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Impact of Trade Liberalization on Agricultural Sector in Jordan

Final Report  
June 2006

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## **Abstract**

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This report presents the results of analysis of the impact of trade liberalization on Jordan's agricultural sector and proposes recommendations to assist the Ministry of Agriculture in laying out a trade strategy to meet international competition under the Doha Round of World Trade Organization negotiations. Using an economic model, the report examines the likely overall impact of trade, assesses the possible winners and losers, and the likely effects of maintaining border protection through a list of Special Products. The analysis was undertaken in collaboration with Mr. Aimen Al Husni of the Trade Agreements Unit of the Ministry of Agriculture.

## **Abbreviations and Acronyms**

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AOA	Agreement on Agriculture (WTO)
AMS	Aggregate Measure of Support
ATPSM	Agricultural Trade Policy Simulation Model
EU	European Union
FTA	Free Trade Agreement (or Area)
FAO	Food and Agriculture Organization
GAFTA	Greater Arab Free Trade Area
GDP	Gross domestic product
GSP	Generalized System of Preferences
JD	Jordanian Dinar (1 JD = 1.41 US\$)
LDC	Least Developing Country
MOA	Ministry of Agriculture
MFN	Most Favored Nation
SP	Special Products
STE	State trading enterprise
TRQ	Tariff Rate Quota
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

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## **Executive Summary**

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The objective of this study is to examine the impact of trade liberalization on Jordan's agricultural sector and to propose recommendations to assist the Ministry of Agriculture (MOA) in laying out a trade strategy to meet international competition.

Production value of agricultural products is estimated at JD 615.0 million (US\$ 878.6 million) in 2003, for which livestock products account 63 percent and vegetable products for the remaining 37 percent. The poultry sector is the major contributor to agriculture value accounting for 30 percent, followed by fruit and vegetables that each contributes an additional 16 percent; live animals and dairy products account for 13 percent and 12 percent, respectively.

Jordan is a net importer of agricultural and food products. Agri-food trade surged in 2004 (exports rose by 27 percent and imports rose by 38 percent; accordingly and since 2002, the trade balance deficit doubled. Imports account for about 70 percent of Jordan's agri-food consumption, and nearly one-half of domestic agricultural production is exported. Jordan's agriculture exports are highly concentrated in few products such as fresh vegetables (mainly tomatoes, cucumbers), fresh fruits (watermelon, strawberries, dates), and olive oil. Imports are more widespread and include a few food products such as cereals, meat, sugar, and processed products.

Agri-food exports are concentrated in few markets (Greater Arab Free Trade Agreement [GAFTA] and the European Union [EU]), while imports originate in a greater number of countries. Jordan has a trade surplus in agri-food with GAFTA countries while it has a trade deficit with all other major trade partners. The largest trade deficit is with the European Union that is double in value compared with the trade deficit with the United States.

Jordan has signed preferential trade agreements with 17 Arab countries (GAFTA), the United States, European Union, and Singapore, and it is in negotiations with other trade partners for further FTA. More than 95 percent of Jordan's agricultural exports benefit from preferential access in GAFTA, E.U. and U.S. markets, while almost 52 percent of agriculture imports enter Jordan under preferential tariffs (either duty free or reduced tariffs).

The likely impact of agriculture trade liberalization on the Jordanian economy as discussed in the World Trade Organization (WTO) Doha Round was simulated by using the Agricultural Trade Policy Simulation Model (ATPSM). The results indicate that:

- Jordanian producers of most agricultural commodities are expected to benefit from higher world prices for products for which export subsidies/credits are eliminated and domestic subsidies are reduced.
- Jordanian breeders and processors are expected to lose (cost of inputs, such as cereals, and raw material rise) but benefit from higher prices for their output.
- Jordan's consumers of most food products are expected to lose (higher prices for most food products) with the notable exception of beef consumers (world price of beef is expected to fall).
- The Government of Jordan is expected to lose in terms of lower customs duties than it currently collects.
- Jordan generally benefits from i) expanded export opportunities and ii) increased competitiveness (lower production cost in the medium to long term).

- In case a number of agricultural Special Products maintain their border protection in Jordan while trade liberalization is carried out as above in developed countries, it is expected:
  - a general increase in Jordan's export receipts (and improvement of trade balance) and a growth of producer surplus;
  - a general decrease of consumer surplus and of government revenues; and
  - Jordan loses out in terms of welfare with losses in consumer welfare and budget more than offsetting gains in producer welfare.

## **1. Background**

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Jordan's agricultural sector continues to face problems in adapting to the new global disciplines of market access since the country initiated liberalisation in 1994. Most recently, one of the main reasons for the country's inability to respond to changing economic conditions is that it was unable to take full advantage of the WTO Agreement of Agriculture, such as the special safeguard provision and flexibility afforded in setting tariffs. Further, constraints on marketing Jordanian agricultural products have represented a major obstacle to access new and existing markets. Therefore, in recent years expected benefits have not been fully realized from Jordan's efforts aimed at building the agricultural economy on the basis of comparative advantage and competitiveness in price and quality of produce, and at reducing subsidies and striking a balance in natural resources for agricultural and non-agricultural uses.

Statistics support the lacklustre performance of agriculture in Jordan. The contribution of the sector to gross domestic product (GDP), at current prices, steadily declined from 14.4 percent in 1971 to 2.1 percent in 2003. This decline was not limited to the relative importance of agriculture in overall economic activity, but also to the poor performance of its absolute value, which decreased from about JD 223 million in 1991 to JD 146 million in 2003. Food exports over the same period exhibited large fluctuations in value. The lowest value was JD 86 million in 1991, while the highest was JD 181 million in 1997, compared with JD 156 million in 2003. The value of imported food commodities exhibited similar fluctuations: in 1994 food imports recorded a minimum value of JD 410 million; in 1996, they reached a maximum level of JD 686 million compared with JD 560 million in 2003. Accordingly, the food trade balance showed a continuous deficit with a maximum of JD 526 in 1996 compared with JD 400 million in 2003.

Economically, the comparative advantage of the Ghor area of Jordan, especially its early production season, is still not fully exploited. National efforts in water harvesting that can provide additional resources for irrigation are still modest. The promising Shafa-Ghor areas with suitable rainfall, ideal for the production of early fruits with minimum supplementary irrigation, have also not yet been fully exploited. The great potential to develop natural rangeland has also been ignored in spite of the impact of such development on protecting natural resources and the environment, decreasing imports of animal feed, and integrating plant and livestock production.

Socially, agriculture significantly contributes to increasing incomes of rural families through involvement of rural women in family income-generating activities, such as cottage farming, livestock production, and processing of agricultural products. Agricultural development creates job opportunities and provides additional sources of income for the rural population that would help to alleviate poverty and control migration from rural areas, thus sparing urban areas from additional pressures on their services and the national economy the burden of creating more job opportunities.

Regarding environmental benefits, agriculture had and still has a crucial role in protecting natural resources of land, water, and natural vegetation from deterioration, and in maintaining the productive capacity of these resources for sustainable development and protection of agrobiodiversity. Not less important, agriculture can mitigate the impacts of new environmental problems such as the increasing use of treated wastewater.

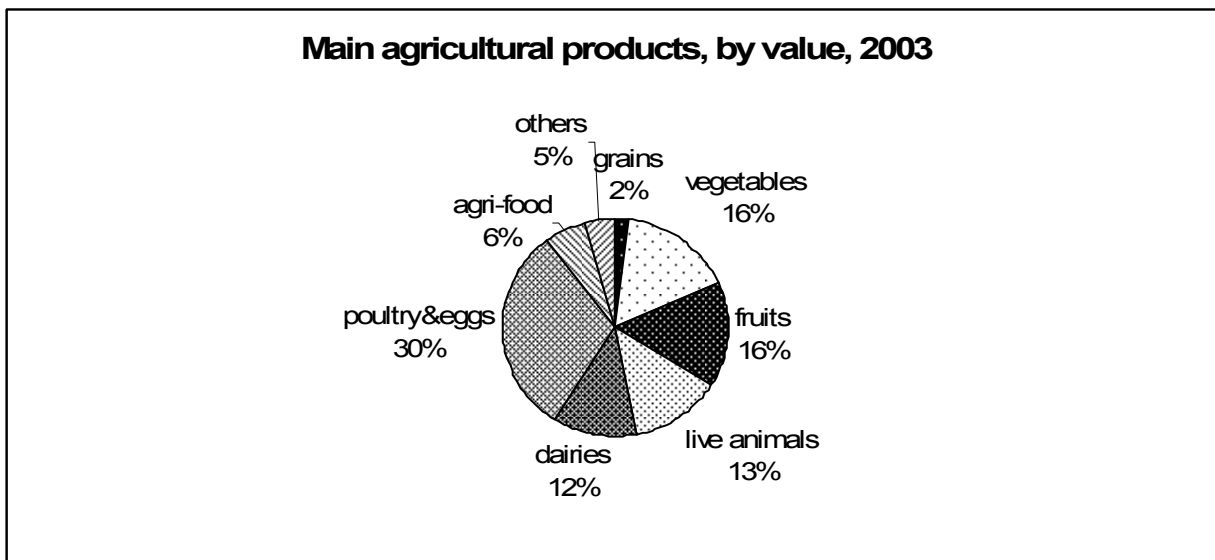
The objective of this study is to examine the impact of trade liberalization on Jordan's agricultural sector and to propose recommendations that will assist the Ministry of Agriculture (MOA) in laying out a trade strategy to meet international competition.



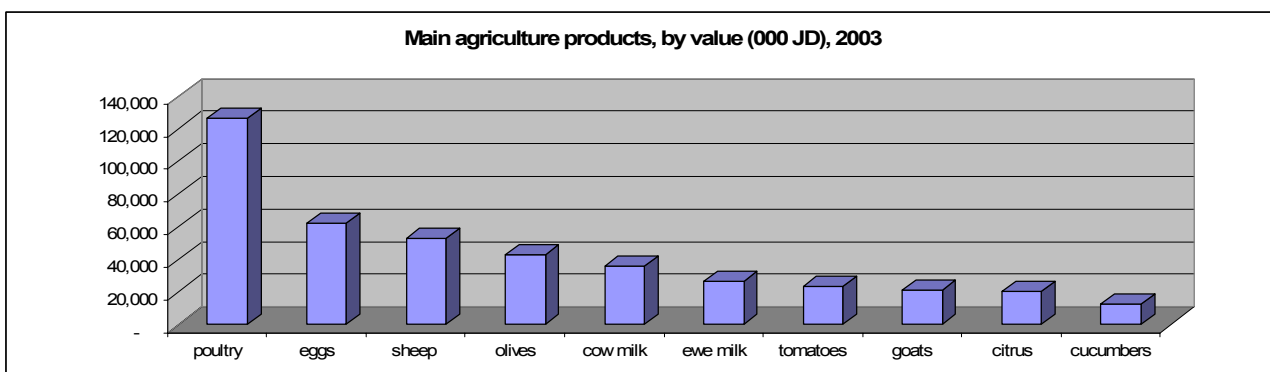
## 2. Jordan's Agriculture Production

Jordan's agricultural sector heavily depends on rain for irrigation, and seasonally fluctuating production creates a heavy reliance on agricultural imports, though Jordan does manage to export some produce. Most agricultural produce (over 60 percent) is grown in the Jordan Valley, located below sea level in a warm, temperate year-round climate offering ideal conditions for planting vegetables and fruit. The highlands also contribute to agricultural production, but more in cereals and field crops, and seasonally, to a lesser extent, in fruits and vegetables. The semi-arid region's agricultural production is negligible.

Production value of agricultural products was estimated at JD 615 million (US\$ 878.6 million) in 2003, to which livestock products contributed 63 percent and vegetables the remaining 37 percent. The poultry sector was the major contributor to agriculture value in 2003 accounting for 30 percent, followed by fruit and vegetables that added an additional 16 percent each; live animals contributed 13 percent to total agriculture value and dairy products accounted for 12 percent.



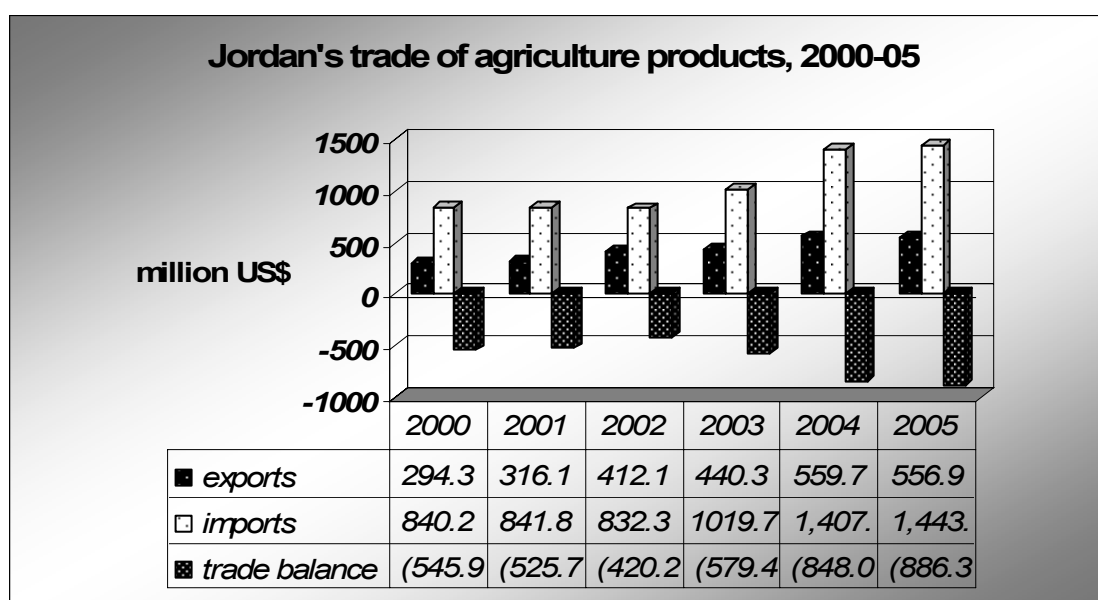
Poultry meat was the main product accounting for 21 percent of agricultural value in 2003, followed by eggs (10 percent), sheep (9 percent), olives (7 percent), cow milk (6 percent), ewe milk and tomatoes (4 percent each), goats and citrus fruits (3 percent each) and cucumbers (2 percent).



### 3. Jordan's Agriculture and Food Trade

Jordan is a net importer of agricultural and food products. In 2005, total agricultural and food exports amounted to US\$ 557 million, while imports totalled US\$ 1,443, resulting in a trade deficit of US\$ 886 million. Compared with the previous year, in 2005 exports were slightly lower, while imports and the trade deficit increased over the last few years. Agri-food trade surged in 2004 (export value rose by 27 percent and import value rose 38 compared with 2003) and the trade balance deficit doubled since 2002.

Imports account for about 70 percent of Jordan's agri-food consumption, while exports represent about one-half of domestic agricultural production. Jordan's agriculture exports are highly concentrated in few products such as fresh vegetables (mainly tomatoes and cucumbers), fresh fruit (watermelons, strawberries, and dates), and olive oil. On the contrary, imports are more varied and include a few food products such as cereals, meat, sugar, and processed products.



Agri-food exports are concentrated in few markets (Greater Arab Free Trade Agreement [GAFTA] and the European Union [EU]), while imports are sourced from a greater number of countries. In 2005, the GAFTA market absorbed nearly all exports (92 percent) and about one-quarter (26 percent) of imports, while the EU market accounted for 2 percent of Jordan's exports and 17 percent of imports of agri-food products. Jordan's other major suppliers of agri-food are the United States (8 percent of imports), Argentina (6 percent), Indonesia (6 percent), India (4 percent), China (3 percent), Australia, Brazil and Malaysia (2 percent each) – see Table 1.

Jordan has a trade surplus in agri-food with GAFTA countries while it has a trade deficit with all other major trading partners. The largest trade deficit is with the European Union that is double in value compared with the deficit with the United States.

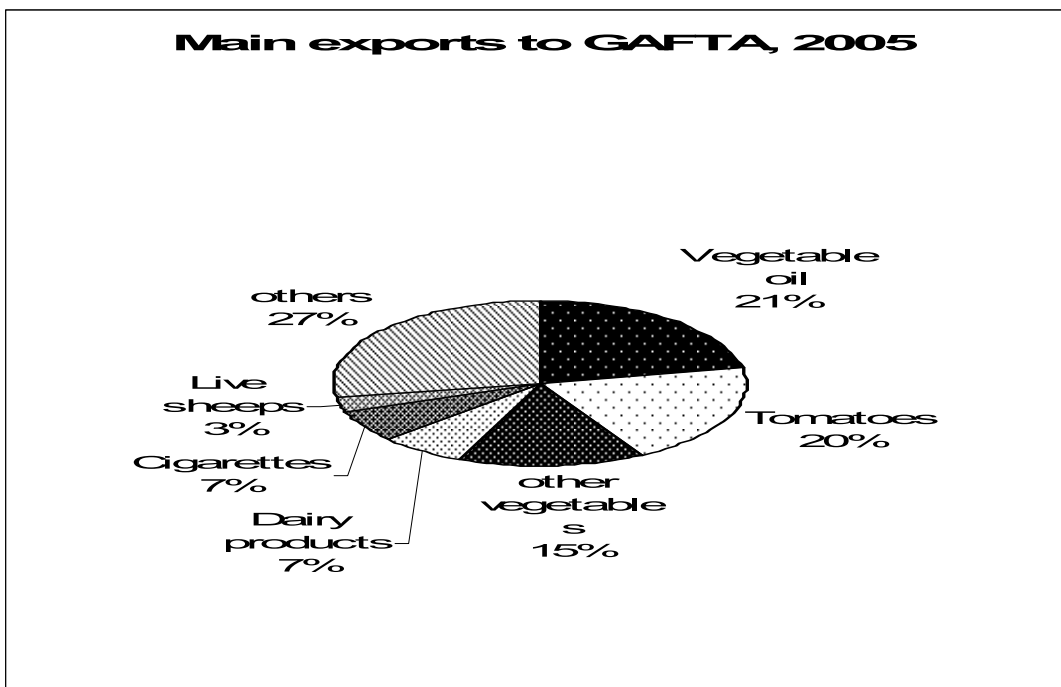
**Table 1: Jordan's main trade partners, 2005**

Partner	Exports		Imports		Trade balance
	JD	Share	JD	Share	JD
GAFTA	365,247,807	92.4%	266,887,392	26.0%	98,360,415
EU-25	9,026,218	2.3%	178,682,035	17.4%	(169,655,817)
USA	2,049,705	0.5%	85,701,955	8.4%	(83,652,250)
Argentina	-	0.0%	59,907,275	5.8%	(59,907,275)
Indonesia	-	0.0%	57,779,679	5.6%	(57,779,679)
India	15,045	0.0%	42,840,386	4.2%	(42,825,341)
China	-	0.0%	27,966,040	2.7%	(27,966,040)
Australia	302,226	0.1%	25,105,829	2.5%	(24,803,603)
Brazil	5,561	0.0%	24,234,152	2.4%	(24,228,591)
Malaysia	1,584	0.0%	20,994,770	2.0%	(20,993,186)
Turkey	1,704,289	0.4%	17,804,489	1.7%	(16,100,200)
New Zealand	11,867	0.0%	17,034,498	1.7%	(17,022,631)
Thailand	38,537	0.0%	8,820,099	0.9%	(8,781,562)
others	16,953,117	4.3%	190,895,994	18.6%	(173,942,877)
<b>Total</b>	<b>395,355,956</b>	<b>100.0%</b>	<b>1,024,654,593</b>	<b>100.0%</b>	<b>(629,298,637)</b>

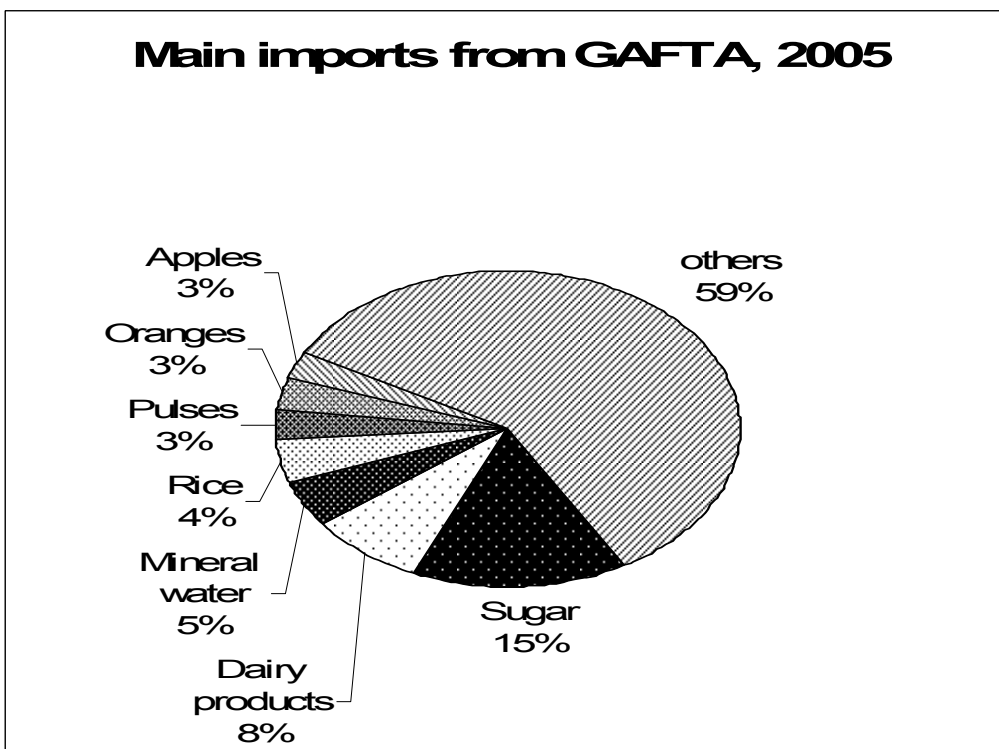
Jordan has signed preferential trade agreements with 17 Arab countries (GAFTA), the United States, the European Union and Singapore, and is in negotiations with other trade partner (e.g., Turkey) for further free trade agreements (FTA). More than 95 percent of Jordan's agricultural exports benefit from preferential access in GAFTA, E.U. and U.S. markets, while almost 52 percent of agriculture imports enter Jordan under preferential tariffs (either duty free or reduced tariffs).

### 3.1 Trade within GAFTA

Trade with GAFTA trade partners has been duty free since January 1, 2005. Exports to GAFTA markets amounted to JD 365.2 million (US\$ 521.7 million) and accounted for 92.4 percent of total agri-food exports in 2005. Main export markets in that year were Iraq (47 percent of total agri-food exports), Syria (10 percent), the Gulf countries (Emirates 10 percent, Kuwait 6 percent, Saudi Arabia 5 percent, Qatar 4 percent, Bahrain 3 percent) and Lebanon (4 percent). Jordan's main exports of agricultural products were olive oil (21 percent of agri-food exports to GAFTA), tomatoes (20 percent), other vegetables (15 percent), dairy products (7 percent), cigarettes (7 percent), and live sheep (3 percent).



In 2005, imports from GAFTA countries amounted to JD 266.9 million (US\$ 381.3 million) and accounted for 26 percent of total agri-food imports. Main suppliers of agri-food products were Syria (7 percent of total agri-food imports), Saudi Arabia (6 percent), Egypt (5 percent), Emirates (3 percent) Lebanon (2 percent). Jordan’s main imports of agricultural products in 2005 were sugar (15 percent of agri-food imports from GAFTA), dairy products (8 percent), mineral water (5 percent), rice (4 percent), oranges, apples, and pulses (3 percent each).



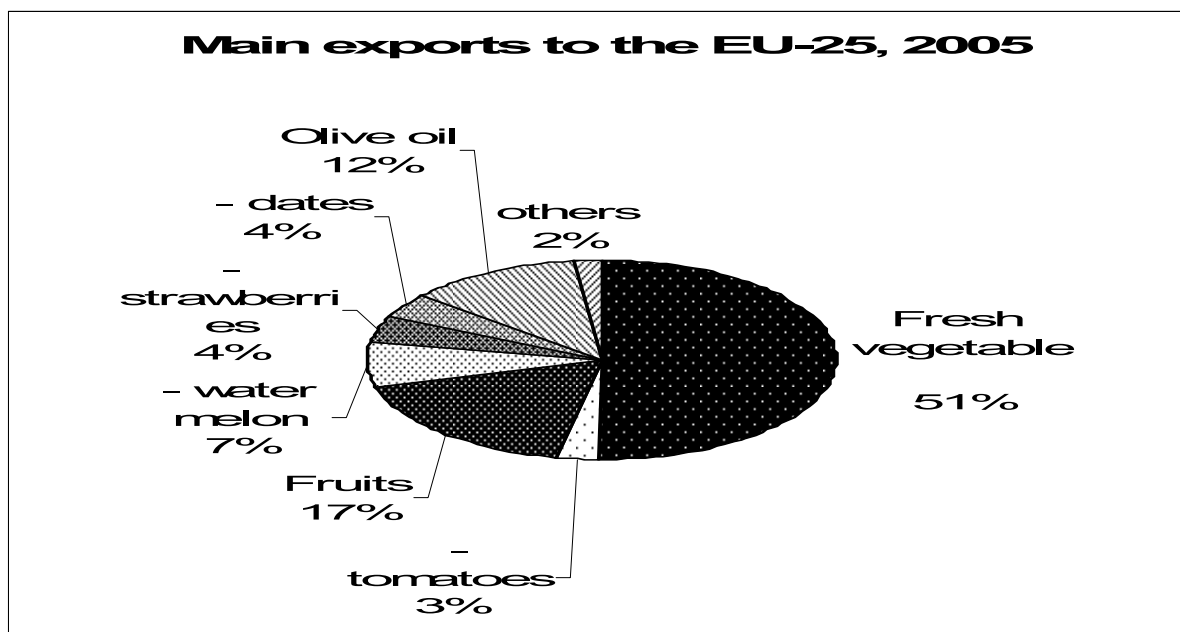
A preliminary analysis of imports shows that some products are likely to be re-exports rather than exports of products originating in the GAFTA countries. For instance, sugar is by far the main product imported from GAFTA; in 2005 sugar imports originated from Saudi Arabia (7.2 percent of total import value from GAFTA), Emirates (6.4 percent) and Egypt 1.3 percent. While Egypt is

indeed a producer of sugar, both Saudi and Emirates are likely to be net importers of this commodity. In case the sugar imported from these countries does not originate in GAFTA countries, imports into Jordan should be subject to import duties rather than entering duty free in accordance with “origin of product” provisions of the FTA. Given the possibility of a significant loss in revenue, it would be beneficial for the MOA and Jordan Customs to closely examine certificates of origin for agricultural products.

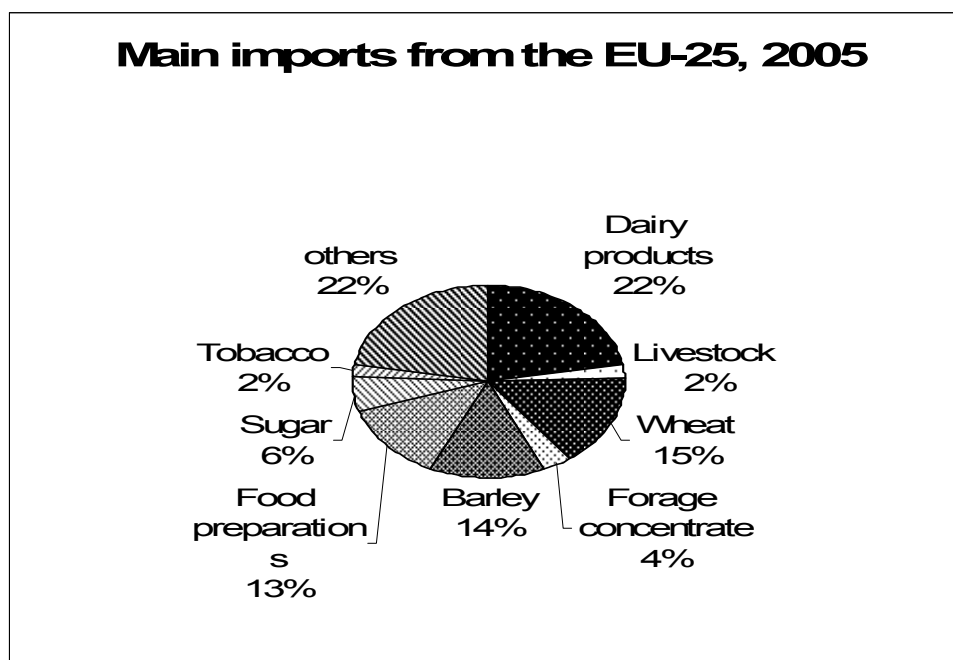
### 3.2 Trade with the European Union

Jordan and the European Union have signed an FTA that entered in force in 2002. In general, the FTA is asymmetric in favour of Jordan but the latter has been unable to fully benefit from preference provided by the Agreement. For instance, Jordan was unable to fulfil most of the duty free tariff quota for exports to the EU market. In 2005 Jordan and the European Union agreed to further liberalise bilateral trade from 2006, when most tariff quotas are to be eliminated and *ad valorem* tariffs will be reduced or eliminated (for export to the EU market). However, certain seasonally adjusted specific duties for export to the European Union (mainly fresh fruit and vegetables) remain in place; duty free quotas remain on exports of cut flowers, potatoes, garlic, cucumbers, citrus, strawberries, and olive oil. In addition, duties on imports of certain alcoholic beverages and tobacco products from the European Union will not be abolished. Regarding Jordan’s imports, duty on imports of poultry meat, olive oil, refined sugar, meat preparations, and certain tobacco products remain in place.

Jordan’s main exports to the EU markets are fresh vegetables (accounting for more than one-half of agri-food exports to the EU-25 in value), in particular tomatoes and cucumbers; also important are fresh fruit (17 percent) (especially watermelons, strawberries, and dates,) and olive oil (12 percent). Olive oil is sold both in bulk (mainly to Spain) or bottled (mainly to the United Kingdom); the latter exports with added value command a unit price that is more than double than the exports sold in raw form.



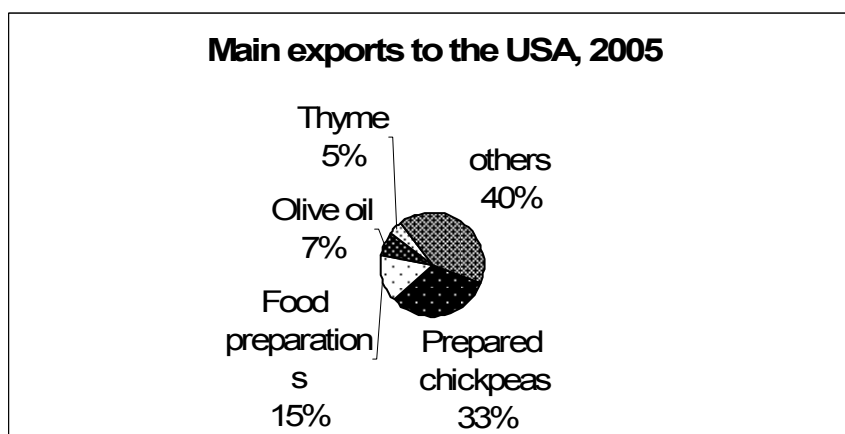
Jordan’s main imports from the European Union are dairy products (accounting for 22 percent of agri-food imports from the EU-25 in value), wheat (15 percent), barley (14 percent), food preparations (13 percent), and sugar (6 percent).



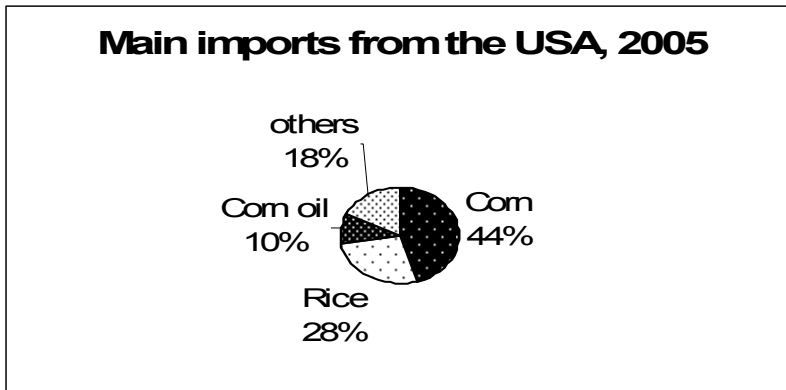
### 3.3 Trade with the United States

Jordan and the United States signed a FTA that entered in force in 2001. In general, the FTA is asymmetric in favour of Jordan with import tariffs applied to Jordan's exports to the U.S. market being lower than for U.S. exports to Jordan. The U.S. average FTA import tariffs for agricultural products is about 0.1 percent in 2006, while Jordan's average FTA import tariffs for agricultural products ranges between 5.5 percent and 16.1 percent in 2006. Duties on certain agricultural products will be eliminated gradually by 2010.

The United States is too distant a market for Jordan's exports of fresh fruit and vegetables, hence main exports are food preparations such as prepared chickpeas (33 percent of agri-food exports to the U.S. market in value terms) and other prepared food (13 percent); exports of olive oil (7 percent) and thyme (5 percent) are also important.



Jordan imports mainly corn (44 percent of imports from the United States in value terms), corn products (vegetable oil 10 percent), and rice (28 percent).



## 4. WTO Doha Round Negotiations

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### 4.1 Background

The primary objective of the WTO Agreement on Agriculture is to reduce distortions in world trade in agricultural products. Trade distortions targeted for elimination at the WTO include border measures such as tariffs, domestic support for agriculture, and export-related subsidies, which confer competitive advantage on farmers who receive them.

The WTO Fourth Ministerial Conference, held in Doha in November 2001, concluded with an agreement on the launch of a new round of negotiations to further liberalize world trade, known as the Doha Development Agenda. The Doha Declaration commits WTO members to substantial cuts in market protection and trade-distorting domestic subsidies as well as reductions of, with a view to phasing out, all forms of export subsidies. At the same time, it committed members to take account of non-trade concerns (e.g. environment, rural and social development, animal welfare) and to negotiate special and differential treatment for developing countries. The Doha Round negotiations on agriculture have focused on three main pillars: domestic support, market access, and export competition. Below are the most recent developments.

### 4.2 Domestic support

The overall base level of all trade-distorting domestic support, as measured by the final bound total aggregate measure of support (AMS) plus permitted *de minimis* level and the level for the so-called Blue Box payments<sup>1</sup> will be reduced according to a tiered formula. Under this formula, members having higher levels of trade-distorting domestic support will make greater overall reductions in order to achieve a harmonizing result. As the first installment of the overall cut, in the first year and throughout the implementation period, the sum of all trade-distorting support will not exceed 80 per cent of the sum of Final Bound Total AMS plus permitted *de minimis* plus the Blue Box. The latter level should not exceed 5 percent of a member's average total value of agricultural production during an historical period to be yet agreed on.

There will be three bands for reductions in Final Bound Total AMS and in the overall cut in trade-distorting domestic support, with higher linear cuts in higher bands. In both cases, the member with the highest level of permitted support will be in the top band, the two members with the second and third highest levels of support will be in the middle band and all other members, including all developing country members, will be in the bottom band.

### 4.3 Market access

To ensure that a single approach for developed and developing country members meets all the objectives of the Doha mandate, tariff reductions will be made through a tiered formula that takes into account their different tariff structures. To ensure that such a formula will lead to substantial trade expansion, the following principles will guide its further negotiation:

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<sup>1</sup> Subsidies are referred to as 'boxes' in WTO terminology: green refers to those that are permitted, amber means those that are to be reduced, and red refers to those that are forbidden. In the WTO Agreement on Agriculture, there are no red box, although blue box exists. Exemptions for developing countries also exist, that are often referred to as 'S&D box'. Blue Box payments cover grants that are partially de-linked from production, *viz.*, payments that are based on fixed areas and yields or heads of livestock, and are not available to promote production. For more details, see [http://www.wto.org/english/tratop\\_e/agric\\_e/agboxes\\_e.htm](http://www.wto.org/english/tratop_e/agric_e/agboxes_e.htm).



- Tariff reductions will be made from bound rates. Substantial overall tariff reductions will be achieved as a final result from negotiations.
- Each member (other than least developing countries (LDCs)) will make a contribution. Operationally effective special and differential provisions for developing country members will be an integral part of all elements.
- Progressivity in tariff reductions will be achieved through deeper cuts in higher tariffs with flexibilities for sensitive products. Substantial improvements in market access will be achieved for all products.
- There will be four bands for structuring tariff cuts.

The number of bands, the thresholds for defining the bands, and the type of tariff reduction in each band remain under negotiation. The role of a tariff cap in a tiered formula with distinct treatment for sensitive products will be further evaluated.

Members may designate an appropriate number, to be negotiated, of tariff lines to be treated as sensitive, taking account of existing commitments for these products. The sensitive products listing should not undermine the overall objective of the tiered approach and the principle of ‘substantial improvement’ shall apply to each product.<sup>2</sup>

Some most-favored nation (MFN)-based tariff quota expansion will be required for all such sensitive products. A base for such an expansion will be established, taking account of coherent and equitable criteria to be developed in the negotiations. In order not to undermine the objective of the tiered approach, for all such products, MFN based tariff quota expansion will be provided under specific rules to be negotiated taking into account deviations from the tariff formula.

#### **4.4 Export competition**

In the Doha Round, the discussions on export competition on the negotiating agenda include explicit export subsidies, export credits, food aid and state trading enterprises. The negotiating mandate calls for ‘the parallel elimination of all forms of export subsidies and disciplines on all export measures with equivalent effect by a credible end date’.

At the Sixth WTO Ministerial Conference held in Hong Kong in December 2005, the WTO membership agreed to end export subsidies in agriculture by 2013, with a substantial part realized by the mid-point of the implementation period (around 2010). The declaration makes clear the agreed date is conditional. Loopholes have to be plugged to avoid hidden export subsidies in export credit, food aid and the sales of exporting sales enterprises. For cotton, the elimination of export refunds is accelerated to the end of 2006. In addition, cotton exports from least-developed countries will be allowed into developed countries without duty or quotas from the start of the period for implementing the new agriculture agreement.

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<sup>2</sup> ‘Substantial improvement’ will be achieved through combinations of tariff quota commitments and tariff reductions applying to each product. However, balance in this negotiation will be found only if the final negotiated result also reflects the sensitivity of the product concerned.

## **5. Impact Analysis of the Elimination of Export Subsidies and Reduction of Domestic Subsidies and Tariffs using the ATPSM**

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### **5.1 Background**

The Agricultural Trade Policy Simulation Model (ATPSM) is a global trade model designed primarily for simulating agricultural trade policies, notably in the context of the Uruguay Round Agreement on Agriculture (AOA). The United Nations Conference on Trade and Development (UNCTAD) and the Food and Agriculture Organization (FAO) jointly developed the model. The primary objective in its use is to assist trade negotiators, policy analysts, and others interested in the assessment of the effects of various negotiating proposals and of the AoA itself once negotiated. An advantage of this model over other models of this type is that it covers virtually all countries, including developing and least developed countries.

The model can simulate the effects of a range of trade policy instruments, notably:

- Reduction of out-of-quota (or MFN) tariffs, either by a certain percentage, or with the tariff harmonizing Swiss formula
- Reduction of in-quota tariffs
- Expansion of tariff rate quota (TRQ) volumes
- Reduction of domestic subsidies
- Reduction of export subsidies.

The model is also flexible in that a user can define a group of countries and/or a group of commodities (e.g. cereals). Different reduction rates can be applied to selected countries and commodities, individually or to groups. This is a very useful advantage for analyzing the impact of, for example, special treatment to some countries and/or commodities.

The ATPSM has, however, a number of limitations. All commodities are assumed to be tradable, i.e., there is no independent behaviour for domestic prices. There are no other domestic policies besides the Amber Box subsidies, or those that will be reduced. All agricultural commodities are assumed to be homogeneous and so there is perfect substitution among goods produced in different countries, an assumption that may not always hold.

Similarly, the model does not account for the possibility of countries exerting market power, though it is well-known that international trade of several agricultural products is often concentrated in a small number of companies. Being a comparative static model, all non-price developments in supply and demand are not captured. Finally, there is no income variable in the model.

An additional problem is data accuracy for certain countries, including Jordan. Original model data (dated 2004) on production, exports and imports of Jordan are not accurate. The data in the model have been replaced with a new set of data obtained from UNCTAD in March 2006. Although the new set of data is an improvement over the original one, differences still exist. For example, certain production and trade flows are underestimated, while other data are overvalued.<sup>3</sup> Nonetheless, the

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<sup>3</sup> For instance, estimated data in the model on production and export of tomatoes are much lower than actual data but estimated producer prices are much higher than actual values. This is because the prices used in the model are a weighted price of fresh and processed tomatoes, while Jordan's main exports are fresh tomatoes. As a result, the production value of tomatoes in the model is nine times that estimated by Jordan's statistical office. However, since most of vegetables produced and traded by Jordan are not included in the model, the item tomatoes in the model can be used as a proxy of total vegetable production plus olive oil (the model's production value for fresh vegetables is double

result of simulation is still valid in terms of trends of welfare, production and trade flows and can be used for analysis of the likely impact of agricultural trade liberalization on producers, consumers and budget revenues.

The ATPSM model has been used to test the effect of the elimination of export subsidies and the reduction of domestic subsidies and import tariffs as discussed in the WTO Doha Round on Jordan's agriculture. The model includes estimation of export subsidies and export credit, domestic subsidies, and tariffs for the period 1999-2001, the same period of reference as for production and trade data. Jordan's production value in the model is generally higher than the actual value (year 2003) in the cases of vegetables (ratio 2 to 1) and fruit (ratio 1.2 to 1), significantly higher for hides and skins (ratio 20 to 1), but similar in the case of poultry.

The model includes (world) export subsidies and export credits for a total of US\$ 2.9 billion, therefore equalling last available data on export subsidy (US\$ 2.7 billion) and export credit (about US\$ 200 million).<sup>4</sup> Although this level of subsidies is probably higher than actual one, the balance can be considered as a proxy of the export subsidy equivalent due to the activities of exporting state-trading enterprise (STE) and the commercial displacement of part of food aid. The model also includes (world) domestic subsidies for US\$ 55.8 billion that account for 3.4 percent of (model) global production value.

## **5.2 Effects of export subsidies and credits on world and Jordanian markets**

Export subsidies depress world prices for agricultural products. While subsidies harm unsubsidized producers, they make goods cheaper for consumers. Countries that import most of their food—including many developing and least-developed countries—worry that the elimination of export subsidies will raise the price of food for their consumers. Therefore, the elimination of the export subsidy will favour producers of subsidized commodities (in countries that do not subsidize) and increase the cost for food for consumers. Jordan is expected to lose out in terms of total welfare, with loss of consumers and budget revenues more than offsetting gain from producers of most subsidized commodities.

Export credits have an effect on the world market similar to export subsidies, thus they reduce world prices for agricultural products. They therefore harm unsubsidized producers but favour consumers that pay lower prices. Countries that import most of their food --including Jordan-- will likely lose out from the elimination of export credit because this will raise the price of food for their consumers. Producers of subsidized commodities will benefit from the WTO elimination of the export credit while consumers will spend more for purchasing their food.

All food aid is potentially trade-distorting since it has the potential both to reduce domestic production of food in the recipient country, damaging the livelihoods of rural populations, and to displace exports into the recipient country market from other countries. Use of food aid for commercial displacement usually has the most damaging effect on trade as its effects equal those of export subsidies. The likely effect of food aid for commercial displacement is therefore to reduce the world price of the displaced commodity. The elimination of this kind of food aid would provoke an increase in price for those commodities. Jordan's producers of cereal will benefit from the

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the actual values and 50 percent higher than actual fresh vegetables plus olive oil. Olive oil has a supply demand balance similar to tomatoes being a net-exported product that can be both sold fresh (table olives) or processed (tomato paste and olive oil).

<sup>4</sup> Since the products included in the model are a selection of total agri-food products rather than the totality, the consultant would have expected that the level of export subsidization would be higher than the one notified to the WTO.

elimination of this type of food aid, while consumers of the same commodities are likely to pay higher prices.

The activities of export STEs have a different impact on Jordan exports and imports. The effect on Jordanian exports are negative because the activities of export STEs result in larger export volumes at the world level, therefore the world price is lower than if export STEs did not operate. As a result the price that Jordanian export gets on the world market is lower (for instance in the case of vegetables, though STE effects is limited for these products). On the contrary, for Jordanian imports, activities of export STEs have the opposite effect, because the import price is lower with Jordanian consumer and processors benefiting and producer losing out (for instance in the case of wheat and wheat flour). Because most export STEs operate in food markets of products that Jordan imports, an improvement of WTO rules dealing with STEs are expected to have a total negative impact in terms of welfare, with a decrease of consumer surplus and customs revenues but an increase of producer surplus.

### **5.3 Effects of domestic subsidies on world and Jordanian markets**

Domestic subsidies result in higher production, higher exports and lower imports by the country that provides subsidies. Unsubsidized farmers are less competitive and can produce and export less. More production favours a rise in exports that depress world prices of the subsidized products. Consumers of subsidized commodities benefit from low prices while producers (in countries that do not subsidize them) lose out in terms of i) depressed price for their products and ii) reduced export potential.

Reduction of domestic subsidies leads to risen export potential for other producers and higher world prices. Producers (in other countries) are expected to gain from the reduction of domestic subsidies while consumers likely to lose out due to higher prices.

### **5.4 Effects of imports tariffs on world and Jordanian markets**

Import tariffs have a protection effect on domestic production and lead to higher prices that stimulate domestic production but depress consumption. Producers benefit from high price and consumer lose out.

Reduction of tariffs liberalizes domestic market, increase competitiveness and improve export potential of the more competitive producers. Consumers benefit from reduced prices but uncompetitive producers lose out.

In some cases, tariff cuts may lead to an influx of cheaper imports that might threaten local production (but consumers generally benefit).

### **5.5 Scenario simulation**

In the ATSPM simulation, the effect of the agriculture trade liberalization was simulated by applying the elimination of all export subsidies, the reduction of domestic subsidies (the highest for the European Union, then the United States and Japan, medium for other developed countries, lower for developing countries), and the reduction of tariffs (significant for developed countries, relatively so for developing countries). This is a simplification of the much more complex trade liberalization mechanism that, however, is still under negotiation at the Doha Round. The simulation is, nonetheless, considered adequate for providing Jordanian WTO negotiators with an

understanding of the likely impact (at least in terms of trends if not of magnitude of changes) of proposed trade liberalization on domestic farmers, processors, consumers and budget.

The following trade liberalization scenario was simulated using the ATSPM:

	Tariff cuts	Domestic subsidies	Export subsidies
<b>Developed countries</b>	50%	50%	100%
<b>- European Union</b>	50%	75%	100%
<b>- United States &amp; Japan</b>	50%	65%	100%
<b>Developing countries</b>	25%	30%	100%

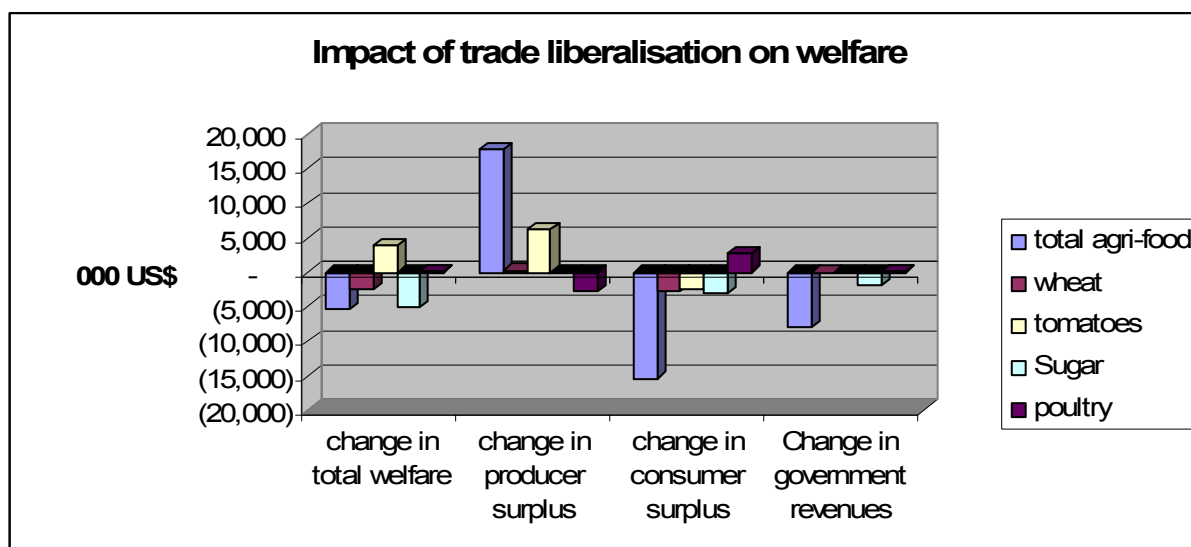
## 5.6 Impact analysis of agricultural trade liberalization

The impact of the above trade liberalization on Jordan agri-food sector is overall negative, with total welfare declining by US\$ 5.5 million. Producers are projected to gain significantly with producer surplus growing by US\$ 17.8 million, while consumers will lose out in terms of lower consumer surplus (minus US\$ 15.3 million). Budget is also to lose from the world-wide trade liberalization of the agriculture sector with government revenues projected to fall by US\$ 8.0 million or 14 percent of current import duty revenues from agri-food sector in terms of lower customs duties collected (see Table 2). Among major commodities, change in total welfare is positive only for tomatoes, beef, powder milk and poultry, negative for wheat, cheese, barley and sugar.

**Table 2. Major winners and losers in terms of welfare, Jordan (US\$ '000)**

Impact	Total agri-food	Wheat	Powder milk	Cheese	Beef	Barley	Tomatoes	Sugar	Poultry
Change in total welfare	(5,469)	(2,353)	1,113	(1,780)	1,718	(1,797)	3,794	(5,015)	229
Change in producer surplus	17,837	285	1,992	439	(221)	315	6,333	(99)	(2,658)
Change in consumer surplus	(15,317)	(2,638)	(1,181)	(1,979)	3,302	(2,112)	(2,412)	(3,162)	2,755
Change in government revenues	(7,989)	-	302	(240)	(1,363)	-	(126)	(1,753)	133

The elimination of export subsidies and reduction of domestic subsidies result in an increase of world prices for main-traded commodities. As a result, wheat and barley world price rise, Jordan's bread consumers and livestock breeders lose out in terms of welfare (consumer surplus decline significantly). World prices of sugar also increase (sugar is one of the most subsidized commodities world-wide) and the loss in terms of consumer surplus is the largest for Jordan. Budget also loses because of the 25 percent reduction of import duty being sugar a major import.



World price of fresh vegetables (tomatoes in the model) also increases and Jordan exporters are projected to gain significantly in term of welfare (producer surplus); domestic consumers are likely to lose out but the balance is positive because exports of fresh vegetables are larger than domestic consumption.

Although world price of poultry is expected to rise, domestic prices of poultry meat are projected to fall (by 1 percent) because the cut of tariffs more than offset the rise of world prices. As a result, imports of poultry meat increase and consumer benefit from lower prices (consumer surplus rises); producers lose out and there is a small gain for the budget because the increased imports more than offset the cut of tariffs (from 30 percent to 22.5 percent *ad valorem*).

Positive change in total welfare for beef is explained with the fact that world price and Jordan's price of beef is projected to fall (world price by 3 percent, Jordan's producer price by 4 percent and consumer's by 5 percent) determining a significant positive impact on consumer surplus. This price reduction is somewhat surprising considering that beef is one of the products that receive significant protection in term of tariff and subsidies and at world-level it would indeed be expected that trade will bring about an increase of price. However, it is likely that the general increase of food price will result in a shift in consumption pattern from relative "expensive" meat (e.g. beef, i.e. products with relatively high demand elasticity to price) to cheaper substitute products (e.g. poultry), thus determining lower demand for beef resulting in their price fall.<sup>5</sup> Because of this consumer price fall, domestic consumption of beef is projected to increase, thus also determining a rise in imports as well as of domestic production even with lower producer prices.

The significant impact on dairy producers is hardly surprisingly, due to the fact that, in aggregate, they represent almost half of total world export subsidies and 27 percent of domestic support included in the ATPSM, therefore the trade liberalization determines a significant growth of their world price (up by 22 percent for powder milk and by 10 percent for cheese). The impact on domestic production of milk is limited while more important is on Jordan's production of cheese that increases by 6 percent. More significant is the impact of the price change on consumers, that reduces significantly the consumption of (powder) milk (-11 percent) and cheese (-3 percent). As a result export increases by respectively 1 percent and 14 percent. The impact in terms of welfare is

<sup>5</sup> The model does not take in consideration change in total consumer income, therefore a general increase of food price will determine a shift of consumption depending on direct and substitution price elasticity.

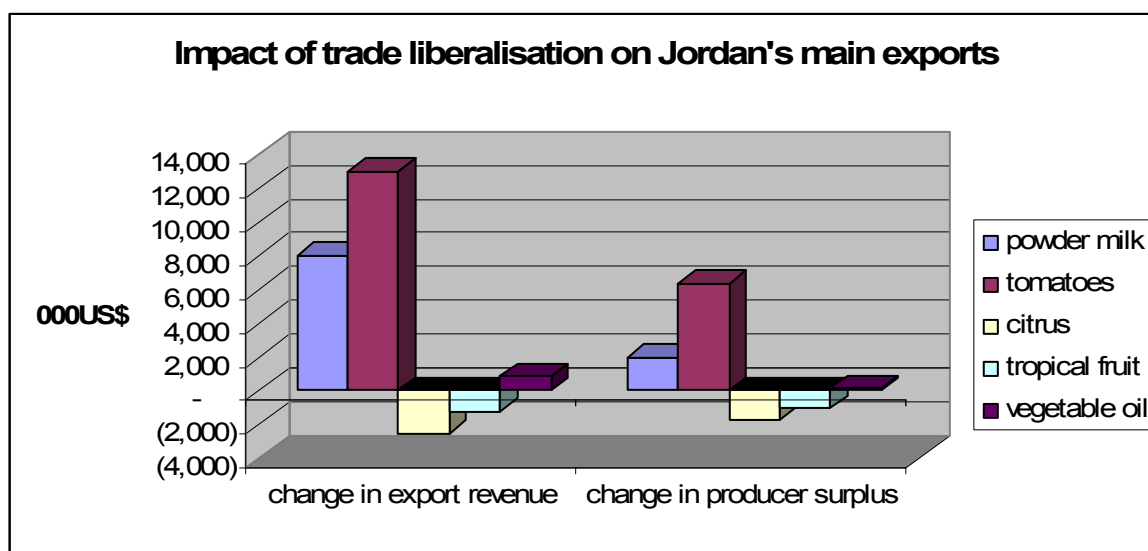
dual: positive for milk with gains by producers more than offsetting the loss of consumers and negative for cheese with significant loss of welfare for consumers.

Among major export products, Jordan’s tomato (vegetables), milk, vegetable oils and livestock (including hides and skins) producers will benefit more from the trade liberalization, mainly in terms of welfare - respectively US\$ 6.3 million (tomatoes), US\$ 2.0 million (milk), US\$ 0.9 million (livestock)<sup>6</sup>, vegetable oil (US\$ 0.1 million).

**Table 3. Effects of trade on Jordan’s main exports (US\$ ‘000)**

Impact	Livestock	Powder milk	Tomatoes	Citrus	Tropical fruit	Hides & skins	Vegetable oil	Subtotal
Change in export revenue	583	8,034	12,988	(2,507)	(1,228)	9,553	845	28,269
Change in producer surplus	878	1,992	6,333	(1,714)	(1,065)	13,394	120	19,938
Share in exports	1%	12%	62%	3%	2%	3%	12%	95%

Tomato (vegetables) producers will also benefit in terms of increased export receipts (US\$ 13.0 million), as also will happen for milk producers (US\$ 8.0 million), while the export of vegetable oils is likely to increase by less than US\$ 1 billion and that of livestock is projected to increase by less than half a million US\$. Producers of most fruits are projected to lose from the trade liberalization, in particular citrus fruit (minus US\$ 1.2 million in exports and a fall of US\$ 1.0 million in producer surplus).

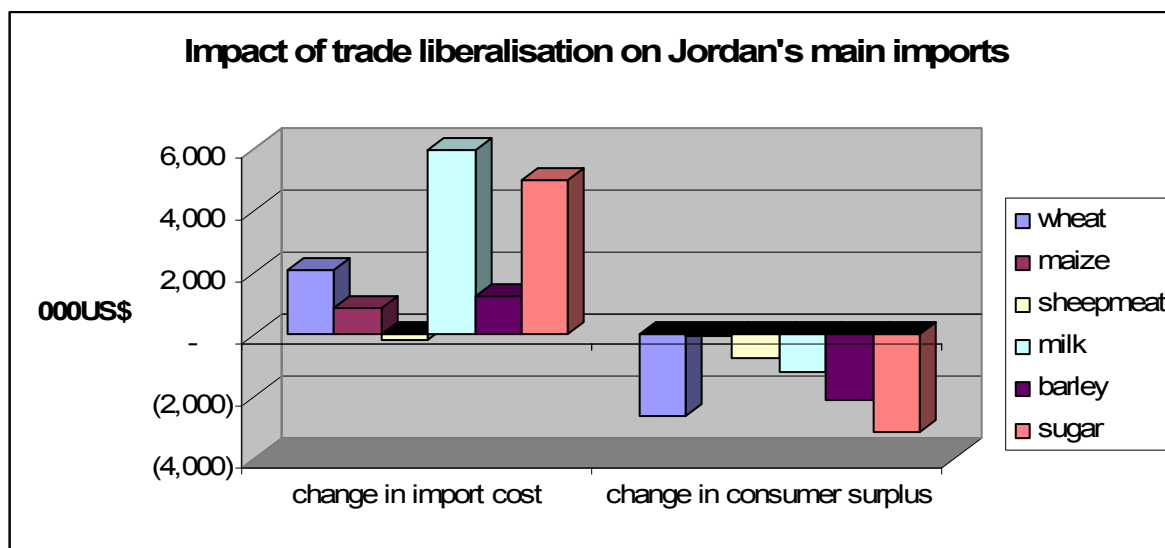


Among main imports, the Jordan’s consumers of beef are the only ones to benefit significantly (a gain of US\$ 3.3 million in consumer surplus) from the trade . The biggest losers will be the consumers of sugar (minus US\$ 3.2 million of welfare), wheat products (minus US\$ 2.6 million), barley (minus US\$ 2.1 million), powder milk (minus US\$ 1.2 million) and mutton (minus US\$ 0.8). Import expenditures will increase significantly for milk (plus US\$ 6.0 million), sugar (plus US\$ 5.0 million), wheat (plus US\$ 2.1 million) and barley (plus US\$ 1.3 million), with import expenditures for maize, beef, rice and pulses also increasing but less significantly. On the contrary, expenditure on sheep meat is expected to decline because of price increase with consumer surplus also to fall.

<sup>6</sup> The model seems to significantly overestimate the importance of hides and skins both in terms of production (by 20 times in term of production value) and exports (by three times, since in 2005 exports of skins averaged 1 percent of agri-food exports).

**Table 4. Effects of trade on Jordan's main imports (US\$ '000)**

	Beef	Wheat	Maize	Pulses	Sheep- meat	Milk	Rice	Barley	Sugar	Subtotal
Change in import cost	35	2,123	893	52	(168)	5,963	358	1,268	5,000	8,899
Change in consumer surplus	3,302	(2,638)	(17)	(92)	(767)	(1,181)	(79)	(2,112)	(3,162)	(1,392)
Share in imports	11%	8%	10%	4%	4%	5%	4%	5%	12%	63%



**Box 2 Effect of trade on FTAs**

The agricultural trade negotiated at the WTO Doha Round is expected increase market access of members mainly through the cut of import tariffs.

Jordan has signed FTAs with its main trade partners, notably the 17 GAFTA countries, the EU-25 and the United States. These FTAs foresee preferential access for Jordanian goods into those markets in terms of duty free entry (GAFTA), reduced tariffs and duty free tariffs quotas (United States and European Union). Jordanian goods entering these markets pay no or reduced duties, thus resulting more competitive *vis-à-vis* goods originating in non-FTA countries. For instance, Jordan olive oil (price 5 US\$ per litre) can enter a GAFTA market duty free while a possible non-FTA competitor (same price) has to pay, say, a 10 percent import duty. Jordan's olive oil price results more competitive (less expensive) on that market because cost 10 percent less: i.e., Jordan olive oil costs US\$ 5 a litre, while that of a competitor' costs US\$ 5.5 a litre

In case of above trade (tariffs cut by 25 percent for GAFTA), the import tariff on live oil is 25 percent lower (say 7.5 percent rather than 10 percent *ad valorem* as before the tariffs cut). As a result, the cost of olive oil sold by the competitor of the GAFTA market is just 7.5 percent higher than Jordan's olive oil, i.e. Jordan olive oil will cost US\$ 5 a litre and that of the competitor will cost US\$ 5.375 a litre.

The trade has resulted in an erosion of the trade preference for the FTA exporter. This preferential erosion is not captured by the simulation<sup>7</sup> but in general exporters of agricultural and food products will likely lose out because of trade preference erosion in GAFTA, E.U. and U.S. markets. Jordan's exports of agri-food to preferential trade markets account for more than 95 percent of total exports. However, this loss is expected to be limited because most of Jordan's competitors (other Arab countries on GAFTA markets; MENA countries on the E.U. market; Mexico and countries benefiting from the General System of Preferences (GSP) on the U.S. market) will also suffer from similar tariffs preference erosion.

<sup>7</sup>The model permits such analysis (though complex) but data on production and trade, including bilateral trade, in the model should be improved before such a simulation could be performed to guarantee robustness of simulation results.



## 6. Impact Analysis of Agricultural Trade Liberalization with Special Products Listing Using the ATPSM

Jordan has the possibility to list a number of sensitive agricultural products in a Special Product (SP) list for which most of the above-described trade liberalization will not apply. Under the Doha Round negotiations, developing countries may have the flexibility to designate an appropriate number of products as SP, based on criteria of food security, livelihood security and rural development needs. The trade liberalization of the Special Products will be more flexible. Criteria and treatment of special products have still to be agreed upon at the Doha Round.

A provisional list of Jordan's SP includes the following products: fresh vegetables, fresh fruits, olive oil, and poultry. An ATPSM simulation has been carried out to analyse the impact of such a listing on Jordan and compare the results in absence of such listing. Because the treatment of SP is still uncertain, the SP option has been included in the model by foreseeing that the no tariff cut will apply for the listed products within the general agricultural trade liberalization.

### 6.1 Effect of Special Products listing for Jordan

Special Product listing will impact on the access of trade partners to the Jordanian market. Tariffs for the listed products is expected to not be cut --or a limited cut or tariff quota could be envisaged for permitting a minimum market access commitment for all products to be achieved under the Doha Round. Because of the SP listing, border protection for these products will be maintained or lightly reduced (e.g., through tariff quotas), while border protection of non-listed products will be reduced by the level still to be agreed upon.

The SP listing will have a limited impact on world market prices (the effects of subsidy elimination or reduction and the tariffs cut by developed countries will stand), but may have a significant impact on domestic prices for developing countries. Jordan's SP listing is expected to impact negatively on consumers and positively on domestic producers of listed products but also have secondary effects on other products because of the substitution effects (as outlined by supply and demand elasticities).

### 6.2 Scenario simulation

In the ATPSM simulation, the effect of SP listing is applied by not cutting the import tariffs of SP products while import tariffs for non-SP products are cut by 25 percent. For developed countries, the same parameters apply as in the previous simulation. As a result, Jordan's SP products remain protected by the existing tariffs while border protection of non-SP products is cut by one quarter.

The following scenario was simulated using the ATPSM:

	Tariff cuts	Domestic subsidies	Export subsidies
<b>Developed countries</b>	50%	50%	100%
- European Union	50%	75%	100%
- United States & Japan	50%	65%	100%
<b>Developing countries</b>	25%	30%	100%
- Jordan –SP products	0%	30%	(*)
- Jordan –non-SP products	25%	30%	(*)

(\*) Jordan is not allowed to provide export subsidies under the WTO.

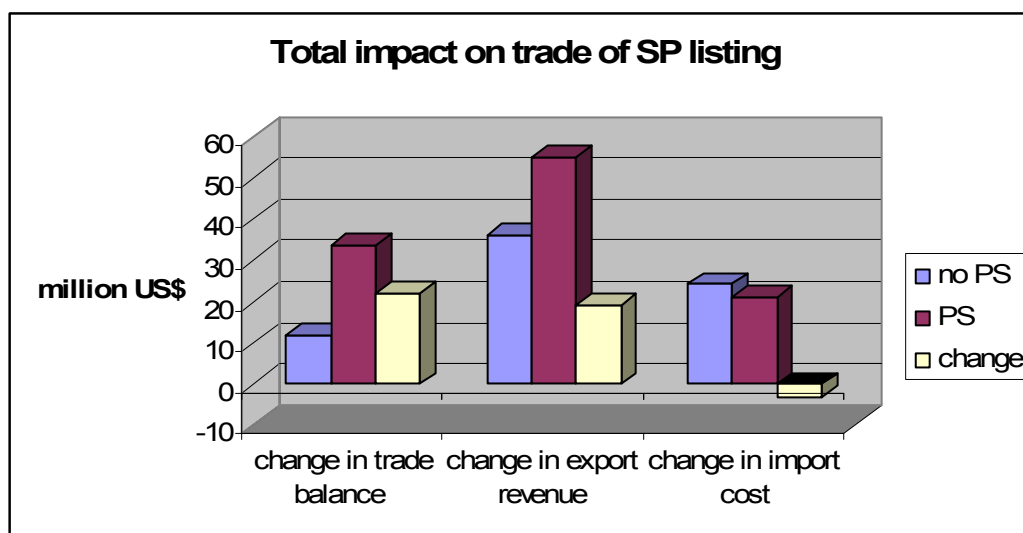
### 6.3 Impact analysis of trade liberalization and SP listing

The SP listing of fresh fruits and vegetables, olive oil,<sup>8</sup> and poultry is projected to have a general positive effect on Jordan's trade balance but an overall negative impact on Jordan's welfare (see Table 5).

**Table 5. Effects of trade with and without SP listing for Jordan (US\$ million)**

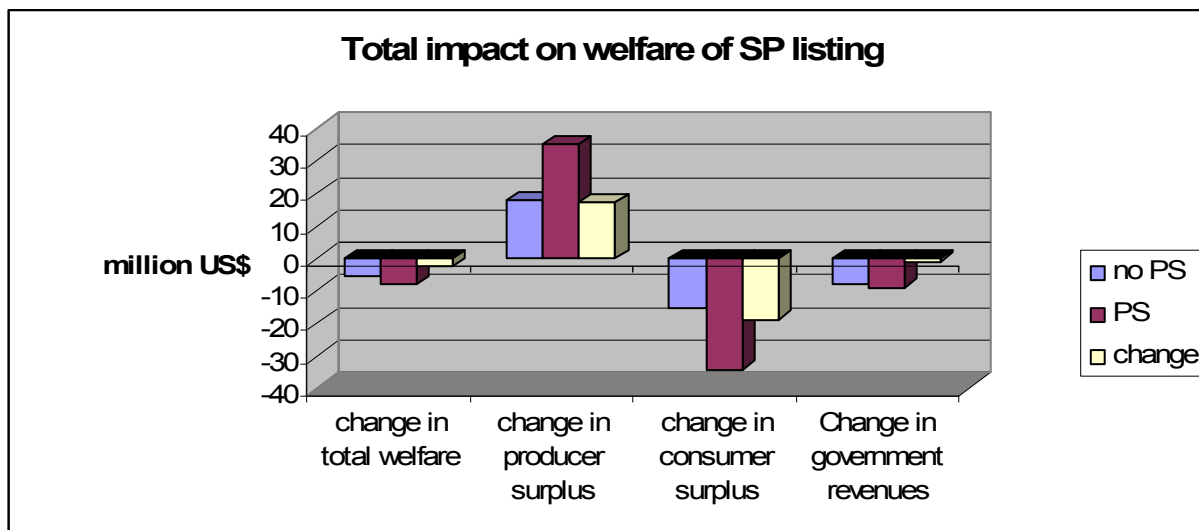
Impact	No SP	SP	Change	No SP	SP	Change	No SP	SP	Change	No SP	SP	Change
	Poultry			Vegetables			Fruit			Total		
Change in trade balance	(2.2)	5.6	7.8	12.5	14.3	1.8	(7.5)	4.8	12.3	11.8	33.8	22.0
Change in export revenue	(0.2)	5.7	5.9	13.0	14.4	1.4	(4.2)	5.0	9.2	36.0	55.1	19.0
Change in import cost	2.0	0.0	(1.9)	0.5	0.0	(0.4)	3.3	0.1	(3.1)	24.3	21.3	(3.0)
Change in total welfare	0.2	(0.0)	(0.2)	3.8	4.1	0.3	0.1	(0.8)	(0.9)	(5.5)	(8.0)	(2.5)
Change in producer surplus	(2.7)	6.6	9.2	6.3	7.2	0.9	(3.9)	3.6	7.5	17.8	35.0	17.2
Change in consumer surplus	2.8	(6.6)	(9.3)	(2.3)	(3.2)	(0.8)	6.4	(4.4)	(10.8)	(15.3)	(34.0)	(18.7)
Change in government revenues	0.1	0.0	(0.1)	(0.2)	0.0	0.2	(2.4)	0.0	2.4	(8.0)	(9.0)	(1.0)

Export receipts are indeed projected to increase significantly more than in absence of SP listing, while import expenditures are likely to decline; the total impact is estimated in an increase of agri-food trade surplus by US\$ 22 million.



However, consumer surplus is projected to decline significantly (minus US\$ 18.7 million) more than offsetting the benefit in terms of producer surplus (plus US\$ 17.2 million) while government receipts are projected to decline by US\$ 1.0 million. The resulting impact of SP listing on Jordan's total welfare is a net loss of US\$ 2.5 million.

<sup>8</sup> As said above, most fresh vegetables and olive oil that represent a significant share of Jordan's output and exports are not included in the model. However, Jordan's data and particularly prices of tomatoes are largely overestimated and the latter product can be assumed as a proxy for all fresh vegetables and olive oil to interpret trade. As in the case of tomatoes, Jordan's production of other fresh vegetables and olive oil is predominantly exported (and imports are small or nil); correspondingly, the effects of trade in terms of welfare and trade change are similar for all these products.



Poultry’s export receipts are projected to increase significantly and trade balance is likely to shift from a deficit of US\$ 2.2 million (no SP listing) to a surplus of US\$ 5.6 million (SP listing). In terms of welfare, the listing of poultry among SP is expected to have a small negative impact (minus US\$ 0.2 million) with gains by producers more than offsetting by losses by consumers.

Fresh vegetables (and olive oil) export revenues are also expected to increase (plus US\$ 1.4 million) but less than in the case of poultry. In terms of welfare, there is a small gain (US\$ 0.3 million) due to increase in budget receipts (two-thirds) and producer surplus more than offsetting the fall of consumer welfare (one-third).

The listing of fresh fruits in SP results in significant gains in export receipts (plus US\$ 9.2 million) and trade surplus (plus US\$ 12.3 million) but a loss of US\$ 0.9 million in terms of total welfare. The latter is the result of the significant loss in terms of consumer surplus (minus US\$ 10.8 million) that more than offset the gain in producer welfare (US\$ 7.5 million) and that in budget revenues from the unchanged tariff regime (plus US\$ 2.5 million).

## **7. Conclusions**

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The likely impact of the outcome of Doha Round negotiations on Jordan's agriculture and food sector is the following:

- Producers of most agricultural commodities are expected to benefit from higher world price for products for which export subsidies/credits are eliminated and domestic subsidies are reduced.
- Breeders and processors are expected to lose (cost of inputs, such as cereals, raw material rises) but benefit from higher prices for their output.
- Consumers of most food products are expected to lose (higher prices for most food products) with the notable exception of beef consumers (world price of beef is expected to fall).
- The Government of Jordan is expected to lose in terms of lower customs duties collected.
- Jordan generally benefits from:
  - An expansion in export opportunities
  - An increase in competitiveness (lower production cost in the medium to long term)

Trade is likely to result in higher revenue for Jordanian producers and exporters of live animals, fresh vegetables and olive oil, but in lower revenue for producers and exporters of citrus and other fruits (e.g. watermelon, strawberries, and dates). Jordanian exporters of agricultural and food products are expected to lose out in terms of trade preferential erosion in GAFTA, E.U. and U.S. markets, though most of Jordan's competitors will also suffer from similar preference erosion.

Most Jordanian consumers are expected to lose from trade negotiations because the elimination of export subsidies and credit and the reduction of domestic subsidies will result in higher world prices for most commodities. On the domestic market, the rise in world price will be transferred to the Jordanian consumer but this increase will be partially offsetting by the reduction of import tariffs on imported products. This tariffs reduction will impact positively (for consumers) on the domestic price of products that are net-imported and that are expected to increase (because of world price rise), but less than without the import tariff cut. Consumers of most food, including, for instance, bread, *foul*, mutton, rice, sugar, and milk will, nonetheless, pay higher prices, while consumer price of beef, poultry meat, potatoes, apples, and citrus, are expected to fall.

Trade changes will impact negatively on most livestock breeders and food processor because the cost of most inputs will increase, such as cereals (higher cost for breeders and food processors), vegetables and pulses (higher costs for vegetable processors), though most fruit prices will decrease (lower cost for jam producers). Livestock breeders will lose based on increased input costs and lower output prices (poultry, beef).

In case a number of agricultural Special Products maintain their border protection in Jordan while trade liberalization is carried out as above in developed countries, it is expected:

- a general increase in Jordan's export receipts (and improvement of trade balance) and growth of producer surplus;
- a general decrease of consumer surplus and of government revenues; and
- Jordan loses out in terms of welfare with losses in consumer welfare and budget more than offsetting gains in producer welfare.

Both producer and consumer prices for listed Special Products are expected to rise. Total welfare is expected to fall for poultry and fruit but to rise for fresh vegetables. Export revenues are expected to increase and import expenditure to decline for all listed products.