INTRN COM PIST ENGINES, NES	71380	130	1.54%	42.85%
Total		38662	10.56%	43.55%

Finally, commodities classified under SITC8 (miscellaneous manufactures) are also characterized by a wide variety of applicable effective tariff rates – and the systematic reasonings behind this are not always apparent. On average, minimum rates are at a level of 6 percent, while maximum rates are at 31 percent. Clearly, lower as well as much higher effective rates may also be observed under particular instances.

Table 23

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC8

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
INST & APPTS NES FOR MEAS/CHEKING FLOW, LEVEL ETC, PARTS & ACCESS FOR MEAS/CHEK VAR LIQ OR GAS NES	87430	701	1.54%	18.24%
FLOOR COVERINGS, PLASTIC, SELF-ADHESIVE OR NOT	89331	299	1.54%	42.85%
Watches	88540	260	6.40%	26.44%
RECORDED MEDIA NES, SOUND ETC	89879	244	1.54%	42.85%
INST & APPTS, MEAS/CHECK ELEC QUANTITIES, PTS & ACCESS FOR INST & APPTS MEAS/CK ELECT ETC.	87470	221	6.40%	26.44%
PRESS-FASTENERS, SNAP-FASTENERS ETC, PTS; BUTTONS	89983	173	6.40%	26.44%
SLIDE FASTENERS	89985	161	21.20%	42.85%
PHOTO PLATES & FILM, SENSITISED, UNEXPOSED	88220	159	4.41%	26.44%
THERMOSTATS, PRESSURE REGULATORS AND CONTROLLERS (MONOSTATS), REGULATING & CONTROLLING INST & APPTS NES, PTS & ACCESS FOR AUTO REGULATING/CONTR INST & APPT	87460	132	1.54%	26.44%
BROOMS, BRUSHES, FEATH DUSTERS, MOPS, PAINT PD ETC	89972	128	6.40%	26.44%
GAS, LIQ/ELECTRICITY METERS, PARTS & ACCESSORIES OF GAS, LIQ/ELECTRICITY METERS	87310	110	6.40%	26.44%
PHOTOGRAPH PAPER, PAPERBOARD & TEXTIL, SENS, UNEXP	88240	103	6.40%	26.44%
SPORTS GOODS, N.E.S.	89479	94	6.40%	26.44%
BALL POINT PENS, FOUNTAIN PENS ETC.	89521	88	6.40%	26.44%
PHOTO FILM, ROLLS, SENSITISED, UNEXPOSED EXC PAPER	88230	85	6.40%	26.44%
FRAMES & MOUNTING FOR SPECTACLES, GOGGLES, ETC.	88421	54	6.40%	26.44%

Table 23 cont'd

Minimum and Maximum Effective Tariff Rates
for Most Important Products from SITC8

	SITC code	Imports at 51 LS/$ in million	Minimum effective rate	Maximum effective rate
DRAFTING TABLES & MACH, WHETHER/NOT AUTOMATIC, ETC, INST FOR MEASURING LENGTH, FOR USE IN HAND, NES, PART & ACCESS FOR DRAFTING & LENGTH MEAS INSTRMNTS, MEAS/CHECKING INST, APPLN & MACH NES; PROFILE PROJ, PARTS AND ACCESS FOR MEAS/CHECK INST NES & PROF PR	87420	52	6.40%	26.44%
WORKED IVORY, BONE, HORN, CORAL ETC	89911	52	32.02%	64.74%
SPECTACLES, GOGGLES ETC, CORRECTIVE, PROTECT ETC	88423	48	6.40%	26.44%
FURNITURE, NES, OF WOOD	82150	36	6.40%	64.74%
FURNITURE, NES	82170	32	32.02%	64.74%
TABLEWARE, KITCHENWARE, OTH HSEHOLD ART OF PLASTIC	89332	31	1.54%	64.74%
WRITING OR DRAWING INK & OTH INK (EX PRINTING INK)	89591	30	4.41%	18.24%
INST, APPTS/MODELS, DESIGNED FOR DEMONSTRATIONS	87452	29	4.41%	18.24%
CLOCK MOVEMENTS, COMPLETE AND ASSEMBLED	88596	28	6.40%	26.44%
APPLIANCES, WORN, CARRIED OR IMPLANTED IN BODY	89960	28	4.41%	18.24%
PORTABLE ELEC LAMPS FUNCTION BY OWN ENERGY SOURCE	81312	24	46.00%	93.00%
TOYS, N.E.S.	89429	23	1.32%	5.47%
CIGARETTE LIGHTERS & OTH LIGHTERS, MECH/ELEC OR NT	89933	23	59.53%	120.35%
CERAMIC SINKS, WASH BASINS ETC	81220	22	21.20%	42.85%
OPT FIBER & OPT FIBER BUNDLES & CABLE UNMOUNT, NES	88419	21	1.54%	26.44%
FITTINGS FOR LOOSELEAF BINDERS, ETC, OF BASE METAL	89512	21	6.40%	26.44%
CLOCKS (CLOCK MVT) NES, BATTERY, OR AC POWERED	88578	20	6.40%	26.44%
SCENT SPRAYS & SIMILAR TOILET SPRAYS ETC	89987	20	32.02%	64.74%
MECHANO-THERAPY APPLNS, MASSAGE APPTS,OZONE/OXYGEN THERAPY/OTH THERAPEUTIC RESPIRAT APPT, BREATHING APPL & GAS MASKS NES	87230	19	4.41%	18.24%
Total		3571	6.39%	30.67%

Applying minimum effective tariff rates yields tariff revenue of 9.845 billion LS, applying maximum effective rates yields 44.381 billion LS. The actual tariff revenue for 1999 (excluding taxes on the import and export of services) is 14.440 billion LS. From this we infer that a reasonable estimate for weighted average tariff rates can be obtained by averaging minimum and maximum effective rates with weights 0.87 and 0.13, respectively. We thus obtain the following average effective tariff rates for one-digit SITC groups, which are subsequently used in the numerical simulation exercises, cf. Table 24.

Table 24

Average Effective Tariff Rates for One-Digit SITC Groups

SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8
7.01%	26.23%	3.05%	7.08%	6.43%	3.89%	7.52%	14.95%	9.62%

The above analysis shows that formal tariff barriers are probably not a decisive impediment to international trade. However, various quantitative restrictions and other non-tariff barriers to trade exist[9]. Import regulations require that the import of certain goods (including medicines, automobiles, oil, wheat, and cotton) be reserved for the public sector; these goods are collected in a so-called „restricted list“. A second list, the „negative list“ specifies prohibited imports, intended either to protect domestic industries (i. e. in the case of finished clothing, shoes, and various electric appliances) or for security, health or religious reasons. Finally, a „permitted list“ defines goods that may legally be imported even by the private sector. This last list has gradually been expanded in recent years. It does not, however, refer to broad categories of goods, which is why the permitted list presently comprises more than 10,000 narrowly defined items.

Imports from the permitted list must be distinguished by the applicable method of financing. For goods on the „unrestricted payments list“, foreign traders can, in principle, use any privately owned foreign exchange resources, but must obtain appropriate registration, certification and licenses from various authorities. For goods on the „export proceeds payment list“ the importer has to prove that the required foreign exchange originates from export proceeds. Since these are short in supply, private exporters (who have to surrender parts of their export proceeds to the government at the overvalued rate of 46.45 LS/$) are able to sell the retained part of their export proceeds to importers at a rate of currently about 56 LS/$. Finally, the import of a third group of commodities must be financed through worker’s remittances („workers remittances payment list“), for which certification of the Commercial Bank of Syria (CoBS) is required.

It is important to note that these regulations of the multiple exchange rate system (MERS) have economic effects equivalent to a combination of import taxes and export subsidies. To begin with, private exporters of non-agricultural products have do surrender 25 percent of their export proceeds to the Commercial Bank of Syria at the rate of 46.45 LS/$. Since the Beirut free market rate is approximately 51 LS/$ and since the CoBS is owned by the government, this surrender requirement has equivalent effects to a tax on exports. Nevertheless, exporters benefit on average from the multiple exchange rate system, since they are allowed to sell the retained part of their exports proceeds to importers of goods on the

[9] The following account borrows heavily from information provided by the International Monetary Fund.

export proceeds list. Since the exchange rate on this „exports proceeds market“ is around 56 LS/$, the economic effects of the MERS on exporters of non-agricultural goods are approximately equal to a 10 percent tax on 25 percent of the export value in US dollars plus a 10 percent subsidy on 75 percent of the export value in US dollars. The net effect is hence a five percent export subsidy. For exporters of agricultural products, who are exempted from the surrender requirement, the subsidy equivalent of the MERS is approximately 10 percent of the true $-value.

For importers of goods on the export proceeds list, the MERS is equivalent to an approximately ten percent ad valorem tax. This „tax“ however, does not show up in the government budget plan, rather, it immediately benefits the exporters, whose „subsidy“ is also invisible in the government budget. Note that the MERS import tax equivalent not only drives a wedge between private imports from the exports proceeds list and imports from the unrestricted payments list, it also drives a wedge between the former and public sector importers of similar goods. Since almost all public sector transactions take place at the rate of 46.5 LS/$, public sector importers of goods that compete with goods on the export proceeds list have a 20 percent price advantage from the MERS – a major impediment to private sector economic activity[10].

Other non-tariff barriers to trade exist. For instance, imports from countries other than the country of origin are prohibited, as are imports from Israel[11]. Compliance to these rules has to be certified by the Ministry of Economy and Foreign Trade. Required quality standards are often incompatible with, say, European standards. In general, foreign trade regulations are extremely complicated, compliance is cumbersome and takes lots of time. Changes in the regulations are very frequent and foreign traders complain that even the bureaucracy can hardly keep up with the necessary modifications. Information about the current state of regulations is difficult to obtain: There is no internet documentation and the last published paper version dates back to 1995. Neither Syrian diplomatic representations nor European institutions specialised on foreign trade information can supply potential traders with the relevant information. Corruption, while illegal, is endemic in the Customs Administration whose officials have the difficult task of determining the correct tariff load of imports in an environment of intransparent and frequently changing case-by-case regulations, cf. MEDA-Team, 2000.

[10] The share of imports from the export proceeds list is modest, but not insignificant: Estimates range around 20 percent of total import value. The share of imports from the workers remittance list is much smaller, currently around 5 percent.

[11] Moreover, there is a blacklist of third country enterprises suspected to have commercial ties with Israel. In principle, even third country enterprises which cooperate with black listed companies would be denied business activities in Syria. However, it seems that Syria does not take its commitments under these advanced levels of Arab league boycott of Israel very seriously (Royal Dutch Embassy, undated.)

Section IV: Nonmathematical description of the CGE Model[1]

The following model is used in the simulations: The Syrian economy is decomposed into eleven activities: Agriculture, mining, public manufacturing, private manufacturing, utilities, construction, wholesale and retail trade, transport and communication, finance and insurance, social and personal services[2], government services. Real net value added at factor cost is produced under constant elasticity of substitution (CES) productions functions, where agriculture uses three inputs (land, labor, capital), while all other activities use only labor and capital.

Assuming competitive factor markets, profit maximization implies the equality between nominal factor prices and marginal products. The specification allows for heterogenous rates of return to capital across sectors – which seems appropriate given the observed heterogeneity of gross rates of return (estimates range between 2 percent for construction to 166 percent for mining). The existence of such large differences is, of course, due to tight government control and associated monopolisitic structures in some sectors of the Syrian economy. Note that the constant returns property of the production function implies zero economic profits for all activities.

We distinguish nine commodity categories associated with the one-digit SITC classification, construction, and services. Due to limitations in the structure of the input-output matrix it was not possible to treat SITC 0 (food and live animals) and SITC 4 (animal and vegetable fats, oils and waxes) as different goods, so that the first commodity group is the aggregate of SITC 0 and SITC 4. The other groups are SITC 1 (beverages and tobacco), SITC 2 (raw materials), SITC 3(mineral fuels), SITC 5 (chemicals), SITC 6 (manufactures classified chiefly by material), SITC 7 (machines and transport equipment), and SITC 8 (miscellaneous manufactures), respectively. Finally, the last group collects SITC 9 (commodities not elsewhere specified), construction, and services (trade, transport, finance, social and personal services, and government services).

For each product category, a composite commodity, the so-called Armington good, is produced using the inputs domestic supply and imports of the respective product group in a CES-production function. The cost minimizing combination describes trade creation as a function of the relative price between domestic and imported goods. To model trade diversion, we assume that for a given import volume of the commodity group Syria minimizes the costs of imports over trading partners under a CES technology, where trading partners are given by the following countries or trading blocks:

Arabic states (Arab)
(Algeria, Bahrein, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mouritania, Saudi Arabia, Somalia, Sudan, Tunisia, United Arab Emirates, Yemen),

European Union (EU 15)
(Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden, United Kingdom),

Formerly socialist countries (Ex-Soc.)

[1] Some information given in this section is repeated in section V. This has the advantage that the reader may skip either section without loss of information.
[2] Including private non-profit services.

(Bulgaria, Byelorussia, China, Cuba, Czech Republic, Hungary, Poland, Rumania, Russia, Serbia, Ukraine),

United States of America (USA) ,

Argentina, Brasil, Chile (ABC),

Turkey,

Japan,

and the rest of the world (ROW).

Intermediate demand for a commodity produced in a certain sector is assumed to depend linearly on gross output of this sector. Similarly, depreciation per sector depends linearly on its capital stock. Exports, as ahother component of aggregate demand, are modeled completely analogous to imports, i. e. for a given level of real gross output per sector producers maximize its value subject to a constant elasticity of transformation (CET) choice between sales on the domestic market and exports. Further, for a given aggregate export volume, export revenue is maximized over sales to trading partners under a CET-transformation function, where we assume that world market prices are equal for all countries.

Nominal household income consists of disposable factor incomes plus exogenous transfers from the government and abroad. Nominal household savings are assumed to be a constant fraction of household income, while (real) household consumption is derived from maximizing the utility function of a Stone-Geary linear expenditure system (LES) subject to a budget constraint. Development expenditures (government investment) and total government consumption are assumed to be constant fractions of government revenues. Demand functions for government consumption are specified as CES functions fulfilling budget identity and homogeneity of degree zero.

The capital market is modeled as an institution with revenues (supply) and expenditures (demand). Capital market revenues are defined as depreciation plus private and government savings plus debt service plus foreign loans. Capital market expenditures are given by CES-investment demand (both public and private), deficits of the government (excluding PSF) financed by domestic or by foreign loans, PSF-deficit, and exogenous taxes on wealth. Capital market equilibrium requires that the current account be equal to the gap between revenues and expenditures. Assuming that total investment is a constant fraction of capital market revenues makes it possible to treat the current account deficit *CA* as an endogenous variable. An overview of the commodity market is given in Figure 1.

Figure 1: The Commodity Markets

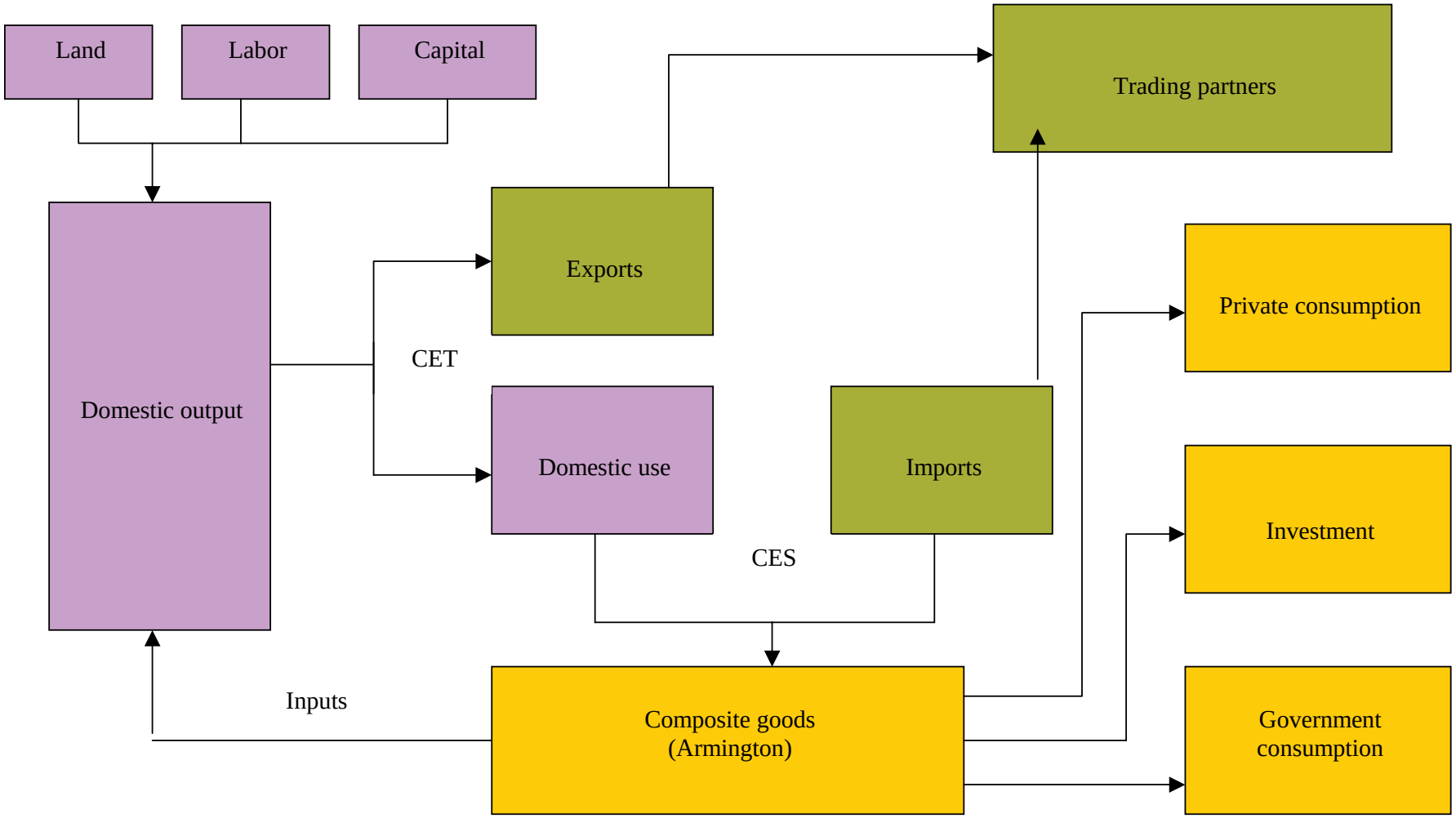
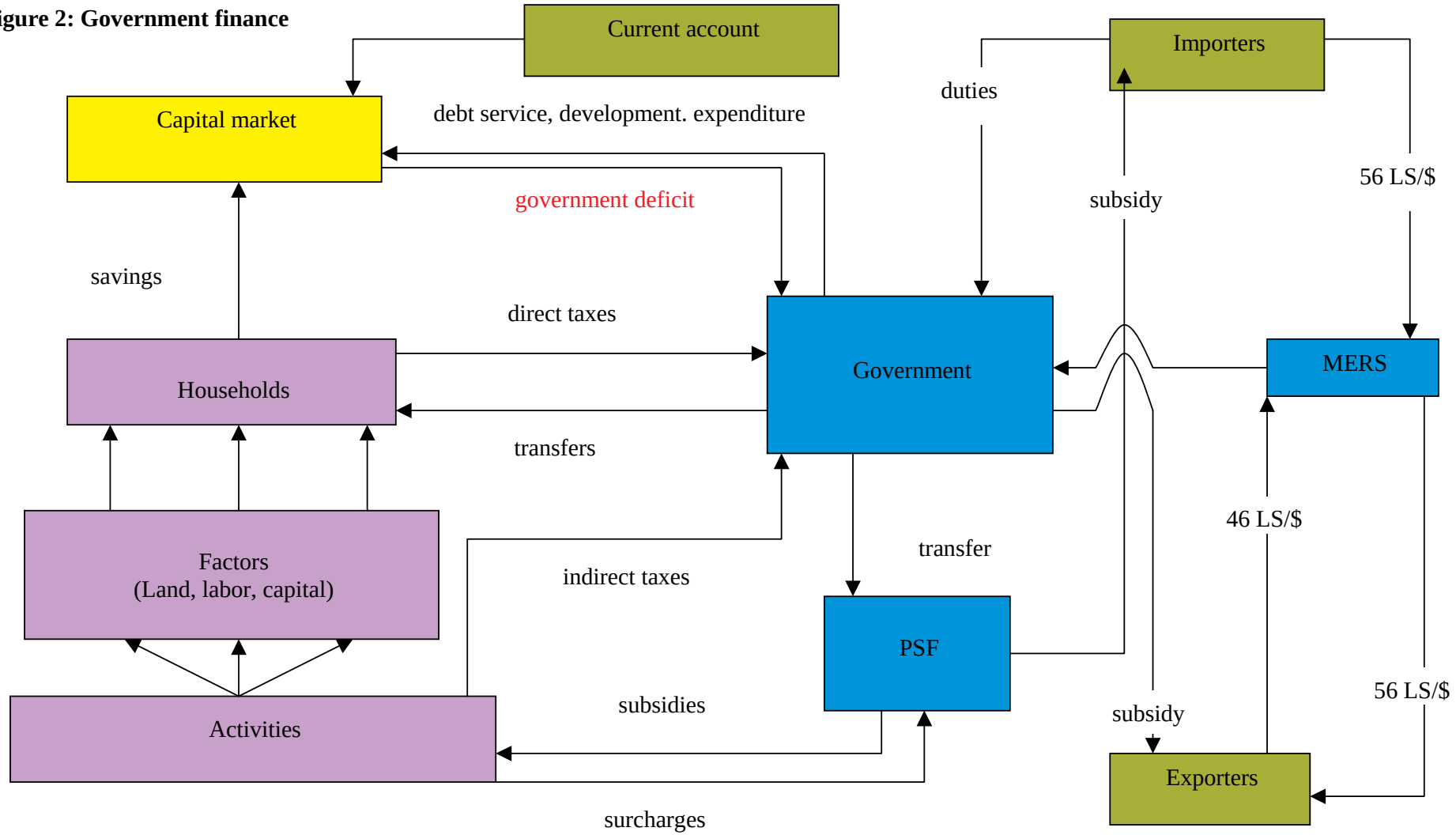


Figure 2: Government finance



The specification of government finances is standard except for the role of PSF and MERS. The PSF budget receives indirect tax proceeds and budgetary transfers from the government, it pays subsidies on domestic production and rice imports. The remaining deficit is financed from the capital market.

The multiple exchange rate system obtains revenues from the surrender requirement for 25 percent of private non-agricultural exports, and a customs tariff equivalent caused by forcing importers of goods on the „export proceeds payments list“ to purchase foreign exchange at an exchange rate higher than the Beirut free market rate. This customs tariff equivalent is equal to the MERS effective export subsidy due to the sale of retained export proceeds. In order to achieve budget balance, the share of imports with mandatory payments in export proceeds is required to adjust according to excess demand or excess supply on the export proceeds market[3]. For exogenously given free market Beirut and export proceeds market exchange rates and exogenously given shares of retained exports the MERS subsidy rate is also exogenous, while the MERS customs tariff equivalent rate is endogenous so that changes in the „payment in export proceeds list“ not only affect the export proceeds market balance but also the effective domestic price of imports. An overview of government finance is given in Figure 2. For a detailed specification of the model, consult the next section.

[3] This adjustment is either to be interpreted as governmental control of the export proceeds market exchange rate or as the result of substitution on the side of private importers.

Section V: The Model[1]

The following model is used in the simulations: The Syrian economy is decomposed into eleven activities: Agriculture, mining, public manufacturing, private manufacturing, utilities, construction, wholesale and retail trade, transport and communication, finance and insurance, social and personal services[2], government services. Real net value added at factor cost Q_i, i=1,...,11, is produced under constant elasticity of substitution (CES) productions functions, where agriculture uses three inputs (land $\overline{B}_1$, labor L_1, capital $\overline{K}_1$), while all other activities use only labor L_i and capital K_i. (Note that, unless otherwise specified, variables are in capital letters, with bars denoting exogenous variables. Parameters are denoted in lowercase letters).

$$Q_1 = a_1\left[\alpha_1\overline{K}_1^{-\rho_1} + \beta_1\overline{B}_1^{-\rho_1} + (1-\alpha_1-\beta_1)L_1^{-\rho_1}\right]^{-\frac{1}{\rho_1}}$$

$$Q_i = a_i\left[\alpha_i\overline{K}_i^{-\rho_i} + (1-\alpha_i)L_i^{-\rho_i}\right]^{-\frac{1}{\rho_i}}, \qquad i=2,...11 \tag{1}$$

Assuming competitive factor markets, profit maximization implies the equality between nominal factor prices and marginal products. Hence factor demands for agriculture are implicitly given by

$$r_1^B\overline{P}_1^B = P_1^Q a_1\left[\alpha_1\overline{K}_1^{-\rho_1} + \beta_1\overline{B}_1^{-\rho_1} + (1-\alpha_1-\beta_1)L_1^{-\rho_1}\right]^{-\frac{1}{\rho_1}-1}\beta_1\overline{B}_1^{-\rho_1-1} \tag{2}$$

$$w = P_1^Q a_1\left[\alpha_1\overline{K}_1^{-\rho_1} + \beta_1\overline{B}_1^{-\rho_1} + (1-\alpha_1-\beta_1)L_1^{-\rho_1}\right]^{-\frac{1}{\rho_1}-1}(1-\alpha_1-\beta_1)L_1^{-\rho_1-1} \tag{3}$$

$$r_1\overline{P}_1^K = P_1^Q a_1\left[\alpha_1\overline{K}_1^{-\rho_1} + \beta_1\overline{B}_1^{-\rho_1} + (1-\alpha_1-\beta_1)L_1^{-\rho_1}\right]^{-\frac{1}{\rho_1}-1}\alpha_1\overline{K}_1^{-\rho_1-1}, \tag{4}$$

where r_1, r_1^B, and w denote the gross rates of return to capital, the rate of return to land and the nominal wage, respectively. In general, prices are denoted P with super- and subscripts denoting the goods to which they refer. Analogously, we have

$$w = P_i^Q a_i\left[\alpha_i\overline{K}_i^{-\rho_i} + (1-\alpha_i)L_i^{-\rho_i}\right]^{-\frac{1}{\rho_i}-1}(1-\alpha_i)L_i^{-\rho_i-1} \tag{5}$$

$$r_i\overline{P}_i^K = P_i^Q a_i\left[\alpha_i\overline{K}_i^{-\rho_i} + (1-\alpha_i)L_i^{-\rho_i}\right]^{-\frac{1}{\rho_i}-1}\alpha_i\overline{K}_i^{-\rho_i-1} \tag{6}$$

for the non-agricultural sectors. Note that this specification allows for heterogenous rates of return to capital across sectors – which seems appropriate given the observed heterogeneity of gross rates of return (estimates range between 2 percent for construction to 166 percent for

[1] This section repeats information provided in section IV in order to enable the interested reader to read either section IV or section V without loss of information.
[2] Including private non-profit services.

mining). The existence of such large differences is, of course, due to tight government control and associated monopolisitic structures in some sectors of the Syrian economy.

Note that the constant returns property of the production function implies zero economic profits for all activities:

$$P_1^Q Q_1 = r_1 \overline{P}_1^K \overline{K}_1 + r_1^B \overline{P}_1^B \overline{B}_1 + wL_1$$

$$P_i^Q Q_i = r_i \overline{P}_i^K \overline{K}_i + wL_i \tag{7}$$

From (3) to (6), the nominal incomes of the production factors are given by

$$Y^B = r_1^B \overline{P}_1^B \overline{B}_1 \tag{8}$$

$$Y^L = \sum_{i=1}^{11} wL_i \tag{9}$$

$$Y^K = \sum_{i=1}^{11} r_i \overline{P}_i^K \overline{K}_i \tag{10}$$

The resource constraint for the production factor labor is simply

$$\sum_{i=1}^{11} L_i = \overline{L}\,, \tag{11}$$

where $\overline{L}$ is the total supply of labor.

I distinguish j=1,...,9 commodity categories associated with the one-digit SITC classification, construction, and services. Due to limitations in the structure of the input-output matrix it was not possible to treat SITC 0 (food and live animals) and SITC 4 (animal and vegetable fats, oils and waxes) as different goods, so that j=1 is the aggregate of SITC 0 and SITC 4. Hence j=2,...,8 are SITC 1 (beverages and tobacco), SITC 2 (raw materials), SITC 3(mineral fuels), SITC 5 (chemicals), SITC 6 (manufactures classified chiefly by material), SITC 7 (machines and transport equipment), and SITC 8 (miscellaneous manufactures), respectively. Finally, j=9 collects SITC 9 (commodities not elsewhere specified), construction, and services (trade, transport, finance, social and personal services, and government services).

For each product category, a composite commodity X_j, j=1,...,9, the so-called Armington good, is produced using the inputs domestic supply D_j and imports M_j in a CES-production function:

$$X_j = a_j^M \left[\alpha_j^M D_j^{-\rho_j^M} + \left(1-\alpha_j^M\right) M_j^{-\rho_j^M} \right]^{-\frac{1}{\rho_j^M}} \tag{12}$$

The cost minimizing input relation is given by

$$\frac{M_j}{D_j} = \left(\frac{P_j^D}{P_j^M} \frac{\left(1-\alpha_j^M\right)}{\alpha_j^M} \right)^{\frac{1}{1+\rho_j^M}}, \tag{13}$$

and the zero profit condition is

$$P_j^X X_j = P_j^D D_j + P_j^M M_j . \tag{14}$$

Equation (13) describes trade creation as a function of the relative price between domestic and imported goods. To model trade diversion, assume that for a given import volume M_j Syria minimizes the costs of imports over trading partners k=1,...8, under a CES technology

$$M_j = a_j^m \left[\sum_{k=1}^{8} \alpha_{jk}^m M_{jk}^{-\rho_j^m} \right]^{-\frac{1}{\rho_j^m}}, \tag{15}$$

where trading partners k=1,...,8 are given by the following countries or trading blocks:

Arabic states (Arab)
(Algeria, Bahrein, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mouritania, Saudi Arabia, Somalia, Sudan, Tunisia, United Arab Emirates, Yemen),

European Union (EU 15)
(Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden, United Kingdom),

Formerly socialist countries (Ex-Soc.)
(Bulgaria, Byelorussia, China, Cuba, Czech Republic, Hungary, Poland, Rumania, Russia, Serbia, Ukraine),

United States of America (USA) ,

Argentina, Brasil, Chile (ABC),

Turkey,

Japan,

and the rest of the world (ROW). Minimization requires

$$\frac{M_{jk}}{M_{j1}} = \left(\frac{\alpha_{jk}^m}{\alpha_{j1}^m} \frac{P_{j1}^m}{P_{jk}^m} \right)^{\frac{1}{1+\rho_j^m}} \tag{16}$$

and total costs of imports are given by

$$P_j^M M_j = \sum_{k=1}^{8} P_{jk}^m M_{jk} \tag{17}$$

Having defined the supply side of the domestic commodity market by Armington aggregates, intermediate demand for commodity *j* of sector *i* is assumed to depend linearly on gross output G_i of sector *i*:

$$V_{ji} = a_{ji} G_i \tag{18}$$

Total (nominal) intermediate demand of sector *i* is therefore

$$P_i^V V_i = \sum_{j=1}^{9} P_j^X V_{ji} \tag{19}$$

Depreciation per sector depends linearly on the capital stock:

$$O_i = \delta_i \overline{K}_i \tag{20}$$

Hence gross output at factor costs is given by

$$P_i^G G_i = P_i^Q Q_i + P_i^V V_i + \overline{P}_i^K O_i\,, \tag{21}$$

Equation (21) describes the value of the total supply of activity *i* at producers cost. To specify the demand side, let us start with exports, whose treatment is completely analogous to imports. Assume that for a given level of real gross output G_i producers maximize its value

$$P_i^G G_i = P_i^D D_i + P_i^E E_i \tag{22}$$

subject to a constant elasticity of transformation (CET) choice between sales on the domestic market and exports:

$$G_i = a_i^E \left[\alpha_i^E D_i^{\rho_i^E} + \left(1-\alpha_i^E\right) E_i^{\rho_i^E} \right]^{\frac{1}{\rho_i^E}} \tag{23}$$

It is then necessary to have

$$\frac{E_i}{D_i} = \left(\frac{P_i^E}{P_i^D} \frac{\alpha_i^E}{\left(1-\alpha_i^E\right)} \right)^{\frac{1}{\rho_i^E - 1}} \tag{23}$$

Further, for a given aggregate export volume E_i, export revenue

$$P_i^E E_i = \sum_{k=1}^{8} P_{ik}^e E_{ik} \tag{24}$$

is maximized over sales to trading partners *k*=1,...8, under a CET-transformation function

$$E_i = a_i^e \left[\sum_{k=1}^{8} \alpha_{ik}^e E_{ik}^{\rho_i^e} \right]^{\frac{1}{\rho_i^e}} \tag{25}$$

It is then necessary to have

$$\frac{E_{ik}}{E_{i1}} = \left(\frac{\alpha_{i1}^{e}}{\alpha_{ik}^{e}} \frac{P_{ik}^{e}}{P_{i1}^{e}} \right)^{\frac{1}{\rho_i^e - 1}} \quad . \tag{26}$$

In fact, since we assume that world market prices are equal for all countries, equations (24) and (26) simplify to

$$E_i = \sum_{k=1}^{8} E_{ik} \tag{24'}$$

and

$$\frac{E_{ik}}{E_{i1}} = \left(\frac{\alpha_{i1}^{e}}{\alpha_{ik}^{e}} \right)^{\frac{1}{\rho_i^e - 1}} \tag{26'}$$

such that the export shares of individual trading blocks are invariant.

Disposable land income is given by

$$Y_D^B = \left(1 - \tau^B\right) Y^B, \tag{27}$$

where effective direct tax rates are denoted τ with appropriate superscript. Analogously, disposable labor income is given by

$$Y_D^L = \left(1 - \tau^L\right)\left(Y^L + \overline{Y}_L^F\right), \tag{28}$$

where $\overline{Y}_L^F$ is labor income from foreign countries. Disposable capital income is defined as

$$Y_D^K = \left(1 - \tau^K - \pi^{SS} - \pi^{LS} - \pi^F\right) Y^K, \tag{29}$$

where π^F is the net share of capital income flowing to foreign countries. To understand π^{SS} and π^{LS}, note that the Syrian government budget distinguishes between „supply surplus“ (SS) and „liquidity surplus“ (LS) of public entreprises. The liquidity surplus comprises temporary surplusses due to depreciation or provisions, whereas the the supply surplus is similar to after tax economic profits. Hence, π^{SS} and π^{LS} denote the share of these surplusses in total capital income.

Nominal household income consists of disposable factor incomes plus exogenous transfers from the government and abroad:

$$Y^H = Y_D^B + Y_D^L + Y_D^K + \overline{TR}^G + \overline{TR}^F \tag{30}$$

Nominal household savings are assumed to be a constant fraction of household income

$$S^H = s^H Y^H, \tag{31}$$

while (real) household consumption is derived from maximizing the utility function of a Stone-Geary linear expenditure system (LES)

$$\max \quad \prod_{\substack{j=1 \\ j\neq 3}}^{9} \left(C_j^H - \gamma_j\right)^{\alpha_j^H}, \qquad \sum_{\substack{j=1 \\ j\neq 3}}^{9} \alpha_j^H = 1 \tag{32}$$

subject to the budget constraint

$$\sum_{\substack{j=1 \\ j\neq 3}}^{9} P_j^X C_j^H + S^H = Y^H - \overline{T}^H \tag{33}$$

where the γ_j are minimum consumption levels and $\overline{T}^H$ is a catchall for other government taxes on hourseholds. Note that households do not consume raw materials (SITC 3), which is why *j*=3 is excluded in (32). Maximization yields the following demand functions:

$$C_j^H = \begin{cases} 0 & j = 3 \\ \gamma_j + \dfrac{\alpha_j^H \left(\left(1 - s^H\right) Y^H - \overline{T}^H - \sum\limits_{\substack{j'=1 \\ j'\neq 3}}^{9} P_{j'}^X \gamma_{j'} \right)}{P_j^X} & j \neq 3 \end{cases} \tag{34}$$

The capital market is modeled as an institution with revenues (supply) and expenditures (demand). Capital market revenues are defined as

$$R^K = \sum_{i=1}^{11} O_i + S^H + \overline{DS}^D + \overline{DS}^F + DE^G + \overline{DEF}^F \tag{35}$$

where $\overline{DS}^D$ and $\overline{DS}^F$ denote domestic and foreign debt service, respectively, $\overline{DEF}^F$ are foreign loans, and the endogenous variable DE^G denotes government outlays for investment purposes, labelled development expenditures in the government budget.

Capital market expenditures are given by investment demand (both public and private), deficits of the government (excluding PSF) financed by domestic or by foreign loans (DEF^D and $\overline{DEF}^F$, respectively), PSF-deficit DEF^{PSF}, and exogenous taxes on wealth $\overline{T}^W$:

$$E^K = \sum_{j=1}^{9} P_j^X I_j + DEF^D + \overline{DEF}^F + DEF^{PSF} + \overline{T}^W \tag{36}$$

Capital market equilibrium requires that the current account (*CA)* is equal to the gap between revenues and expenditures:

$$CA = R^K - E^K \tag{37}$$

Assuming that total investment is a constant fraction of capital market revenues

$$\sum_{j=1}^{9} P_j^X I_j = s_I^K R^K \tag{38}$$

makes it possible to treat the current account deficit *CA* as an endogenous variable. Using CES demand functions, gross investment is given by

$$I_j = \begin{cases} 0 & j \le 4 \\ \dfrac{\alpha_j^I s_I^K R^K}{\left(P_j^X\right)^{\frac{1}{1+\rho^I}} \sum_{j'=5}^{9} \alpha_{j'}^I \left(P_{j'}^X\right)^{\frac{\rho^I}{1+\rho^I}}} & j > 4 \end{cases} \qquad \sum_{j=5}^{9} \left(\alpha_j^I\right)^{1+\rho^I} = 1, \tag{39}$$

where I_j is zero for SITC 0 – SITC 4, since these do not include significant amounts of capital goods.

The PSF budget constraint is modeled as

$$\sum_{i=1}^{11} t_i^{PSF} P_i^Q Q_i + \overline{TR}^{PSF} + DEF^{PSF} = \sum_{i=1}^{11} s_i^{PSF} P_i^Q Q_i + \sum_{j=1}^{9} f_j^{PSF} \overline{p}_j^m M_j \,, \tag{40}$$

where t_i^{PSF} and s_i^{PSF} denote PSF-specific indirect tax and subsidy rates on domestic production and f_j is a subsidy rate on imports. $\overline{TR}^{PSF}$ is the transfer the PSF receives from the government budget.

Revenues consolidated in the government budget are given by

$$\begin{aligned} R^G = & \sum_{i=1}^{11} t_i P_i^Q Q_i + \sum_{j=1}^{9} \sum_{k=1}^{8} c_{jk} \overline{p}_j^m M_{jk} + \tau^B Y^B + \tau^L Y^L + \left(\tau^K + \pi^{SS} + \pi^{LS}\right) Y^K \\ & + \overline{T}^H + \overline{T}^W + \overline{DEF}^F + DEF^D + \sum_{i=1}^{12} t_i^{MERS} \overline{p}_i^e E_i . \end{aligned} \tag{41}$$

Here t_i is the effective indirect tax rate per sector earmarked for the government budget, t_i^{MERS} is the effective indirect tax rate equivalent of the multiple exchange rate system and c_{jk} is the effective customs rate for good *j* imported from country *k*.

Government expenditure is given by

$$E^G = \sum_{i=1}^{11} s_i p_i^e E_i + \sum_{j=1}^{9} P_j^X C_j^G + \overline{TR}^G + \overline{DS}^D + \overline{DS}^F + DE^G + \overline{TR}^{PSF} \,, \tag{42}$$

where s_i is the effective subsidy rate on exports and C_j^G is government consumption of good *j*. Development expenditures DE^G and total government consumption are assumed to be constant fractions of government revenues, such that

$$DE^G = s_I^G R^G \tag{43}$$

$$\sum_{j=1}^{9} P_j^X C_j^G = s_C^G R^G \tag{44}$$

and demand functions for government consumption are specified as CES functions fulfilling budget identity and homogeneity of degree zero:

$$C_j^G = \begin{cases} 0 & j = 3 \\ \dfrac{\alpha_j^G s_C^G R^G}{\left(P_j^X\right)^{\frac{1}{1+\rho^G}} \sum_{j'=5}^{9} \alpha_{j'}^G \left(P_{j'}^X\right)^{\frac{\rho^G}{1+\rho^G}}} & j \neq 3 \end{cases} \qquad \sum_{\substack{j=1 \\ j\neq 3}}^{9} \left(\alpha_j^G\right)^{1+\rho^G} = 1 \tag{45}$$

The budget restriction is, of course, simply $R^G = E^G$.

The multiple exchange rate system is another institution with revenues given by

$$R^{MERS} = \sum_{i=1}^{11} t_i^{MERS} \overline{p}_i^e E_i + \sum_{j=1}^{9} c_j^{MERS} \overline{p}_j^m M_j \,. \tag{46}$$

While $\sum_{i=1}^{11} t_i^{MERS} \overline{p}_i^e E_i$ is the MERS export tax due to the surrender requirement for 25 percent of private non-agricultural exports, $\sum_{j=1}^{9} c_j^{MERS} \overline{p}_j^m M_j$ is the MERS customs tariff equivalent caused by forcing importers of goods on the „export proceeds payments list“ to purchase foreign exchange at an exchange rate higher than the Beirut free market rate. This customs tariff equivalent is hence equal to the MERS effective export subsidy due to the sale of retained export proceeds. Total expenditures of the MERS are therefore given by

$$E^{MERS} = \sum_{i=1}^{12} \left(t_i^{MERS} + s_i^{MERS}\right) \overline{p}_i^e E_i \tag{47}$$

and budget balance requires

$$R^{MERS} = E^{MERS} \,. \tag{48}$$

In order to achieve budget balance, the share of imports with mandatory payments in export proceeds λ_j^{PEP} is required to adjust according to excess demand or excess supply on the export proceeds market[3]. For exogenously given exchange rates $\overline{e}^{FM}$ and $\overline{e}^{EPM}$ (free market Beirut and export proceeds market, respectively) and exogenously given shares of retained exports $\overline{\lambda}_i^{REP}$ the MERS subsidy rate is also exogenous and given by the export proceeds market exchange rate

[3] This adjustment is either to be interpreted as governmental control of the export proceeds market exchange rate or as the result of substitution on the side of private importers.

$$s_i^{MERS} = \overline{\lambda}_i^{REP} \left(\frac{\overline{e}^{EPM}}{\overline{e}^{FM}} - 1 \right). \tag{49}$$

The MERS customs tariff equivalent rate, however, is endogenous and given by

$$c_j = \lambda_j^{PEP} \left(\frac{\overline{e}^{EPM}}{\overline{e}^{FM}} - 1 \right), \tag{50}$$

so that changes in the „payment in export proceeds list“ not only affect the export proceeds market balance but also the effective domestic price of imports.

Price identities complete the model: The domestic prices of exports are derived from world market prices $\overline{p}_i^e$, adjusted for export taxes and subsidies. Similarly, domestic prices for imports are derived from world market prices $\overline{p}_j^m$ adjusted for customs tariffs (and equivalent) and import subsidies.

$$P_{ik}^e = \left(1 + s_i + s_i^{MERS} - t_i^{MERS}\right) \overline{p}_i^e \tag{51}$$

$$P_{jk}^m = \left(1 + c_{jk} + c_j^{MERS} - f_j^{PSF}\right) \overline{p}_j^m \tag{52}$$

The trade (and services) balances of Syria vis-à-vis each trading partner are simply

$$TB_k = \sum_{i=1}^{12} \overline{p}_i^e E_{ik} - \sum_{j=1}^{9} \overline{p}_j^m M_{jk} \tag{53}$$

and the current account is given by

$$CA = \sum_{k=1}^{8} TB_k - \pi^F Y^K + \overline{Y}_L^F + \overline{DEF}^F + \overline{TR}^F, \tag{54}$$

which basically states that current account is the sum of the trade (and services) balance plus the income balance plus the transfers balance. Given equation (1) – (53), this equation is redundant by Walras law.

Section VI: Calibration

Calibration of the relevant parameters is mostly achieved using the 1999 Social Accounting Matrix. This matrix uses national accounts, foreign trade and government budget data provided by various Syrian authorities (Central Bureau of Statistics, 1999, 2000) and the IMF (1999a, 1999b). Also, data on labor input and capital stocks, partially constructed from available net investment series, were used to calibrate rates of return to capital.

A major limitation of the analysis is the fact that the Syrian government was unable to provide an input-output matrix for Syria[1]. Instead, usage of material inputs was approximated using proportions borrowed from Jordan's 1987 input-output matrix, see Department of Statistics, 1990, and Hosoe, 1998. However, appropriate adjustments were made to some sectors of the economy, in particular the oil producing sector, to make the implied input usage compatible with existent data on total intermediate consumption per sector from the Syrian national accounts.

It is important to note that only the technical (Leontief) coefficients have been borrowed from the Jordanian table. While it is undeniable that this still involves error, it seems nevertheless a reasonable measure in view of the scarcity of data, since the technical production conditions, i. e. the proportions of factor inputs, may be similar in both countries. In fact, since Jordan's industry is certainly more advanced than Syria's, the usage of an „old" input-output matrix may actually be quite appropriate.

The Social Accounting Matrix is the basis for most of the calibration exercises, as many parameters are simply chosen such that the model's benchmark solution exactly replicates the SAM. Table 25 contains the basic information on the SAM.

[1] They acknowledged the existence of an input-output matrix constructed in the 1980s, but, unfortunately, the staff in the Ministry of Planning did not find it any more.

Table 25

Social Accounting Matrix for Syria, 1999

		1	2	3	4	5	6	7
1	Agriculture							
2	Mining							
3	Public manufacturing							
4	Private manufacturing							
5	Utilities							
6	Construction							
7	Trade							
8	Transp. & communic.							
9	Finance and insurance							
10	Social & pers. services							
11	Government services							
12								
13	SITC0,4	58984	0	29558	34939	0	0	1990
14	SITC1	0	0	36	43	0	0	230
15	SITC2	309	973	7130	26662	0	14340	22
16	SITC3	2111	610	13612	16089	15582	3258	447
17	SITC5	4980	93	22901	27069	158	553	1646
18	SITC6	1338	273	25780	30472	258	9758	2271
19	SITC7	583	200	780	922	0	1691	3571
20	SITC8	31	26	1043	1232	36	494	166
21	SITC9, Constr., Serv.	33280	18641	31666	29130	6529	15362	14469
22								
23	Land income	76490	0	0	0	0	0	0
24	Labor income	42643	2189	10982	15570	4307	5843	21525
25	Capital income	72092	121613	7690	54252	6866	20357	74998
26								
27	Households							
28								
29	Capital							
29a	Interest on dom. debt							
29b	Interest on ext. debt							
29c	Develop. expenditures							
29d	Cons. of fixed capital	4475	4861	4930	7385	1149	366	2011
30								
31a	PSF-Subsidies			-6119	-22881			
31b	PSF own resources			1266	4734			
32								
33	Government							
33a	Ind. taxes (exc. tariffs, MERS and PSF taxes)	6179	97	432	1616	475	867	40892
33b	MERS tax							
33c	Direct taxes							
33d	Other revenues							

Table 25 cont'd

Social Accounting Matrix for Syria, 1999

		1	2	3	4	5	6	7
33e	Govern. entrepreneurial income, supply surplus							
33f	Govern. entrepreneurial income, liquidity surpl.							
33g	Foreign loans							
33h	Local loans and taken from reserve							
33i	Import duty revenue from ARAB							
33j	Import duty revenue from EU 15							
33k	Import duty revenue from formerly socialist countries							
33l	Import duty revenue from USA							
33m	Import duty revenue from ABC							
33n	Import duty revenue from Turkey							
33o	Import duty revenue from Japan							
33p	Import duty revenue from ROW							
34								
35a	MERS subsidy							
35b	MERS tax							
36								
37	Foreign Sector							
37a	ARAB							
37b	EU 15							
37c	Formerly Socialist							
37d	USA							
37e	ABC							
37f	Turkey							
37g	Japan							
37h	ROW							
	Totals	303496	149578	151686	227234	35360	72890	164239

Table 25 cont'd

Social Accounting Matrix for Syria, 1999

	8	9	10	11	12	13	14	15	16	17
1						261484	0	0	0	0
2						0	0	506	37144	0
3						25317	5116	16479	26786	20010
4						36248	7325	23593	38350	28648
5						0	0	0	0	0
6						0	0	0	212	0
7						1087	0	0	0	0
8						0	0	0	0	0
9						0	0	0	0	0
10						1	0	0	0	0
11						2	0	0	0	0
12										
13	3	0	266	412						
14	0	0	34	54						
15	12	595	7	26						
16	21003	7	634	984						
17	1109	56	2828	4391						
18	1572	51	1287	1999						
19	535	0	479	744						
20	1013	30	714	1109						
21	32143	1842	12927	20073						
22										
23	0	0	0	0						
24	21347	7052	4011	14179						
25	74380	24572	13974	49405						
26										
27										
28										
29										
29a										
29b										
29c										
29d	6780	723	637	1095						
30										
31a						-1000				
31b										
32										
33										
33a	-104	2748	240	180						
33b										
33c										
33d										

Table 25 cont'd

Social Accounting Matrix for Syria, 1999

	8	9	10	11	12	13	14	15	16	17
33e										
33f										
33g										
33h										
33i						164	8	27	34	183
33j						654	51	38	151	497
33k						211	0	79	36	79
33l						149	66	18	0	35
33m						278	0	14	0	8
33n						188	0	2	19	27
33o						0	7	1	0	10
33p						531	4	31	34	143
34										
35a						687	9	151	91	405
35b										
36										
37										
37a						3920	37	1407	829	5446
37b						12076	200	1594	2934	11827
37c						3878	1	3336	705	1874
37d						2732	256	756	1	823
37e						5110	0	601	0	189
37f						3716	0	90	366	638
37g						6	26	27	3	240
37h						10036	17	1328	656	3412
	159794	37676	38039	94651	0	367473	13122	50077	108352	74492

Table 25 cont‘d

Social Accounting Matrix for Syria, 1999

	18	19	20	21	22	23	24	25	26	27
1	0	0	0	1865						
2	0	0	0	218						
3	13266	799	17241	16563						
4	18994	1144	24685	23714						
5	0	0	0	35360						
6	222	31	0	72425						
7	168	0	340	162644						
8	9	0	19	84362						
9	0	0	0	25622						
10	0	0	0	28125						
11	0	0	0	78427						
12										
13										241229
14										12721
15										0
16										33686
17										8251
18										15197
19										26704
20										30348
21										207867
22										
23										
24										
25										
26										
27						76455	153417	380941		
28										
29										40049
29a										
29b										
29c										
29d										
30										
31a										
31b										
32										
33										
33a										
33b										
33c						35	5200	48675		
33d										2100

Table 25 cont‘d

Social Accounting Matrix for Syria, 1999

	18	19	20	21	22	23	24	25	26	27
33e								39771		
33f								12107		
33g										
33h										
33i	178	121	11	130						
33j	800	2554	119	479						
33k	1272	491	73	267						
33l	145	265	29	72						
33m	60	42	2	57						
33n	260	133	4	78						
33o	120	802	33	64						
33p	1218	1855	78	503						
34										
35a	1026	712	66	1697						
35b										
36										
37								38706		
37a	3370	1034	150	8092						
37b	12091	17433	1346	29733						
37c	19233	3348	829	16592						
37d	2194	1809	330	4448						
37e	907	284	22	3555						
37f	3925	909	44	4841						
37g	1810	5476	374	3979						
37h	18419	12665	882	31197						
	99688	51905	46677	635108	0	76490	158617	520201	0	618152

Table 25 cont‘d

Social Accounting Matrix for Syria, 1999

	28	29	29a	29b	29c	29d	30	31a	31b	32
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13		0								
14		0								
15		0								
16		0								
17		83								
18		8664								
19		15213								
20		10090								
21		120201								
22										
23										
24										
25										
26										
27										
28										
29										
29a										
29b										
29c										
29d										
30										
31a										
31b		19500								
32										
33										
33a										
33b										
33c		295								
33d										

Table 25 cont‘d

Social Accounting Matrix for Syria, 1999

	28	29	29a	29b	29c	29d	30	31a	31b	32
33e										
33f										
33g		26033								
33h		54968								
33i										
33j										
33k										
33l										
33m										
33n										
33o										
33p										
34										
35a										
35b										
36										
37		-4371								
37a										
37b										
37c										
37d										
37e										
37f										
37g										
37h										
	0	250674	0	0	0	0	0	0	0	0

Table 25 cont‘d

Social Accounting Matrix for Syria, 1999

	33	34	35a	35b	36	37a	37b	37c	37d	37e
1	5137		3126	0		19114	4133	1081	687	169
2			1	0		3869	91626	64	945	377
3			0	0		4270	3634	707	200	39
4			1716	-521		9857	8388	1631	461	91
5			0	0		0	0	0	0	0
6			0	0		0	0	0	0	0
7			0	0		0	0	0	0	0
8			0	0		15806	45905	1483	976	288
9			0	0		2527	7339	237	156	46
10			0	0		2078	6035	195	128	38
11			0	0		3400	9876	319	210	62
12										
13	92									
14	3									
15	0									
16	330									
17	375									
18	767									
19	483									
20	344									
21	90977									
22										
23										
24										
25										
26										
27	6229									
28										
29										
29a	1846									
29b	10381									
29c	137953									
29d										
30										
31a										
31b	4500									
32										
33										
33a										
33b				521						
33c										
33d										

Table 25 cont‘d

Social Accounting Matrix for Syria, 1999

	33	34	35a	35b	36	37a	37b	37c	37d	37e
33e										
33f										
33g										
33h										
33i										
33j										
33k										
33l										
33m										
33n										
33o										
33p										
34										
35a										
35b										
36										
37										
37a										
37b										
37c										
37d										
37e										
37f										
37g										
37h										
	259417	0	4843	0	0	60921	176935	5717	3763	1109

Table 25 cont'd

Social Accounting Matrix for Syria, 1999

	37f	37g	37h	37			Totals			
1	2108	399	4194				303496			
2	12604	74	2149				149578			
3	507	17	736				151686			
4	1171	39	1699				227234			
5	0	0	0				35360			
6	0	0	0				72890			
7	0	0	0				164239			
8	6981	225	3741				159794			
9	1116	36	597				37676			
10	918	30	492				38039			
11	1502	49	805				94651			
12							0			
13							367473			
14							13122			
15							50077			
16							108352			
17							74492			
18							99688			
19							51905			
20							46677			
21							635108			
22							0			
23							76490			
24				8969			158617			
25							520201			
26							0			
27				1110			618152			
28							0			
29				26033			66082			
29a							1846			
29b							10381			
29c							137953			
29d							34413			
30							0			
31a							-30000			
31b							30000			
32							0			
33							0			
33a							53622			
33b							521			
33c							54205			
33d							2100			

Table 25 cont‘d

Social Accounting Matrix for Syria, 1999

	37f	37g	37h	37			Totals			
33e							39771			
33f							12107			
33g							26033			
33h							54968			
33i							856			
33j							5343			
33k							2508			
33l							778			
33m							461			
33n							710			
33o							1037			
33p							4398			
34							0			
35a							4843			
35b							0			
36							0			
37							34335			
37a							24284			
37b							89234			
37c							49796			
37d							13348			
37e							10669			
37f							14528			
37g							11941			
37h							78612			
							0			
	26906	869	14413	36112	0					

The remaining parameters to be specified are various elasticities of substitution and transformation. Fortunately, key parameters for Syria are available from time series estimates using modern unit root and cointegration techniques, see Devarajan et al., 1999. From this we set the elasticity of transformation between domestic and exported goods equal to 0.09 and the elasticity of substitution between imports and domestic goods equal to 0.1. In calibrating the elasticities of substitution or transformation between trading blocks I follow Martin, 2000, who argues that benchmark values of 3.0 (for both elasticities) are appropriate for Lebanon's foreign trade. This is a rather high value, which must be cautiously received given Syria's complex quality standard and rules of origin regulations, cf. Lucke, 2001. On the other hand, the fact that Syria is in a phase of economic transition implies that traditional trade relations may undergo vivid changes, which would justify the choice of high elasticity values for trading partners. Moreover, trade diversion in favor of trading partners with reduced import tariffs leads to revenue losses for the customs authorities. If the specified elasticities were too low, then the impact of trade liberalization on the budget deficit would be underestimated. Conversely, high elasticities give an upper limit for possible revenue losses, and this is what policy makers might be interested in.

Further, we exploit the fact that tariff rates for many products are different for different usages, see Ministry of Finance, 1989. For instance, nominal tariff rates for industrial usage are often merely 1 percent (or free of charge for projects under Investment Law No. 10). Since the model is fairly aggregated on the commodity side it is in particular incapable of distinguishing different usages of commodities. Hence the average calibrated tariff rates in the model will tend to be too high for industrial demands. I capture this bias by compensating through the specification of a low elasticity of substitution of 0.01 for investment demand, reasoning that tariff reductions are not likely to yield notable increases in capital goods and raw material imports, since these do not carry much of a tariff load anyway. Note that this is not to say that investment demand is not price elastic, the assumption merely states that investment demand is hardly price elastic along the particular variation of prices used in the simulations below.

A similar reasoning applies to the elasticity of substitution of government consumption. Government consumption is overwhelmingly consumption of services, most of which are probably domestically produced. As far as the government consumes imported services, it is essential to note that taxes on foreign trade in services are constant in most of the simulations. Hence government consumption is not likely to respond much to trade liberalization, which is why I assume an elasticity of substitution for government demand equal to 0.01 as well[2].

The main aggregate to respond to reduced import tariffs is thus private consumption. Here, the LES specification (31) requires the calibration of minimum consumption quantities, which then imply the demand elasticities. Using data from the 1985/1986 income and expenditure survey, I assume that minimum consumption levels in 1999 are equal to nominal consumption levels in 1985/1986. On average, this is precisely 25 percent of today's consumption expenditure, which seems a reasonable specification of minimum consumption[3]. The precise values are found in Table 26.

[2] This may not be appropriate for non-service component of government consumption. However, this component is very tiny (2.6 percent of total government consumption).

[3] Minimum consumption quantities vary with product categories. They are particularly high (54 percent of todays consumption) for SITC 5, which includes medicines.

Table 26 Minimum Consumption Levels in LES			
	Actual consumption	Minimum consumption	Share of minimum consumption
SITC0+4	241.229	81.042	34%
SITC1	12.721	3.334	26%
SITC2	0	0	0%
SITC3	33.686	3.531	10%
SITC5	8.251	4.479	54%
SITC6	15.197	4.095	27%
SITC7	26.704	2.793	10%
SITC8	30.348	12.541	41%
SITC9	207.867	29.773	14%

Elasticities of substitution for the production functions (1) are not readily available. In the public sector, factor substitution seems to be extremely low, since, e. g. employees intending to resign from their posts must seek official permission, which is difficult to obtain (US Department of State, 2000). Therefore, I assume an elasticity of substitution of zero (fixed proportions) for pure public sector activities. For pure private sector activities I use the Cobb-Douglas benchmark (elasticity of substitution equal to one), so that for sectors with mixed public/private activities I calibrate the elasticity of substitution with the share of private activity.

Section VII: Simulation results

Various liberalization scenarios are simulated. Denoting the status quo (benchmark) by L0, let us first focus on the following removal of tariff barriers:

Scenario L1: 50 percent decrease in duties on agricultural products imported from the EU.
Scenario L2: Zero duties on agricultural products imported from the EU.
Scenario L3: Zero duties on non-agricultural products imported from the EU.
Scenario L4: Scenario L1 and Scenario L3.
Scenario L5: Zero duties on products imported from the EU.
Scenario L6: Zero duties on products imported from the EU, Arab, and Turkey.
Scenario L7: Zero duties on all imports[1].

A first selection of results is given in Table 27, which displays real variables only. Gross domestic product at factor cost (GDPF) is hardly changed in any of the scenarios. There are slight reductions in GDP at market prices (GDPM), but comparison with GDPF shows that these are solely due to the reduced indirect tax, i. e. tariff load. Private consumption (CPRIV) is almost constant when tariffs on EU agricultural products are reduced, but increases more impressively when manufactures are liberalized. Generally, the increase in private consumption is of approximately the same value as the loss in tariff revenues. Variability in public consumption (CPUB) is tiny, there are small increases when liberalization is confined to agricultural products, and small decreases when manufactures are (also) involved. Gross investment (INVEST) grows a little, but only for the radical scenario L7 is the growth rate larger than one percent. Imports respond to trade liberalization much more than exports: Changes in imports are three to four times the changes in exports, so that the trade balance deteriorates.

Table 27

Effects of Trade Liberalization on Main Aggregates,
Variables in Volume

	L0	L1	L2	L3	L4	L5	L6	L7
GDPF	781	781 0.00%	781 0.00%	781 0.00%	781 0.00%	781 0.00%	781 0.01%	781 0.02%
GDPM	821	821 -0.01%	821 -0.04%	821 -0.05%	821 -0.07%	821 -0.09%	821 -0.07%	821 -0.01%
CPRIV	576	576 0.05%	577 0.10%	580 0.69%	580 0.74%	581 0.79%	582 1.01%	589 2.21%
CPUB	93	93 0.10%	94 0.21%	93 -0.50%	93 -0.40%	93 -0.29%	93 -0.22%	93 -0.15%
INVEST	154	154 0.07%	154 0.14%	155 0.21%	155 0.28%	155 0.36%	155 0.48%	156 1.08%
Imports	292	293 0.34%	295 0.74%	298 1.74%	298 2.08%	300 2.48%	302 3.41%	314 7.41%
Exports	291	291 0.14%	291 0.29%	292 0.39%	292 0.52%	293 0.68%	294 1.03%	298 2.56%
Trade Balance	-1.777	-2.370 33.4%	-3.094 74.1%	-5.741 223%	-6.338 257%	-7.068 298%	-8.771 394%	-16.029 802%

[1] Unlike L1-L6, this scenario also includes abolition of taxes on the import and export of services.

Table 28 gives the corresponding results for nominal variables. There is a gradual increase of producers prices which lets nominal GDP at factor costs increase across scenarios. GDP at market prices, however, is almost constant since the increase in factor costs is balanced by the decrease in indirect taxes, i. e. customs tariffs. All components of aggregate demand (expressed in market prices) increase, where the increase in imports balances the increases in consumption, investment and exports. Again, there are clearly negative effects on the trade balance, partially of dramatic extent.

Table 28

Effects of Trade Liberalization on Main Aggregates,
Variables in Value (Billion 1999 LS)

	L0	L1	L2	L3	L4	L5	L6	L7
GDPF	781	781	782	786	786	787	789	798
		0.06%	0.14%	0.65%	0.71%	0.79%	1.01%	2.22%
GDPM	821	821	822	821	821	821	821	822
		0.02%	0.03%	-0.03%	-0.02%	0.00%	0.00%	0.10%
CPRIV	576	576	577	580	580	581	582	589
		0.05%	0.10%	0.69%	0.74%	0.79%	1.01%	2.21%
CPUB	93	94	94	93	93	94	94	94
		0.20%	0.43%	-0.12%	0.09%	0.32%	0.52%	1.11%
INVEST	154	155	155	154	154	155	155	156
		0.18%	0.39%	-0.07%	0.11%	0.32%	0.54%	1.12%
Imports	292	294	295	299	300	302	305	321
		0.45%	0.98%	2.30%	2.76%	3.30%	4.47%	9.89%
Exports	291	291	292	293	294	295	297	305
		0.25%	0.53%	0.94%	1.19%	1.48%	2.06%	4.92%
Trade Balance	-1.777	-2.373	-3.101	-5.773	-6.381	-7.124	-8.861	-16.398
		33.5%	41.0%	150%	34.2%	41.8%	97.8%	424%

The effects of trade liberalization on the government budget and on capital accumulation are shown in Table 29. To interpret the effects on the government budget, it may be useful to express tariff revenue as a percentage of the 1999 government revenues (excluding loans and the PSF). This benchmark value is 178 billion LS. Thus, the tariff revenue loss implied by, say, scenario L2 is less than half a percent of today's government revenue. For L3, however, 3 percent of government revenue are affected and for L6 and L7 (complete liberalization) we find 4.4 percent and 9 percent, respectively. While these reductions in tariff revenue are not negligible, they appear considerably smaller than those reported for other MENA-countries under similar scenarios. Note that the loss of tariff revenues in absolute terms is mirrored by similar increases in private consumption, cf. Table 27.

Changes in domestic indirect taxes are small, and changes in direct taxes are not much larger. Thus, total tax revenues (excluding PSF and MERS revenues) decrease by almost the same amount as does tariff revenue. Consolidating the PSF, we see that the total government deficit increases almost one-to-one with the loss of tariff revenue. Since household savings are hardly changed and investment expenditures even increase, cf. Table 27, the government deficit must be financed from abroad, which explains the current account deterioration in the last row of Table 29. This perspective is hardly promising for the Syrian government, which is

already plagued by a sizable external debt[2] requiring complicated negotiations with the Paris Club, see International Monetary Fund, 1999a.

Table 29

Effects of Trade Liberalization on Government Budget and Capital Accumulation, Variables in Value (Billion 1999 LS)

	L0	L1	L2	L3	L4	L5	L6	L7
Tariff revenue	16.090	15.789 -1.87%	15.397 -4.31%	10.525 -34.6%	10.213 -36.5%	9.808 -39.0%	8.183 -49.1%	0 -100%
Domest. ind. tax	30.622	30.641 0.06%	30.663 0.13%	30.874 0.82%	30.893 0.89%	30.914 0.95%	30.863 0.79%	30.716 0.31%
Total ind. taxes	46.712	46.430 -0.60%	46.060 -1.40%	41.399 -11.4%	41.106 -12.0%	40.722 -12.8%	39.045 -16.4%	30.716 -34.2%
Direct taxes	54.205	54.255 0.09%	54.312 0.20%	54.557 0.65%	54.607 0.74%	54.665 0.85%	54.796 1.09%	55.490 2.37%
All taxes	100.917	100.686 -0.23%	100.372 -0.54%	95.956 -4.92%	95.713 -5.16%	95.387 -5.48%	93.842 -7.01%	86.206 -14.6%
Govern. deficit	100.501	101.131 0.63%	101.898 1.39%	105.081 4.56%	105.721 5.19%	106.498 5.97%	108.368 7.83%	116.986 16.4%
Househ. savings	40.049	40.083 0.08%	40.121 0.18%	40.389 0.85%	40.423 0.93%	40.462 1.03%	40.583 1.33%	41.215 2.91%
Current account	-4.371	-4.967 13.6%	-5.695 30.3%	8.612 97.0%	-9.220 111%	-9.962 128%	-11.738 169%	-19.632 349%

Table 30 illustrates trade diversion effects for scenario L1, i. e. a 50 percent reduction of import duties on EU agricultural products. The table shows percentage changes in real imports vis-à-vis the benchmark equilibrium and is confined to agricultural commodity groups (including beverages and tobacco), the effects of other commodity groups being negligible (changes of less than 0.25 percent in absolute value). Clearly, the EU benefits at the expense of all other trading partners. However, it should be noted that the magnitude of this effect is determined by the rather high elasticity of substitution specified for the choice of trading partners. If a lower value were appropriate, trade diversion effects would generally be reduced.

Table 30

Trade Diversion of Syrian Imports, Percentage Changes of Scenario L1

	ABC	Arab	EU15	Ex-Soc.	Japan	ROW	Turkey	USA
SITC0+4	-2.60%	-2.60%	14.05%	-2.60%	-2.60%	-2.60%	-2.60%	-2.60%
SITC1	-	-0.41%	-0.41%	-0.41%	-0.41%	-0.41%	-	-0.41%

[2] This debt is partially denominated in hard currency, partially in Russian rubles.

The same caveat applies to simulations which reduce tariff rates on non-agricultural products. Table 31 gives the respective percentage changes for a 100 percent reduction of imports from the EU (scenario L3). This scenario may be particularly relevant as ist may be close to the tariff reduction finally agreed upon in an Association Agreement. With high elasticity of substitution, the EU will make large inroads into the domains of other Syrian trading partners. This holds for all product categories except agricultural products (SITC 0 and SITC 4) and Services.

Table 31

Trade Diversion of Syrian Imports,
Percentage Changes of Scenario L3

	ABC	Arab	EU15	Ex-Soc.	Japan	ROW	Turkey	USA
SITC0+4	0.59%	0.59%	0.59%	0.59%	0.59%	0.59%	0.59%	0.59%
SITC1	-	-26.89%	182.17%	-26.90%	-26.90%	-26.90%	-	-26.90%
SITC2	-1.21%	-1.21%	13.36%	-1.21%	-1.21%	-1.21%	-1.21%	-1.21%
SITC3	-	-6.34%	26.02%	-6.34%	-6.34%	-6.34%	-6.34%	-6.34%
SITC5	-10.71%	-10.71%	13.85%	-10.71%	-10.71%	-10.71%	-10.71%	-10.71%
SITC6	-7.35%	-7.35%	35.24%	-7.35%	-7.35%	-7.35%	-7.35%	-7.35%
SITC7	-28.94%	-28.94%	59.40%	-28.94%	-28.94%	-28.94%	-28.94%	-28.94%
SITC8	-9.87%	-9.87%	48.69%	-9.87%	-9.87%	-9.87%	-9.87%	-9.87%
Services	-0.39%	-0.39%	-0.39%	-0.39%	-0.39%	-0.39%	-0.39%	-0.39%

Finally, Table 32 depicts trade diversion effects in scenario L6, where duties on all products from Arab countries, Turkey, and the EU are completely abolished. For the EU, gains in trade are then almost as large as if tariff reductions only in favor of the EU had been enacted – a result which is probably due to large differences in the product structure of exported goods between the EU on the one hand and Arab states and Turkey on the other hand.

Table 32

Trade Diversion of Syrian Imports,
Percentage Changes of Scenario L6

	ABC	Arab	EU15	Ex-Soc.	Japan	ROW	Turkey	USA
SITC0+4	-7.23%	18.83%	27.61%	-7.23%	-7.23%	-7.23%	25.01%	-7.23%
SITC1	-	110.16%	169.00%	-30.31%	-30.31%	-30.31%	-	-30.31%
SITC2	-3.01%	8.31%	11.30%	-3.01%	-3.01%	-3.01%	11.30%	-3.01%
SITC3	-	16.33%	23.30%	-8.36%	-8.36%	-8.36%	23.30%	-8.36%
SITC5	-14.31%	4.17%	9.27%	-14.31%	-14.31%	-14.31%	9.27%	-14.31%
SITC6	-10.59%	21.23%	30.51%	-10.59%	-10.59%	-10.59%	30.51%	-10.59%
SITC7	-30.82%	33.17%	55.20%	-30.82%	-30.82%	-30.82%	55.20%	-30.82%
SITC8	-11.98%	31.80%	45.20%	-11.98%	-11.98%	-11.98%	45.20%	-11.98%
Services	-1.01%	8.78%	-1.01%	-1.01%	-1.01%	-1.01%	8.78%	-1.01%

Table 33 gives a detailed account of imports in volume and Table 34 gives the corresponding numbers in value. Similarly, Table 35 gives exports in volume and Table 36 gives exports in value.

Table 33

Imports by Product and Origin
Variables in Volume

	L0	L1	L2	L3	L4	L5	L6	L7
Imports by product group								
SITC0+4	41.474	42.407	43.512	41.719	42.658	43.769	44.902	48.471
		2.25%	4.91%	0.59%	2.86%	5.53%	8.27%	16.87%
SITC1	537	534	532	810	807	803	824	1.043
		-0.41%	-0.86%	50.97%	50.38%	49.73%	53.64%	94.34%
SITC2	9.138	9.131	9.123	9.260	9.252	9.244	9.263	9.433
		-0.08%	-0.17%	1.33%	1.25%	1.16%	1.37%	3.22%
SITC3	5.493	5.493	5.493	6.094	6.094	6.094	6.283	6.514
		0.00%	-0.01%	10.94%	10.94%	10.93%	14.39%	18.59%
SITC5	24.448	24.463	24.481	24.734	24.750	24.768	24.895	25.263
		0.06%	0.13%	1.17%	1.23%	1.31%	1.83%	3.33%
SITC6	61.950	61.997	62.049	62.545	62.593	62.648	63.043	64.455
		0.08%	0.16%	0.96%	1.04%	1.13%	1.76%	4.04%
SITC7	42.958	42.963	42.970	45.926	45.931	45.938	46.157	47.977
		0.01%	0.03%	6.91%	6.92%	6.94%	7.45%	11.68%
SITC8	3.977	3.968	3.957	4.373	4.363	4.351	4.361	4.775
		-0.24%	-0.50%	9.96%	9.69%	9.40%	9.65%	20.07%
Services	102.436	102.443	102.453	102.040	102.048	102.060	102.667	106.160
		0.01%	0.02%	-0.39%	-0.38%	-0.37%	0.23%	3.64%
Imports by country of origin								
ABC	10.669	10.536	10.393	10.506	10.373	10.228	10.032	11.835
		-1.24%	-2.59%	-1.52%	-2.77%	-4.13%	-5.97%	10.93%
Arab	24.284	24.187	24.082	23.051	22.953	22.847	27.359	24.954
		-0.40%	-0.83%	-5.08%	-5.48%	-5.92%	12.66%	2.76%
EU15	89.234	90.946	92.900	107.441	109.166	111.136	108.485	96.758
		1.92%	4.11%	20.40%	22.34%	24.55%	21.57%	8.43%
Ex-Soc.	49.796	49.707	49.612	47.003	46.914	46.817	45.751	52.876
		-0.18%	-0.37%	-5.61%	-5.79%	-5.98%	-8.12%	6.19%
Japan	11.941	11.942	11.944	10.137	10.138	10.140	9.932	12.942
		0.01%	0.02%	-15.11%	-15.09%	-15.08%	-16.82%	8.38%
ROW	78.612	78.368	78.103	73.016	72.770	72.502	71.023	84.343
		-0.31%	-0.65%	-7.12%	-7.43%	-7.77%	-9.65%	7.29%
Turkey	14.528	14.435	14.334	13.882	13.789	13.687	17.755	15.680
		-0.64%	-1.33%	-4.44%	-5.09%	-5.79%	22.22%	7.93%
USA	13.348	13.278	13.201	12.464	12.393	12.316	12.058	14.703
		-0.53%	-1.11%	-6.63%	-7.16%	-7.74%	-9.67%	10.15%

In general, reduced tariffs for agricultural products (SITC0+4) increase the imported quantities of these products and have weak effects of either sign on other product groups. If tariffs for manufactures are (also) reduced, we note particularly high responses for the import of beverages and tobacco (SITC1). Further, tariff reductions for European goods only are generally benefitial for the EU and have advers effects for other trading partners. These can become substantial tariffs for other MENA countries are also reduced. For instance, in

scenario L6, Japan and the US loose 17 percent and 10 percent of their import volume, respectively. Interestingly, Turkey benefits from this form of trade liberalization much more than the Arab countries, its percentage increase in import volume is even slightly higher than the one for the European Union. Under full tariff liberalization the American countries would make the largest percentage gains, and the foreign trade increase of Arabic states would be far off those enjoyed by all other countries.

Table 34

Imports by Product and Origin
Variables in Value (Billion 1999 LS)

	L0	L1	L2	L3	L4	L5	L6	L7
Imports by product group								
SITC0+4	41.474	42.455	43.616	41.950	42.942	44.116	45.361	49.586
		2.37%	5.17%	1.15%	3.54%	6.37%	9.37%	19.56%
SITC1	537	535	533	815	812	810	833	1.067
		-0.29%	-0.62%	51.80%	51.38%	50.92%	55.21%	98.81%
SITC2	9.138	9.141	9.145	9.311	9.314	9.317	9.358	9.650
		0.03%	0.07%	1.89%	1.92%	1.96%	2.41%	5.60%
SITC3	5.493	5.499	5.506	6.128	6.134	6.142	6.348	6.664
		0.11%	0.23%	11.55%	11.67%	11.81%	15.56%	21.31%
SITC5	24.448	24.491	24.539	24.870	24.914	24.964	25.150	25.844
		0.18%	0.37%	1.73%	1.91%	2.11%	2.87%	5.71%
SITC6	61.950	62.066	62.198	62.890	63.010	63.145	63.688	65.938
		0.19%	0.40%	1.52%	1.71%	1.93%	2.81%	6.44%
SITC7	42.958	43.012	43.073	46.179	46.237	46.303	46.629	49.080
		0.13%	0.27%	7.50%	7.63%	7.79%	8.55%	14.25%
SITC8	3.977	3.972	3.967	4.397	4.392	4.385	4.406	4.885
		-0.13%	-0.26%	10.56%	10.42%	10.27%	10.78%	22.83%
Services	102.436	102.558	102.698	102.603	102.727	102.869	103.718	108.602
		0.12%	0.26%	0.16%	0.28%	0.42%	1.25%	6.02%
Imports by country of origin								
ABC	10.669	10.548	10.417	10.564	10.442	10.310	10.134	12.107
		-1.13%	-2.35%	-0.98%	-2.12%	-3.36%	-5.01%	13.48%
Arab	24.284	24.214	24.140	23.178	23.106	23.029	27.639	25.528
		-0.29%	-0.59%	-4.55%	-4.85%	-5.17%	13.82%	5.12%
EU15	89.234	91.048	93.123	108.034	109.892	112.017	109.595	98.984
		2.03%	4.36%	21.07%	23.15%	25.53%	22.82%	10.93%
Ex-Soc.	49.796	49.763	49.731	47.263	47.226	47.189	46.219	54.092
		-0.06%	-0.13%	-5.09%	-5.16%	-5.24%	-7.18%	8.63%
Japan	11.941	11.955	11.972	10.193	10.206	10.220	10.034	13.239
		0.12%	0.26%	-14.64%	-14.53%	-14.41%	-15.97%	10.88%
ROW	78.612	78.456	78.291	73.419	73.254	73.077	71.750	86.283
		-0.20%	-0.41%	-6.61%	-6.82%	-7.04%	-8.73%	9.76%
Turkey	14.528	14.451	14.368	13.959	13.881	13.796	17.937	16.041
		-0.53%	-1.10%	-3.91%	-4.45%	-5.04%	23.47%	10.42%
USA	13.348	13.293	13.233	12.533	12.475	12.414	12.182	15.041
		-0.42%	-0.87%	-6.11%	-6.54%	-7.00%	-8.74%	12.68%

We now turn to Tables 9 and 10 which give simulation results for exports by activity and country of destination.

Table 35

Exports by Activity and Destination
Variables in Volume

	L0	L1	L2	L3	L4	L5	L6	L7
Exports by activity								
Agricult.	31.884	32.082	32.306	31.777	31.975	32.199	32.367	32.943
		0.62%	1.32%	-0.33%	0.28%	0.99%	1.51%	3.32%
Mining	111.708	111.739	111.774	111.819	111.850	111.884	111.997	112.438
		0.03%	0.06%	0.10%	0.13%	0.16%	0.26%	0.65%
Public manuf.	10.109	10.158	10.213	10.447	10.498	10.556	10.805	11.756
		0.49%	1.03%	3.34%	3.85%	4.42%	6.88%	16.29%
Private manuf.	23.337	23.390	23.450	23.727	23.781	23.843	24.112	25.173
		0.23%	0.48%	1.67%	1.90%	2.17%	3.32%	7.87%
Transp.+ commun.	75.404	75.447	75.494	75.620	75.662	75.708	75.835	76.681
		0.06%	0.12%	0.29%	0.34%	0.40%	0.57%	1.69%
Finance + insurance	12.054	12.061	12.068	12.058	12.065	12.072	12.083	12.187
		0.06%	0.12%	0.03%	0.09%	0.15%	0.24%	1.10%
Social services	9.914	9.920	9.927	10.012	10.018	10.025	10.067	10.280
		0.07%	0.14%	0.99%	1.05%	1.13%	1.55%	3.70%
Govern. services	16.222	16.232	16.243	16.299	16.308	16.319	16.359	16.603
		0.06%	0.13%	0.47%	0.53%	0.60%	0.84%	2.34%
Exports by country of destination								
ABC	1.109	1.111	1.113	1.113	1.115	1.117	1.121	1.139
		0.16%	0.34%	0.37%	0.54%	0.72%	1.09%	2.69%
Arab	60.921	61.097	61.297	61.251	61.428	61.629	61.998	63.504
		0.29%	0.62%	0.54%	0.83%	1.16%	1.77%	4.24%
EU15	176.935	177.063	177.206	177.514	177.642	177.786	178.219	180.236
		0.07%	0.15%	0.33%	0.40%	0.48%	0.73%	1.87%
Ex-Soc.	5.717	5.732	5.749	5.772	5.787	5.805	5.851	6.039
		0.26%	0.56%	0.96%	1.23%	1.54%	2.34%	5.64%
Japan	869	872	875	870	873	876	880	895
		0.33%	0.70%	0.13%	0.46%	0.83%	1.26%	3.00%
ROW	14.413	14.450	14.492	14.473	14.511	14.553	14.626	14.927
		0.26%	0.55%	0.42%	0.68%	0.97%	1.48%	3.57%
Turkey	26.906	26.934	26.965	26.985	27.012	27.044	27.114	27.433
		0.10%	0.22%	0.29%	0.39%	0.51%	0.77%	1.96%
USA	3.763	3.771	3.779	3.781	3.789	3.797	3.815	3.889
		0.20%	0.42%	0.48%	0.68%	0.90%	1.37%	3.34%

In terms of activities, exports of manufactures, both from the public and the private sector show the largest percentage increases. Exports of mining products are small both in absolute and relative terms. Agriclture is also only modestly stimulated, in fact, there may be slight reductions in agricultural exports under scenario L3, where we simulate the effects of non-agricultural tariff reductions. Since we do not study improved market access in partner countries, no dramatic changes occur in the distribution of exports across trading partners.

Table 36

Exports by Activity and Destination
Variables in Value (Billion 1999 LS)

	L0	L1	L2	L3	L4	L5	L6	L7
Exports by activity								
Agricult.	31.884	32.118	32.383	31.953	32.188	32.454	32.698	33.701
		0.73%	1.57%	0.22%	0.95%	1.79%	2.55%	5.70%
Mining	111.708	111.865	112.041	112.436	112.594	112.772	113.143	115.024
		0.14%	0.30%	0.65%	0.79%	0.95%	1.28%	2.97%
Public manuf.	10.109	10.169	10.238	10.504	10.568	10.640	10.915	12.026
		0.60%	1.28%	3.91%	4.54%	5.25%	7.98%	18.97%
Private manuf.	23.337	23.416	23.506	23.858	23.940	24.032	24.359	25.752
		0.34%	0.72%	2.23%	2.58%	2.98%	4.38%	10.35%
Transp.+ commun.	75.404	75.532	75.675	76.038	76.165	76.309	76.611	78.445
		0.17%	0.36%	0.84%	1.01%	1.20%	1.60%	4.03%
Finance + insurance	12.054	12.074	12.097	12.125	12.145	12.168	12.206	12.468
		0.17%	0.36%	0.59%	0.75%	0.94%	1.26%	3.43%
Social services	9.914	9.931	9.951	10.067	10.085	10.105	10.170	10.517
		0.18%	0.38%	1.55%	1.73%	1.93%	2.59%	6.08%
Govern. services	16.222	16.251	16.282	16.389	16.417	16.449	16.526	16.985
		0.17%	0.37%	1.02%	1.20%	1.39%	1.87%	4.70%
Exports by country of destination								
ABC	1.109	1.112	1.115	1.119	1.122	1.126	1.132	1.165
		0.27%	0.58%	0.93%	1.20%	1.52%	2.13%	5.05%
Arab	60.921	61.166	61.443	61.589	61.837	62.118	62.633	64.965
		0.40%	0.86%	1.10%	1.50%	1.96%	2.81%	6.64%
EU15	176.935	177.262	177.630	178.494	178.824	179.196	180.043	184.382
		0.18%	0.39%	0.88%	1.07%	1.28%	1.76%	4.21%
Ex-Soc.	5.717	5.739	5.763	5.804	5.826	5.851	5.911	6.178
		0.38%	0.80%	1.52%	1.91%	2.34%	3.39%	8.07%
Japan	869	873	877	875	879	883	889	916
		0.44%	0.94%	0.68%	1.13%	1.63%	2.30%	5.37%
ROW	14.413	14.466	14.527	14.553	14.607	14.668	14.776	15.270
		0.37%	0.79%	0.98%	1.35%	1.78%	2.52%	5.95%
Turkey	26.906	26.964	27.030	27.134	27.192	27.258	27.391	28.064
		0.22%	0.46%	0.85%	1.06%	1.31%	1.80%	4.30%
USA	3.763	3.775	3.788	3.802	3.814	3.827	3.854	3.978
		0.31%	0.66%	1.04%	1.35%	1.70%	2.41%	5.72%

Production by activity is given in Tables 11 and 12, where the former displays variables in volume and the latter variables in value. We comment only on the former, since price effects will separately be discussed below.

Table 37

Production by Activity
Variables in Volume

	L0	L1	L2	L3	L4	L5	L6	L7
Agricult.	303.496	302.937	302.310	305.612	305.046	304.411	304.287	305.739
		-0.18%	-0.39%	0.70%	0.51%	0.30%	0.26%	0.74%
Mining	149.578	149.765	149.977	150.212	150.400	150.611	150.878	152.809
		0.13%	0.27%	0.42%	0.55%	0.69%	0.87%	2.16%
Public manuf.	151.686	152.163	152.702	153.121	153.610	154.163	155.724	161.643
		0.31%	0.67%	0.95%	1.27%	1.63%	2.66%	6.56%
Private manuf.	227.234	227.391	227.567	225.975	226.133	226.311	226.026	225.768
		0.07%	0.15%	-0.55%	-0.48%	-0.41%	-0.53%	-0.65%
Utilities	35.360	35.422	35.492	35.567	35.630	35.701	35.799	35.608
		0.18%	0.37%	0.59%	0.76%	0.97%	1.24%	0.70%
Construc.	72.890	73.004	73.134	73.905	74.022	74.154	74.642	76.939
		0.16%	0.33%	1.39%	1.55%	1.73%	2.40%	5.55%
Trade	164.239	164.471	164.732	164.768	165.000	165.263	165.344	165.699
		0.14%	0.30%	0.32%	0.46%	0.62%	0.67%	0.89%
Transp.+ commun.	159.794	160.036	160.308	160.574	160.816	161.090	161.423	163.094
		0.15%	0.32%	0.49%	0.64%	0.81%	1.02%	2.07%
Finance + insurance	37.676	37.731	37.793	37.727	37.782	37.844	37.872	38.021
		0.15%	0.31%	0.14%	0.28%	0.45%	0.52%	0.91%
Social services	38.039	38.097	38.163	38.439	38.498	38.565	38.713	39.286
		0.15%	0.33%	1.05%	1.21%	1.38%	1.77%	3.28%
Govern. services	94.651	94.789	94.946	95.098	95.237	95.394	95.561	96.161
		0.15%	0.31%	0.47%	0.62%	0.79%	0.96%	1.60%

Reduced agricultural import tariffs generally lead to slight depressions of domestic agricultural production, while all other activities enjoy very, very minor stimuli. Conversely, agriculture benefits a little from the reduction of non-agricultural tariffs only, since this effectively raises the price of agricultural products relative to non-agricultural products. Consequently, most activities suffer minor reductions, among the exceptions being those activities whose products are not traded (utilities, construction). Full liberalization under scenario L7 has very hererogenous effects across activities and some of these are difficult to explain. For instance, private manufacturing decreases slightly, but public manufacturing increases. Still, the adverse effects of trade liberalization due to increased competition on the domestic markets seem very limited. We have some doubts about the reliability of the results for this scenario, since we share a general feeling of weak competitiveness for the Syrian industry which, if true, would suggest much larger inroads into Syrian markets. However, to the best of our knowledge, the data released by the Syrian authorities do not support this skeptical view in a mostly standard computable general equilibrium model.

Table 38

Production by activity
Variables in Value (Billion 1999 LS)

	L0	L1	L2	L3	L4	L5	L6	L7
Agricult.	303.496	302.937	302.310	305.612	305.046	304.411	304.287	305.739
		-0.18%	-0.39%	0.70%	0.51%	0.30%	0.26%	0.74%
Mining	149.578	149.765	149.977	150.212	150.400	150.611	150.878	152.809
		0.13%	0.27%	0.42%	0.55%	0.69%	0.87%	2.16%
Public manuf.	151.686	152.163	152.702	153.121	153.610	154.163	155.724	161.643
		0.31%	0.67%	0.95%	1.27%	1.63%	2.66%	6.56%
Private manuf.	227.234	227.391	227.567	225.975	226.133	226.311	226.026	225.768
		0.07%	0.15%	-0.55%	-0.48%	-0.41%	-0.53%	-0.65%
Utilities	35.360	35.422	35.492	35.567	35.630	35.701	35.799	35.608
		0.18%	0.37%	0.59%	0.76%	0.97%	1.24%	0.70%
Construc.	72.890	73.004	73.134	73.905	74.022	74.154	74.642	76.939
		0.16%	0.33%	1.39%	1.55%	1.73%	2.40%	5.55%
Trade	159.794	164.471	164.732	164.768	165.000	165.263	165.344	165.699
		0.14%	0.30%	0.32%	0.46%	0.62%	0.67%	0.89%
Transp.+ commun.	164.239	160.036	160.308	160.574	160.816	161.090	161.423	163.094
		0.15%	0.32%	0.49%	0.64%	0.81%	1.02%	2.07%
Finance + insurance	37.676	37.731	37.793	37.727	37.782	37.844	37.872	38.021
		0.15%	0.31%	0.14%	0.28%	0.45%	0.52%	0.91%
Social services	38.039	38.097	38.163	38.439	38.498	38.565	38.713	39.286
		0.15%	0.33%	1.05%	1.21%	1.38%	1.77%	3.28%
Govern. services	94.651	94.789	94.946	95.098	95.237	95.394	95.561	96.161
		0.15%	0.31%	0.47%	0.62%	0.79%	0.96%	1.60%

Looking at factor prices, Table 39, the wage rate (measured in units of the consumer basket) increases slightly. This was to be expected since the price of the consumer basket decreases with reduced import tariffs and domestic production does not change much. Since we use a neoclassical production function with fixed factor supply in the aggregate economy, it is not surprising to find the remuneration of the complementary factor capital also increasing across scenarios. Table 39 shows the gross rates of return to capital, i. e. including allowance for depreciation. The base year values are obtained from estimating sectoral production functions and evaluating the marginal products. Given the scarcity and quality of available data, these estimates will have large standard errors and need to be interpreted very cautiously. Still, the general impression they communicate may be correct: We find extremely high returns to capital in the oil producing sector and low returns in sectors in which the government might find it appropriate to guarantee basic needs like housing, water, and electricity at low prices. (Note that utilities are almost completely government controled and that the state still controls about 50 percent of the construction business). It seems also plausible to find rather high returns to capital in an economy which is reputedly scarce of this prodction factor (and abundant of labor). As pointed out above, the specification of the model does not allow the free flow of capital among different sectors, which is why we show different and very heterogenous returns in Table 39.

Table 39

Compensation of Production Factors

	L0	L1	L2	L3	L4	L5	L6	L7
Wage rate	100.00%	100.07%	100.14%	100.79%	100.85%	100.93%	101.23%	102.65%
gross return to capital								
Agricult.	15.61%	15.60%	15.58%	15.70%	15.81%	15.91%	16.03%	16.30%
Mining	166.3%	166.5%	166.9%	167.8%	168.9%	170.3%	172.0%	176.1%
Public manufact.	14.79%	14.83%	14.91%	15.10%	15.34%	15.62%	16.07%	17.13%
Private manufact.	8.10%	8.11%	8.12%	8.14%	8.17%	8.20%	8.25%	8.39%
Utilities	4.77%	4.78%	4.79%	4.83%	4.88%	4.93%	5.00%	5.09%
Construc.	2.21%	2.21%	2.22%	2.25%	2.29%	2.33%	2.38%	2.52%
Trade	18.52%	18.55%	18.59%	18.70%	18.84%	19.00%	19.19%	19.55%
Transp. + commun.	15.98%	16.00%	16.04%	16.15%	16.28%	16.43%	16.63%	17.05%
Finance + insurance	18.49%	18.51%	18.56%	18.63%	18.73%	18.85%	19.01%	19.33%
Social services	18.51%	18.54%	18.59%	18.80%	19.04%	19.32%	19.67%	20.39%
Govern. services	18.51%	18.53%	18.58%	18.71%	18.86%	19.04%	19.27%	19.72%

Price indices of domestically produced goods are given in Table 40, both by factor costs and by market prices. Effects are qualitatively similar for factor costs and for market prices, since in both cases two effects merge into each other: On the one hand, prices for the primary factors of production increase, cf. Table 39, on the other hand, competing imports become cheaper due to reduced import tariffs. This again makes intermediate consumption cheaper, such that the effects on total costs is unclear. The general line visible in Table 40 seems to be that the prices of manufactured products decrease, while the prices of raw material, agricultural products and services increase.

Table 40

Prices of Domestically Produced Products

	L0	L1	L2	L3	L4	L5	L6	L7
by factor costs								
SITC0+4	100.00%	99.90%	99.79%	100.67%	100.56%	100.45%	100.50%	101.17%
SITC1	100.00%	99.99%	99.98%	98.50%	98.50%	98.49%	98.21%	96.35%
SITC2	100.00%	100.07%	100.15%	100.48%	100.55%	100.63%	100.52%	100.50%
SITC3	100.00%	100.10%	100.22%	100.37%	100.47%	100.59%	100.70%	101.67%
SITC5	100.00%	100.11%	100.23%	98.78%	98.88%	99.00%	98.50%	98.87%
SITC6	100.00%	100.11%	100.24%	99.36%	99.47%	99.59%	99.17%	96.73%
SITC7	100.00%	100.10%	100.20%	95.42%	95.52%	95.62%	95.37%	91.64%
SITC8	100.00%	100.03%	100.07%	99.59%	99.62%	99.66%	99.51%	98.23%
Services	100.00%	100.11%	100.23%	100.42%	100.53%	100.65%	100.80%	101.56%
by market prices								
SITC0+4	100.00%	99.83%	99.64%	100.65%	100.48%	100.28%	100.25%	100.65%
SITC1	100.00%	100.00%	99.99%	97.95%	97.95%	97.95%	97.63%	95.32%
SITC2	100.00%	100.08%	100.17%	100.41%	100.49%	100.58%	100.47%	100.41%
SITC3	100.00%	100.10%	100.22%	100.22%	100.32%	100.44%	100.50%	101.43%
SITC5	100.00%	100.11%	100.23%	98.67%	98.78%	98.90%	98.38%	98.70%
SITC6	100.00%	100.11%	100.24%	99.21%	99.32%	99.45%	98.98%	96.29%
SITC7	100.00%	100.11%	100.24%	94.17%	94.28%	94.40%	94.11%	89.51%
SITC8	100.00%	100.04%	100.09%	99.37%	99.41%	99.45%	99.31%	97.81%
Services	100.00%	100.11%	100.23%	100.44%	100.55%	100.67%	100.80%	101.41%

Table 41 shows price indices for domestic prices of imports. There is little to say about this; all price effects are intuitive in the sense that import prices fall when tariffs of this product group are reduced. Conversely, (relative) prices rise when the own customs tariff rate is unchanged but the rates of other product groups are reduced.

Table 41

Domestic Prices of Imports by Product Groups

	L0	L1	L2	L3	L4	L5	L6	L7
SITC0+4	100.00%	99.31%	98.55%	100.53%	99.84%	99.08%	98.47%	97.13%
SITC1	100.00%	100.11%	100.24%	89.61%	89.71%	89.83%	89.05%	81.86%
SITC2	100.00%	100.11%	100.24%	100.11%	100.22%	100.35%	100.27%	100.01%
SITC3	100.00%	100.11%	100.24%	97.76%	97.87%	98.00%	97.36%	97.47%
SITC5	100.00%	100.11%	100.24%	98.48%	98.59%	98.72%	98.16%	98.37%
SITC6	100.00%	100.11%	100.24%	99.14%	99.25%	99.38%	98.89%	96.08%
SITC7	100.00%	100.11%	100.24%	94.12%	94.23%	94.35%	94.07%	89.43%
SITC8	100.00%	100.11%	100.24%	97.34%	97.45%	97.57%	97.46%	94.13%
Services	100.00%	100.11%	100.24%	100.53%	100.65%	100.78%	100.80%	100.67%

Finally, Table 42 shows the domestic prices of exports. These are equal across commodities, since world market prices are given and the subsidy structure is held constant in scenarios L1 through L7. Clearly, export prices rise slightly since they are measured relative to the consumer basket price and this price falls due to cheaper inputs.

Table 42

Domestic Prices of Exports by Activities

	L0	L1	L2	L3	L4	L5	L6	L7
Agricult.	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%
Mining	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%
Public manuf.	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%
Private manuf.	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%
Transp. + commun.	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%
Finance + insurance	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%
Social services	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%
Govern. services	100.00%	100.11%	100.24%	100.55%	100.67%	100.79%	101.02%	102.30%

As pointed out above, the MERS has, among other things, tariff equivalent effects. Let us therefore study scenarios that include the abolition of the MERS. Thus along formal tariff barriers, a specific form of non-tariff barrier is eliminated in the scenarios specified below. In place of the multiple exchange rate systems the scenarios postulate that the Syrian government fixes the exchange rate at the Beirut free market level (51 LS/$). The following scenarios are studied:

Scenario L8: Zero duties on all imports[3] and abolition of MERS.
Scenario L9: Zero duties on non-agricultural EU-products and abolition of MERS.
Scenario L10: Zero duties on all products imported from the EU and abolition of MERS.
Scenario L11: Zero duties on imports from the EU, Arab, and Turkey and abolition of MERS.

Scenario L8 is a scenario of completely free trade. Scenario L9 (no tariff reduction for agriculture) may be close to what will actually be specified under EU-Association. Scenario L10 also includes liberalization for agricultural products. Scenarion L11 studies the effects of also integrating Turkey and the Arabic countries into such a free trade area.

The economic effects of the MERS are equivalent to import tariffs, export subsidies and export taxes. Abolition of the MERS has thus direct effects also on export performance. However, it is important to note that MERS export subsidy equivalents support hardly anything else but agriculture and private manufacturing[4]. While agriculture enjoys the full subsidy equivalent effect, private manufacturing is simultaneously subject to the MERS export tax equivalent effect, which effectively reduces, but does not extinguish the subsidy equivalent effect. Therefore, the first impact of MERS abolition is a strong negative effect on agricultural exports and a somewhat weaker, but still negative effect on exports of private manufacturing. Table 43 and Table 44 show exports in volume and value, respectively.

[3] Again, unlike L9-L11, this scenario also includes abolition of taxes on the import and export of services.
[4] There are also very tiny subsidies for private mining activities, but these are negligible.

Table 43

Exports by Activity and Destination
Variables in Volume

	L0	L8	L9	L10	L11
Exports by activity					
Agricult.	31.884	27.082 -15.06%	26.075 -18.22%	26.483 -16.94%	26.627 -16.49%
Mining	111.708	115.218 3.14%	114.571 2.56%	114.790 2.76%	114.907 2.86%
Public manuf.	10.109	13.060 29.20%	11.581 14.56%	11.758 16.32%	12.040 19.10%
Private manuf.	23.337	22.053 -5.50%	20.775 -10.98%	20.933 -10.30%	21.172 -9.28%
Transp.+ commun.	75.404	81.121 7.58%	79.986 6.08%	80.338 6.54%	80.473 6.72%
Finance + insurance	12.054	12.914 7.13%	12.775 5.98%	12.831 6.44%	12.842 6.53%
Social services	9.914	10.992 10.88%	10.702 7.95%	10.759 8.52%	10.804 8.98%
Govern. services	16.222	17.730 9.29%	17.400 7.26%	17.488 7.80%	17.531 8.07%
Exports by country of destination					
ABC	1.109	1.137 2.51%	1.111 0.22%	1.118 0.79%	1.122 1.16%
Arab	60.921	60.788 -0.22%	58.601 -3.81%	59.110 -2.97%	59.470 -2.38%
EU15	176.935	185.368 4.77%	182.564 3.18%	183.253 3.57%	183.697 3.82%
Ex-Soc.	5.717	5.853 2.38%	5.589 -2.25%	5.637 -1.40%	5.683 -0.60%
Japan	869	842 -3.17%	818 -5.86%	826 -5.00%	829 -4.60%
ROW	14.413	14.424 0.08%	13.985 -2.97%	14.094 -2.21%	14.165 -1.72%
Turkey	26.906	27.916 3.76%	27.463 2.07%	27.583 2.52%	27.653 2.78%
USA	3.763	3.841 2.07%	3.735 -0.75%	3.759 -0.11%	3.777 0.36%

From Table 43, it is immediately apparent that the abolition of MERS subsidy equivalents implies sharply decreasing exports of agriculture and private manufacturing. Exports of all other activities rise, since there relative export price has risen. Particularly impressive is the rise in public manufacturing, since this is likely the closest sbstitute for private manufacturing.

Table 44

Exports by Activity and Destination
Variables in Value (Billion 1999 LS)

	L0	L8	L9	L10	L11
Exports by activity					
Agricult.	31.884	28.300 -11.24%	26.777 -16.02%	27.289 -14.41%	27.502 -13.75%
Mining	111.708	120.403 7.78%	117.655 5.32%	118.287 5.89%	118.680 6.24%
Public manuf.	10.109	13.648 35.01%	11.893 17.64%	12.117 19.86%	12.435 23.01%
Private manuf.	23.337	23.045 -1.25%	21.334 -8.58%	21.571 -7.57%	21.867 -6.30%
Transp.+ commun.	75.404	84.772 12.42%	82.140 8.93%	82.785 9.79%	83.115 10.23%
Finance + insurance	12.054	13.495 11.95%	13.119 8.84%	13.221 9.68%	13.263 10.03%
Social services	9.914	11.487 15.87%	10.990 10.85%	11.086 11.83%	11.159 12.56%
Govern. services	16.222	18.528 14.21%	17.868 10.15%	18.021 11.09%	18.106 11.61%
Exports by country of destination					
ABC	1.109	1.188 7.13%	1.141 2.92%	1.152 3.86%	1.158 4.48%
Arab	60.921	63.524 4.27%	60.178 -1.22%	60.911 -0.02%	61.423 0.82%
EU15	176.935	193.711 9.48%	187.478 5.96%	188.835 6.73%	189.729 7.23%
Ex-Soc.	5.717	6.116 6.99%	5.739 0.38%	5.809 1.60%	5.869 2.66%
Japan	869	879 1.19%	840 -3.32%	851 -2.10%	856 -1.46%
ROW	14.413	15.073 4.59%	14.361 -0.36%	14.524 0.77%	14.630 1.51%
Turkey	26.906	29.173 8.42%	28.203 4.82%	28.423 5.64%	28.561 6.15%
USA	3.763	4.014 6.66%	3.835 1.92%	3.874 2.94%	3.901 3.65%

We can clearly discern the sectoral impact of MERS abolition in domestic export prices, cf. Table 45: Export prices for private manufacturing decrease, and prices for agricultural exports decrease even more strongly. Export prices for all other activities increase, however. This is due to the fact that these prices are expressed in terms of the consumer basket, which becomes cheaper with reduced import tariffs.

Table 45

Domestic Prices of Exports by Activities

	L0	L8	L9	L10	L11
Agricult.	100.00%	96.36%	94.70%	95.02%	95.24%
Mining	100.00%	104.50%	102.69%	103.05%	103.28%
Public manuf.	100.00%	104.50%	102.69%	103.05%	103.28%
Private manuf.	100.00%	99.41%	97.69%	98.02%	98.25%
Transp. + commun.	100.00%	104.50%	102.69%	103.05%	103.28%
Finance + insurance	100.00%	104.50%	102.69%	103.05%	103.28%
Social services	100.00%	104.50%	102.69%	103.05%	103.28%
Govern. services	100.00%	104.50%	102.69%	103.05%	103.28%

Production receives two kinds of stimulating effects from the abolition of the MERS: First, intermediate consumption of imported goods becomes cheaper, and second, export prices rise except for agriculture and private manufacturing. Thus the sectoral production increases for all exporting activities but these two, cf. Table 46 and Table 47. Interestingly, two non-exporting sectors (trade and utilities) also experience decreases in production, while a third one (construction) does not. Again we see that public manufacturing expands rather strongly, apparently at the cost of private manufacturing.

Table 46

Production by Activity
Variables in Volume

	L0	L8	L9	L10	L11
Agricult.	303.496	296.812 -2.20%	298.827 -1.54%	298.154 -1.76%	297.800 -1.88%
Mining	149.578	151.841 1.51%	151.666 1.40%	151.826 1.50%	151.797 1.48%
Public manuf.	151.686	166.335 9.66%	157.509 3.84%	158.730 4.64%	160.503 5.81%
Private manuf.	227.234	219.139 -3.56%	220.103 -3.14%	220.169 -3.11%	219.969 -3.20%
Utilities	35.360	34.281 -3.05%	34.636 -2.05%	34.574 -2.22%	34.619 -2.10%
Construc.	72.890	75.975 4.23%	73.768 1.20%	73.710 1.13%	74.088 1.64%
Trade	164.239	162.912 -0.81%	163.829 -0.25%	163.757 -0.29%	163.582 -0.40%
Transp.+ commun.	159.794	163.124 2.08%	162.826 1.90%	163.058 2.04%	163.092 2.06%
Finance + insurance	37.676	37.702 0.07%	37.902 0.60%	37.918 0.64%	37.879 0.54%
Social services	38.039	39.153 2.93%	38.793 1.98%	38.835 2.09%	38.917 2.31%
Govern. services	94.651	95.127 0.50%	95.228 0.61%	95.253 0.64%	95.260 0.64%

Table 47

Production by activity
Variables in Value (Billion 1999 LS)

	L0	L8	L9	L10	L11
Agricult.	303.496	296.280 -2.38%	296.420 -2.33%	295.456 -2.65%	295.297 -2.70%
Mining	149.578	158.043 5.66%	155.303 3.83%	155.969 4.27%	156.252 4.46%
Public manuf.	151.686	166.840 9.99%	157.824 4.05%	159.297 5.02%	160.943 6.10%
Private manuf.	227.234	218.952 -3.64%	219.600 -3.36%	220.020 -3.17%	219.654 -3.34%
Utilities	35.360	34.918 -1.25%	34.883 -1.35%	34.888 -1.33%	34.989 -1.05%
Construc.	72.890	77.376 6.15%	74.291 1.92%	74.380 2.04%	74.877 2.73%
Trade	159.794	165.904 1.01%	164.979 0.45%	165.227 0.60%	165.309 0.65%
Transp.+ commun.	164.239	168.245 5.29%	165.537 3.59%	166.221 4.02%	166.579 4.25%
Finance + insurance	37.676	38.733 2.81%	38.418 1.97%	38.530 2.27%	38.560 2.35%
Social services	38.039	40.161 5.58%	39.275 3.25%	39.412 3.61%	39.565 4.01%
Govern. services	94.651	97.345 2.85%	96.240 1.68%	96.481 1.93%	96.654 2.12%

Turning to imports, we basically see the expected stimulating effects of tariff reduction, cf. Table 48. Some special features merit attention, however. Most prominently, we find that imports of (non-mineral) raw materials (SITC2) shrink in volume. This are probably mainly due to the depressing effects on agriculture, which needs less inputs like seeds and fertilizers. A similar mechnism may be at work for private manufacturing, although this will be weaker, since lower raw material demand by private manufacturing will (partially) be offset by higher demand in public manufacturing). It may also be the case that more domesticcly produced agricultural raw materials are supplied on the domestic market since domestic export prices of these goods have fallen with the abolition of the MERS.

Further, we see that imports of agricultural products (SITC0+4) decline when the only formal tariff rates to be lowered are those for non-agricultural imports from the EU. In this case, agricultural imports become relatively more expensive. Moreover, the above supply effect tends to make domestic agricultural products cheaper which reinforces the negative effect on agricultural imports.

Table 48

Imports by Product and Origin
Variables in Volume

	L0	L8	L9	L10	L11
Imports by product group					
SITC0+4	41.474	46.274	39.744	41.699	42.798
		11.58%	-4.17%	0.54%	3.19%
SITC1	537	1.023	794	784	805
		90.70%	47.94%	46.18%	50.03%
SITC2	9.138	8.947	8.802	8.750	8.765
		-2.09%	-3.68%	-4.24%	-4.08%
SITC3	5.493	6.656	6.226	6.212	6.407
		21.16%	13.34%	13.08%	16.63%
SITC5	24.448	25.148	24.614	24.659	24.788
		2.87%	0.68%	0.86%	1.39%
SITC6	61.950	64.200	62.282	62.387	62.786
		3.63%	0.54%	0.70%	1.35%
SITC7	42.958	47.550	45.529	45.511	45.727
		10.69%	5.99%	5.94%	6.45%
SITC8	3.977	4.640	4.250	4.212	4.221
		16.67%	6.87%	5.91%	6.13%
Services	102.436	104.547	100.520	101.807	102.386
		2.06%	-1.87%	-0.61%	-0.05%
Imports by country of origin					
ABC	10.669	11.465	10.170	9.838	9.645
		7.47%	-4.67%	-7.78%	-9.59%
Arab	24.284	24.527	22.634	22.299	26.797
		1.00%	-6.79%	-8.17%	10.35%
EU15	89.234	95.302	106.219	112.174	109.487
		6.80%	19.03%	25.71%	22.70%
Ex-Soc.	49.796	52.097	46.242	45.780	44.710
		4.62%	-7.14%	-8.06%	-10.21%
Japan	11.941	12.800	9.991	9.927	9.719
		7.20%	-16.32%	-16.86%	-18.60%
ROW	78.612	83.016	71.730	70.718	69.241
		5.60%	-8.75%	-10.04%	-11.92%
Turkey	14.528	15.384	13.599	13.329	17.384
		5.90%	-6.39%	-8.25%	19.66%
USA	13.348	14.394	12.177	11.956	11.700
		7.84%	-8.78%	-10.43%	-12.35%

Table 49

Imports by Product and Origin
Variables in Value (Billion 1999 LS)

	L0	L8	L9	L10	L11
Imports by product group					
SITC0+4	41.474	48.357	40.814	42.970	44.203
		16.60%	-1.59%	3.61%	6.58%
SITC1	537	1.069	815	808	832
		99.28%	51.92%	50.64%	54.96%
SITC2	9.138	9.350	9.039	9.017	9.053
		2.32%	-1.08%	-1.33%	-0.93%
SITC3	5.493	6.955	6.393	6.401	6.617
		26.62%	16.39%	16.52%	20.46%
SITC5	24.448	26.280	25.276	25.410	25.602
		7.49%	3.39%	3.94%	4.72%
SITC6	61.950	67.090	63.959	64.287	64.848
		8.30%	3.24%	3.77%	4.68%
SITC7	42.958	49.690	46.754	46.897	47.228
		15.67%	8.84%	9.17%	9.94%
SITC8	3.977	4.849	4.365	4.340	4.359
		21.92%	9.75%	9.13%	9.62%
Services	102.436	109.252	103.226	104.908	105.749
		6.65%	0.77%	2.41%	3.23%
Imports by country of origin					
ABC	10.669	11.981	10.444	10.138	9.962
		12.30%	-2.11%	-4.97%	-6.62%
Arab	24.284	25.630	23.243	22.979	27.677
		5.54%	-4.29%	-5.38%	13.97%
EU15	89.234	99.591	109.078	115.591	113.082
		11.61%	22.24%	29.54%	26.73%
Ex-Soc.	49.796	54.442	47.487	47.174	46.178
		9.33%	-4.64%	-5.26%	-7.26%
Japan	11.941	13.377	10.260	10.229	10.039
		12.03%	-14.07%	-14.33%	-15.93%
ROW	78.612	86.752	73.661	72.872	71.514
		10.35%	-6.30%	-7.30%	-9.03%
Turkey	14.528	16.077	13.965	13.735	17.954
		10.66%	-3.87%	-5.45%	23.59%
USA	13.348	15.042	12.504	12.320	12.084
		12.69%	-6.32%	-7.71%	-9.47%

Finally, note that the volume of imports increases less when the MERS is abolished than when it is not, cf. Table 50. This is again due to the reduction in export subsidies. If, for instance, we compare scenarios L7 and L8 (which are identical except for the abolition of the MERS), we find that the volume of imports increases with the abolition of the MERS except for product groups SITC0+4 (food and live animals), SITC2 (non-mineral raw materials), and SITC8 (various manufactures). These groups correspond precisely to the activities (or their inputs) whose subsidies have been reduced. In fact, imports for these activities are rather large, so that the volume of aggregate imports actually decreases despite of growing imports in all other product groups.

Table 50

Effects of Trade Liberalization on Main Aggregates,
Variables in Volume

	L0	L8	L9	L10	L11
GDPF	781	780 -0.04%	781 -0.03%	781 -0.04%	781 -0.03%
GDPM	821	823 0.17%	822 0.11%	822 0.06%	822 0.09%
CPRIV	576	588 2,17%	580 0,64%	581 0,80%	582 1,02%
CPUB	93	90 -3,44%	90 -3,67%	90 -3,39%	90 -3,34%
INVEST	154	153 -0,62%	152 -1,43%	152 -1,25%	152 -1,14%
Imports	292	309 5,67%	293 0,12%	296 1,23%	299 2,14%
Exports	291	300 3,28%	294 1,11%	295 1,63%	296 1,98%
Trade Balance	-1.777	-8.816 396%	1.104 -162%	-641 -63.9%	-2.287 28.7%

In other respects, Table 50 just reflects earlier results. GDP at factor costs and at market prices is almost constant and private consumption expands. However, the expansion is less pronounced than in the earlier scenarios without MERS abolition. Also, public consumption and investment shrink – an effect which will become clear when looking at government finances. Imports and exports rise in a more balanced way than without MERS abolition, so that the deficit in the trade balance is less dramatic. In fact, scenarios L9 and L10 even result in an improved trade balance.

Table 51

Effects of Trade Liberalization on Main Aggregates,
Variables in Value (Billion 1999 LS)

	L0	L8	L9	L10	L11
GDPF	781	799	787	788	790
		1.56%	-0.01%	0.18%	0.41%
GDPM	821	824	823	823	823
		5.60%	5.44%	5.46%	5.46%
CPRIV	576	588	580	581	582
		2,17%	0,64%	0,80%	1,02%
CPUB	93	92	91	91	91
		-1,89%	-2,98%	-2,56%	-2,39%
INVEST	154	154	152	152	153
		-0,42%	-1,54%	-1,15%	-0,94%
Imports	292	323	301	305	308
		10,42%	2,82%	4,32%	5,50%
Exports	291	314	302	304	306
		7,93%	3,83%	4,73%	5,33%
Trade Balance	-1.777	-9.213	1.133	-661	-2.362
		418%	-164%	-63.8%	32.9%

As for the effects of trade liberalization on the government budget and on capital accumulation, observe that the loss of tax revenue is similar to the respective scenarios without MERS abolition. What is different is the trade balance: Syria imports less capital since the trade deficit is much smaller. Hence capital market supply is smaller than without MERS abolition and thus the government borrows less funds at the capital market. Since government consumption and development expenditures (government investment) depend on total government revenue, these components of aggregate demand do also decrease.

Table 52

Effects of Trade Liberalization on Government Budget and Capital Accumulation, Variables in Value (Billion 1999 LS)

	L0	L8	L9	L10	L11
Tariff revenue	16.090	0 -100.00%	10.538 -34.51%	9.342 -41.94%	7.713 -52.06%
Domest. ind. tax	30.622	31.094 1.54%	31.229 1.98%	31.185 1.84%	31.138 1.69%
Total ind. taxes	46.712	31.094 1.54%	31.229 1.98%	31.185 1.84%	31.138 1.69%
Direct taxes	54.205	55.880 3.09%	54.935 1.35%	55.071 1.60%	55.204 1.84%
All taxes	100.917	86.974 -13.82%	96.702 -4.18%	95.598 -5.27%	94.056 -6.80%
Govern. deficit	100.501	108.390 7.85%	96.814 -3.67%	98.748 -1.74%	100.579 0.08%
Househ. savings	40.049	41.229 2.95%	40.400 0.88%	40.498 1.12%	40.620 1.42%
Current account	-4.371	12.738 191.39%	1.988 -54.53%	3.807 -12.91%	5.548 26.91%

Factor prices are shown in Table 53. As before, trade liberalization increases factor compensation on the same line of reasoning as exposed for the scenarios without MERS abolition.

Table 53

Compensation of Production Factors

	L0	L8	L9	L10	L11
Wage rate	100.00%	102.29%	100.41%	100.59%	100.89%
gross return to capital					
Agricult.	15.61%	16.33%	16.22%	16.09%	15.99%
Mining	166.3%	184.42%	189.64%	195.71%	202.41%
Public manufact.	14.79%	18.67%	19.32%	20.14%	21.19%
Private manufact.	8.10%	8.40%	8.28%	8.19%	8.12%
Utilities	4.77%	5.12%	5.11%	5.10%	5.10%
Construc.	2.21%	2.69%	2.75%	2.81%	2.90%
Trade	18.52%	20.00%	20.22%	20.47%	20.77%
Transp. + commun.	15.98%	17.86%	18.37%	18.96%	19.62%
Finance + insurance	18.49%	19.93%	20.28%	20.69%	21.15%
Social services	18.51%	21.51%	22.14%	22.86%	23.70%
Govern. services	18.51%	20.41%	20.77%	21.19%	21.68%

Price indices of domestically produced goods are given in Table 54. Again, these effects are qualitatively similar for factor costs and for market prices. No clear-cut picture emerges, since reduction of formal tariffs plus MERS abolition is a complex shock to the system of sectoral prices with the effects of tariffs, tariff equivalents, subsidy equivalents and export tax equivalence working with varying strength partially in the same, partially in opposite directions. A similar comment applies to domestic import prices shown in Table 55.

Table 54

Prices of Domestically Produced Products

	L0	L8	L9	L10	L11
by factor costs					
SITC0+4	100.00%	100.30%	99.81%	99.65%	99.70%
SITC1	100.00%	96.36%	98.54%	98.52%	98.23%
SITC2	100.00%	99.67%	99.70%	99.83%	99.71%
SITC3	100.00%	102.87%	101.54%	101.80%	101.91%
SITC5	100.00%	99.24%	99.13%	99.45%	98.94%
SITC6	100.00%	97.10%	99.78%	100.10%	99.67%
SITC7	100.00%	91.88%	95.73%	95.98%	95.73%
SITC8	100.00%	98.00%	99.40%	99.45%	99.30%
Services	100.00%	101.86%	100.71%	100.91%	101.07%
by market prices					
SITC0+4	100.00%	99.96%	99.95%	99.65%	99.62%
SITC1	100.00%	95.37%	98.02%	98.03%	97.70%
SITC2	100.00%	99.83%	99.87%	100.04%	99.93%
SITC3	100.00%	102.58%	101.35%	101.62%	101.68%
SITC5	100.00%	99.12%	99.08%	99.41%	98.87%
SITC6	100.00%	96.75%	99.72%	100.06%	99.58%
SITC7	100.00%	89.97%	94.70%	95.03%	94.74%
SITC8	100.00%	97.66%	99.25%	99.33%	99.19%
Services	100.00%	101.75%	100.77%	100.91%	101.05%

Table 55

Domestic Prices of Imports by Product Groups

	L0	L8	L9	L10	L11
SITC0+4	100.00%	97.60%	101.06%	99.67%	99.05%
SITC1	100.00%	82.29%	90.15%	90.46%	89.66%
SITC2	100.00%	100.54%	100.63%	100.97%	100.89%
SITC3	100.00%	97.98%	98.26%	98.60%	97.95%
SITC5	100.00%	98.89%	98.98%	99.32%	98.75%
SITC6	100.00%	96.58%	99.69%	100.04%	99.54%
SITC7	100.00%	89.90%	94.66%	94.99%	94.70%
SITC8	100.00%	94.63%	97.88%	98.22%	98.10%
Services	100.00%	101.19%	101.04%	100.91%	100.94%

Part II

What fiscal budget modification can be performed to overcome the loss of tariff revenues?

This chapter discusses possible fiscal responses to the challenge of reduced import tariff revenues along with suggested reform measures in the design of direct and indirect taxes. Also, a critical review of certain expenditure blocks is proposed in order to cut government outlays and relieve budgetary pressure. The conclusions on policy measures formulated in the sequel refer to the economic and budgetary situation of the Syrian Arab Republic in November 2000, and relate to information obtained from high-ranking government officials at the occasion of a five-day visit to Damascus in this month. I have to warn that the information may be outdated at the time of reading, since it seemed one of the intentions of the new president to promote economic reform. In particular, legislative initiatives aiming at a unification of exchange rates, simplification of the tariff structure, elimination of price controls and abolition of the PSF were under discussion but had not yet been approved in November 2000. If such measures were adopted by the Syrian government, they would come close to some of the budgetary strategies discussed below. Therefore, an informed reader might find parts of the following discussion obsolete at the time of reading.

Simulation results obtained from the formal model of the Syrian economy suggest that the most natural fiscal response to lost tariff revenues would be an increase in indirect taxation. This increase should be levied on consumption goods, since these benefit much more than capital goods or raw materials from reduced import tariffs. In fact, any increase in indirect taxes on industrial supplies might have adverse effects on domestic production, so that the net effect of trade liberalization plus compensating fiscal measures on Syria's GDP might be negative if a substantial share of the additional indirect tax load were borne by the industry.

As far as the consumer's point of view is concerned, it is important to underline that higher indirect taxation of consumption goods does not seem to raise major problems regarding a politically and socially acceptable distribution of the tax burden, since the increase in tax rates can be designed such that it approximately offsets the gain in purchasing power due to lower import tariffs. The major effect of an indirect tax hike is hence a market price increase for domestically produced consumption goods relative to imported substitutes. Domestic producers might therefore encounter reduced domestic demand for their products. Thus, unless the Syrian consumption goods industries could increase their exports, domestic production in these industries would fall. Given the almost constant volume of GDP at factor cost under various scenarios of trade liberalization, this implies that the government response to reduced tariff revenues might eventually induce a reduction of GDP. It might therefore be advisable to combine the increase in indirect taxes with stimulating measures in the design of direct taxation.

This last remark raises the difficult issue of a general reform of the Syrian tax system – an issue which by far exceeds the prospects and problems of trade liberalization. However, given the present state of the Syrian tax system it is not completely unlikely that a mandatory redesign of foreign trade taxes under an Association Agreement also initiates a redesign of the whole tax system, which has a reputation of being inefficient, see Corm, 1997a. I will therefore comment on some features of the Syrian tax system which should be considered by tax reform strategists. I will subsequently discuss some budgetary measures which are likely to increase economic efficiency. Finally, I will point out some rather primitive steps that

could be taken in order to compensate for reduced tariff revenues if the Syrian government were unwilling to initiate major changes in its current budgetary policies.

Indirect taxation in Syria is achieved by a great number of different taxes. The precise number of indirect taxes remains unclear, as the nature of some taxes (i. e. direct versus indirect) is difficult to determine. The Syrian authorities list 22 indirect taxes in their account of revenues in the 1999 „consolidated“ budget (i. e. excluding PSF resources). This number, however, is probably too small. Corm, 1997a, argues that a more conventional classification would lead to 32 different taxes being classified as „indirect“. This number would have to be increased by seven surcharges and the indirect taxes attributable to the Price Stabilization Fund.

Whatever the correct number of indirect taxes may be, many of these are very weak in terms of volume. The administrative cost of tax collection may hence be larger than actual revenue for a substantial number of taxes, so that their removal would actually benefit the government sector and increase allocative efficiency of resources due to reduced deadweight losses. Among the top candidates for taxes to be eliminated on grounds of insufficient tax revenue are, e. g., the duties on television sets, arms‘ permits duties, irrigation fees, various excises, for instance on fuels, sugar, salt, hunting, mines and quarries, taxes on entertainments, taxes on agricultural production, and fees on the notary public.

Besides mere abolition of inefficient indirect taxes, a restructuring of the main domestic taxes seems recommendable. Currently, much of the indirect tax revenue on domestic production is levied in terms of excises, mostly on goods from government protected monopolies. This induces two important and distortive asymmetries: First, selected goods bear a certain tax burden which other goods do not. Second, the government sector carries most of the indirect tax burden, while the private sector pays only very few indirect taxes. While a certain legitimation for this sort of indirect taxation may consist of arguing that the indirect tax load is paid from monopoly rents and therefore tends to correct for monopoly-induced allocative failures, the first best solution to handle negative effects of monopolized markets would still embody an increased degree of competition on these markets and not asymmetric indirect taxation.

It seems thus recommendable to develop the system of excises and related indirect taxes into a general ad-valorem tax on domestic transactions. In a first step, paying tribute to capacity restrictions in the tax collecting administration, the introduction of a general sales tax seems advisable. This general sales tax should exempt raw materials and semi-finished goods, however, so that the tax design includes features similar to a value added tax. In addition, it might be useful to specify lower tax rates for capital goods than for consumption goods, since this would make it possible to implement proper compensating measures for the reduction in import tariffs and would simultaneously support the growth enhancing provisions of Investment Law No. 10. Clearly, in a second step, the general sales tax should be developed into a full value added tax when sufficiently qualified staff and capacity is available in the government administration.

Direct tax revenues are predominantly business taxes and taxes on labor income, where the revenue of the former is far larger than the revenue of the latter. Here again, the public sector contributes to total tax revenues to a much larger extent than the private sector. Three reasons for the weak private sector contribution are suggested by Syrian government officials: First, incomes from the agricultural sector are not taxed, second, various exemptions to business profits are granted under Investment Law No. 10, and third, many private entrepreneurs and

self-employed are suspected to incorrectly declare their income as so low as to be exempted from tax or not to declare entrepreneurial income at all.

It is therefore of prime concern to broaden the tax base. The subsidy of agricultural activities implicit in the exemption of agricultural income from direct taxes may be difficult to abolish, both on political and social reasons. Moreover, the fact that agricultural income is also tax free in e. g. neighboring Jordan may strengthen resistance against efforts to levy income taxes on this large and economically significant sector. We therefore suggest to use a stepwise approach which consists of tax reform measures that make agricultural incomes taxable in principle but keep it effectively without a significant tax burden. Specifically, the introduction of a negative income tax in the sense of Friedman might serve this purpose well: It could be tuned such that today's average agricultural income is tax free, with lower than average incomes receiving small subsidies and higher than average incomes paying rather low taxes. As this measure would change the status quo only slightly, it will probably not meet more than a manageable degree of opposition. However, two important goals would be achieved: First, the government would emphasize that in principle any kind of income is subject to taxes, and second, assuming normal economic growth in the years ahead, agricultural incomes would rise and therefore induce a slowly rising tax contribution of the agricultural sector.

We do not propose to tackle the second important cause of weak private sector tax contributions, the tax exemptions for the returns on investment projects under Investment Law No. 10. The relative success of this law, visible in the strong growth of private sector activity in the last ten years suggests that the stimulating effects of Investment Law No. 10 broaden the tax base so much that this effect outweighs the lost tax revenue from the granted exemptions. In fact, a continuation and reinforcement of Law No. 10 may be called for. In particular, remaining restrictions on investment activities should be lifted, for example the requirement that companies benefiting from the law must be partially owned by Syrian citizens. Also, investors should be allowed to purchase rather than rent land and to freely convert local currency into foreign exchange at the relevant black market rates. Clearly, this would imply that the 25 percent surrender requirement for non-agricultural export earnings would be lifted for projects benefiting from Investment Law No. 10.

Finally, incorrect tax declarations can be fought not only by tighter controls and punishments but also by reduced average and marginal tax rates. Currently, marginal tax rates may be as high as 65 percent, providing strong incentives for tax evasion. (By comparison, marginal tax rates in Jordan are 30 percent for personal incomes and at most 35 percent for corporate incomes). Further, the unification of the various individual income taxes currently in existence is also likely to reduce loopholes for citizens seeking to minimize their tax burden.

To sum up, a reduction in foreign trade taxes could be compensated by an increase in indirect taxation in particular on consumption goods. The introduction of a general sales tax with different tax rates applied to raw and semi-finished materials, capital, and consumption goods should be considered. Such a reform of the indirect taxation system would replace the current system of specific excises which relies on an extremely narrow tax base and hardly reaches the private sector. As tax reform measures are equally suggestive for the current system of direct taxes, we propose to unify income taxation by the introduction of a negative income tax whose design at the time of introduction is tuned so as to approximately match the effective current tax load of the lower income groups of the Syrian society.

While tax reform measures are suggestive, they are by far not the only possible means of compensation for reduced tariff revenues. Alternatively (or supplementary), the government

might contemplate a reduction of government expenditures. For instance, the staff in the government exceeds 800,000 people (almost 20 percent of the work force) and it has a reputation of being very unproductive. We therefore suggest to reduce public employees to an undeniably necessary number, while simultaneously raising their wages to a level which is competitive with private sector earnings. Despite the wage increase, this measure would probably result in a significant reduction of labor cost.

In addition, a review of other expenditure components may be warranted. Little is known about the structure and effectiveness of public investments, but it is quite conceivable that higher controling and monitoring efforts would save considerable resources. Further, a more or less gradual reduction of food subsidies should be considered, in particular if support for the poorest part of the population could be ensured by the introduction of a negative income tax, see above. Similarly, the implicit fuel oil subsidy induced by selling fuel at prices lower than the world market price, could gradually be eliminated. Government procurement prices for cotton and wheat could also be reviewed for the possibility of a stepwise realignment with world market prices.

So far, the Syrian government has not encouraged any discussion of public enterprise privatization. However, it is difficult to see convincing evidence for large-scale productive activities of the state under a government policy which cautiously moves towards a market economy. Since under these conditions privatization will be an issue sooner or later, it is suggestive to discuss this in the context of necessary adjustments under the Association Agreement. Clearly, the extra revenue from privatization of public enterprises could be quite helpful if the government feels that budgetary pressures due to reduced import tariffs are particularly tight in a transition period of a couple of years. However, an equally appealing way of handling the privatization revenue would consist in a reduction of the considerable amount of government debt, such that future debt service obligations could be significantly reduced. Such a reduction in interest and debt repayment would be particularly attractive if it were true that Syrian oil reserves will be depleted in the not too far future, thereby causing the loss of large oil-related revenues in the government budget.

The strong dependence of government revenues on oil-related proceeds is highly problematic in the light of very limited proven oil reserves. As pointed out earlier in this report, some estimates suggest that oil reserves may not last longer than approximately ten more years. This prospect constitutes a fiscal challenge whose importance far outweighs the problems caused by reduced import tariff revenues, although the latter may certainly reinforce the former to a certain extent, in particular if there is further delay in signing and ratifying the Association Agreement. As such it seems sensible to suggest that the Syrian Ministry of Finance should make use of oil-related proceeds in a way consistent with their possibly transitory nature: This kind of revenue should be earmarked for profitable government investment projects, the proceeds of which could, in later years, partially compensate for lower oil-related government receipts. By contrast, budget projections over the next ten years should be designed such that current government expenditures could be financed from non-oil sources only at the time of likely depletion of oil reserves.

Finally, besides the complex and politically possibly hazardous issues of tax reform and expenditure realignment a seemingly easy way of fiscal compensation for reduced import tariff revenues should be mentioned: The facilitation of import procedures along with a simplification of the tariff structure and improved information on foreign trade regulations. In the course of this research we have experienced many, but certainly not all of the difficulties a European exporter of goods to Syria is likely to encounter. To illustrate these, consider first of

all the issue of information and imagine to be German exporter who would like to find out about import regulations in Syria:

There is, to our knowledge, no internet site which would provide any information on applicable tariff and exchange rates, let alone supplementary regulations. Neither the Syrian embassy nor consular representations in Germany are able to communicate tariff information, nor is the German embassy in Damascus. Phone calls to the Syrian customs department (by a person fluent in Arabic) do not yield the desired result; it is difficult to get through in the first place and if successful one is handed from one official to the other without finding the person who would know. Similar experiences are made with phone calls to the Syrian Ministry of Economics and Foreign Trade. Written requests to both institutions are not answered. The German Ministry of Economics sustains an Information Center for Foreign Trade (Bundesstelle fürAußenhandelsinformation) which does have the full tariff schedule – alas without the applicable customs exchange rates. The information center is, in fact, not even aware that different customs exchange rates apply. Thus, information on the tariff rates alone is at best misleading and next to worthless. A German-Syrian Chamber of Commerce does not exist. Information on the Damascus Chamber of Commerce and the Syrian Consulting Bureau for Development and Investment (SCB) found in the internet provide outdated email adresses so that electronic requests bounce back. GHORFA, the Arabic-German Association for Trade and Industry does not have any tariff information either. While very cooperative, this Association capitulates after three months of fruitless efforts to obtain the relevant information from Syrian authorities. Neither the IMF, nor the World Bank, the United Nations, the World Trade Organisation (WTO) or various trade centers have more than just the most general information on Syrian import tariffs. The last Syrian official publication which collects foreign trade information (if one is able to get hold of it), dates back from 1995, so that many recent changes are not included.

By contrast, the same exporter might contemplate exporting his goods to Jordan. In this case, the complete tariff information (in the Harmonized System (HS) classification) is just a few mouseclicks away and links to the correct URL are found at many places in the internet. It thus seems fair to say that insufficient information is probably a major impediment to Syrian trade, and as little effort as an up-to-date internet site with the relevant regulations could easily increase the volume of Syrian imports and hence import tariff revenues.

Second, a (revenue neutral) simplification of the tariff structure might also encourage imports and raise import tariff revenues. Currently, an importer must pay attention to nominal tariff rates, the relevant customs exchange rate, the surcharge labelled „unified tax on imports“, the statistics fees and the license fees. In addition, he needs to know the precise classification of his products according to the outdated CCCN nomenclature and possibly further disaggregated by the products‘ nature and intended usage. In particular, traders unfamiliar with Syrian foreign trade taxation might find this system confusing and be deterred from the Syrian market. Consequently, unifying all charges in a single import tariff rate and classifying according to the widely used HS nomenclature might also encourage trade and raise import tariff revenues.

Finally, bureaucratic regulations could be reduced and facilitated. Currently, importing into Syria requires a lot of time and patience. Licenses have to be obtained, quality standards respected, residence has to be proved, availability of foreign exchange and its proper origin must be documented, rules of origin certified, and the authorities must be convinced that the importer complies to the Arab League boycott of Israel. Further complicated documentation is required if the importer wants to benefit from exemptions, reduced rates or regulations of

Investment Law No. 10. Last but not least, corruption in the customs department or elsewhere in the administration must be dealt with. In short, any attempt by the Syrian government to facilitate the bureaucratic requirements can only have trade-enhancing effects.

Summing up, various measures at the administrative level are possible that would likely stimulate foreign trade even if the effective tariff rates remained unaltered. Given the large and purely administrative impediments to trade currently existing, it is not unlikely that the inevitable loss of tariff revenues under an Association Agreement with the European Union could be made up for by removing these non-tariff barriers to trade. As pointed out in the discussion of the economic effects of trade liberalization, the removal of non-tariff barriers is likely to have stimulating effects on domestic production, as this kind of reform, unlike reduced import tariffs, also induces a significant benefit to the Syrian industry. This is not to say that the issues of tax reform and critical inspection of expenditure policies should be discarded. But it seems that these important measures of economic reform could be approached independent of budgetary pressures to increase government revenues, if the administration were willing to discontinue an effectively import-deterring regime of foreign trade regulations.

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