A Dynamic General Equilibrium Analysis of the EU-Jordanian Free Trade Agreement

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Abstract

This paper aims at assessing the impact on the Jordanian economy of the implementation of the Association Agreement (AA) with the European Union (EU). The Agreement between Jordan and the EU entered into force in 2002. It eliminates progressively tariffs on industrial goods imported by Jordan from the EU, and leads eventually to the creation of a free-trade area between Jordan and the EU in 2014. Custom duties on agricultural products imported by Jordan from the EU are subject to a gradual, but partial reduction. Given the negative impact of trade liberalisation on government revenue, counteracting fiscal measures are required in order to offset the loss in government revenue. In order to capture intertemporal and intersectoral effects brought about by trade liberalisation on the domestic economy, a multisectoral and dynamic CGE model is specified and calibrated to simulate the implementation of the preferential trade agreement with the EU and non-discriminatory trade liberalisation.

Key words: dynamic computable general equilibrium, Jordan, trade liberalisation.

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1 Introduction

The Euro-Mediterranean Association Agreement between Jordan and the European Union (EU) was signed in November 1997. It is part of a larger programme, the Euro-Mediterranean Partnership, that began with the 1995 Barcelona Declaration and involves through a network of bilateral relations the EU and countries in the Middle East and North Africa (MENA) region[1]. The Euro-Jordanian Association Agreement entered into force on May 1st, 2002, and replaces the 1977 Cooperation Agreement. The Association Agreement allows imports into the EU of Jordanian products free of custom duties and free of quantitative restrictions, with the exclusion of agricultural products. Custom duties and charges on imports into Jordan of EU products are progressively abolished, and duties on agricultural products are gradually and partially eliminated. The Agreement aims eventually at creating a free-trade area between the EU and Jordan within 12 years by its entry into force.

Trade liberalisation in the form of a preferential trade agreement (PTA) with the EU is expected to provide benefits for Jordan in terms of trade creation, and lower consumer prices, that bring about a rise in welfare, and increased competition in the domestic economy. A key role in such a process is played by investment demand, that is potentially important to the dynamic behaviour of output over the long-run (Francois et al., 1997). On the other hand, trade liberalisation has some unpleasant effects on Jordan's economy. There is a loss in government revenue, due to foregone import tariff duties. Such an impact is likely to be particularly strong for Jordan, where government revenue relies heavily on custom duties[2]. Furthermore, opening up domestic trade to foreign competition is likely to be a painful process in terms of displacement of labour force in the formerly protected sectors. In the short-run this fall in employment might not be fully compensated by job creation due to expansion in other sectors, and might determine a transition period in which there are winners and losers.

The magnitude of the adverse effects will be influenced by the measures taken by the Jordanian government to counteract the effects of revenue loss. Ideally, trade liberalisation ought to be accompanied by an appropriate and

[1] The countries involved in the Euro-Mediterranean Partnership are Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, the Palestinian Authority, Syria, Tunisia and Turkey.

[2] Import duties from EU trade in Jordan in the period 1994-96 averaged 12% of total tax revenue and 2% of GDP, total import duties averaged more than one-third of total tax revenue and about 6% of GDP (Abed, 1998).

parallel process of economic reforms, such as modernisation of the tax system and broadening of the tax base in order to offset the loss in custom duties. As measures of fiscal reform, the Jordanian government has harmonised the General Sales Tax (GST) rates on domestic and imported goods, has replaced the GST, introduced in 1994, by a Value-Added-Tax(VAT)-like sales tax in 2000, and has undertaken an income tax reform in 2001.

A trade policy issue playing a role in Jordan's trade liberalisation is the debate about global versus regional integration (Winters, 1996). Whereas there is wide empirical evidence that economic growth rates and trade liberalisation are positively related (Sachs and Warner, 1995), there is further evidence supporting the view that non-discriminatory trade openness leads to higher growth than preferential trade liberalisation does (Vamvakidis, 1998). Moreover, preferential trade liberalisation is likely to cause trade diversion, that is a diversion of Jordanian imports from more efficient non-EU countries to more costly EU producers.

The policy implications for Jordan therefore suggest that broad and non-discriminatory openness would be more beneficial than regional integration (Hoekman and Djankov, 1997, Ghesquiere, 1998). A multilateral liberalisation process would avoid the costs of trade diversion and the "hub-spoke" effect, although it would clearly further reduce government revenues, and hence require additional compensatory fiscal measures.

Jordan has joined the World Trade Organisation (WTO) in April 2000, after starting the process of regional integration with the EU. It could be noticed that preferential trade agreements (PTAs) depart from the non-discriminatory principle of the WTO and are therefore conflicting with the WTO "most-favoured nation" (MFN) rule. However, WTO members are allowed, under specific conditions, to set up custom unions and free trade areas. In order to foster South-South economic integration, Jordan, Egypt, Morocco and Tunisia have established in May 2001 the Mediterranean Arab Free Trade Area (the so-called Agadir process). Jordan has also signed bilateral FTAs with several countries in the MENA regions, and is a member of the Arab Free Trade Area Agreement, with other 13 countries who are members of the Arab League. As a step towards even broader trade liberalisation, Jordan concluded FTAs with the United States in October 2000 (entered into force in December 2001), and with the European Free Trade Association (EFTA) in June 2001 (into force since September 2002).

Previous studies on Jordan's trade liberalisation by Hosoe (2001) and by Lucke (2001) have investigated the effects of opening up Jordanian trade by using static computable general equilibrium (CGE) models. Hosoe simulated the impacts of two trade policy scenarios for Jordan, the Uruguay

Round implementation and the establishment of a free trade area with the EU, by using a model based on Devarajan et al. (1990). Simulation of the Uruguay Round shows that its implementation would lead to trade creation in imports and exports and would increase Jordan's welfare by 0.28%. The EU-Jordan FTA scenario would further increase Jordan's welfare by 0.16%, would increase the two-way trade between the EU and Jordan, but it would determine trade diversion favourable for EU imports. The work by Lucke focuses on fiscal effects of the EU-Jordanian Association Agreement, and discusses fiscal responses aiming at overcoming the loss in government revenue, such as simplifying and harmonising tax rates, and broadening the tax base.

This paper focuses on the dynamic effects on the Jordanian economy of establishing a free-trade area between the EU and Jordan. Using a dynamic computable general equilibrium (CGE) model, the impacts of gradually decreasing and eventually eliminating tariff barriers in Jordan for EU goods are estimated. However, there may be the need of taking appropriate fiscal measures to counterbalance the adverse effects brought about by trade liberalisation. Therefore, the impact of discriminatory trade openness is assessed together with accompanying fiscal actions. Finally, the results simulating a PTA with the EU are compared with the effects of non-discriminatory trade liberalisation. The paper is structured as follows: Section 2 describes the model, Section 3 presents data and calibration, Section 4 analyses the results of the simulations, and Section 5 draws the conclusions.

2 The model

The model implemented is a simple neo-classical open-economy intertemporal model. Discounted lifetime utility of the representative consumer is maximised by choosing optimal consumption and investment paths. In the domestic economy there are two production sectors, one producing goods and the other producing services. Perfect competition and full employment are assumed in both sectors. International trade flows are characterised by imperfect substitution between domestic and foreign goods. Final sectoral output Q is allocated across domestic sales D and exports E through a constant elasticity of transformation (CET) function. Total sectoral absorption X an Armington composite of domestic good D and imported good M. It is differentiated among four uses: private consumption C, government consumption GC, intermediate input AQ, investment I. The parameters in the

Armington functions are the same for all uses, as well as prices[3]. The domestic country is assumed to be a price-taker in the international markets, that is world prices of imports and exports are exogenously determined.

2.1 Consumers

On the demand side, the representative consumer chooses consumption and new capital so as to maximise her discounted lifetime utility, subject to the budget constraint, the motion equation of capital, the equality between savings and investment, and the given initial capital stock. The optimisation problem is therefore:

$$\max_{\{C_t, K_{t+1}\}} U = \sum_{t=0}^{\infty} \left(\frac{1}{1+\rho}\right)^t \ln C_t,\ \rho > 0 \tag{1}$$

subject to

$$P_t^C C_t = Y_t - PS_t \tag{2}$$

$$I_t = K_{t+1} - (1-\delta) K_t,\ 0 < \delta < 1 \tag{3}$$

$$P_t^I I_t = PS_t \tag{4}$$

$$K_0 = \bar{K}_0 \tag{5}$$

where C_t and K_t are real aggregate private consumption and real aggregate capital in period t, Y is total net nominal income, ρ is the rate of time preferences at which consumers discount future utility, P^C is the supply composite price index faced by consumers, δ is the constant capital depreciation rate, I is aggregate real investment, P^I is the composite price of investment goods, PS is personal saving, and $\bar{K}_0$ is the given initial level of capital stock. Aggregate consumption C is a Cobb-Douglas composite of good and service consumption.

Consumer income Y_t is defined as

$$Y_t = \left(1 - t_t^Y\right) \left[w_t LS_t + \left(1 - t_t^K\right) r_t K_t + GT_t + FREM_t\right] \tag{6}$$

[3]This assumption is necessary because imports data are not disaggregated across uses. This allows to calibrate the parameters only in the aggregate Armington function.

where LS_t is labour supply at period t, which is normalised to one, w is the wage rate, t^Y is the income tax rate, t^K is the capital rent tax rate, r is the rate of return to capital, GT is government transfer to households and $FREM$ is foreign remittainces.

Household consumption of good $C_{t,g}$ and service $C_{t,s}$ are in turn composites of domestic and import goods, modelled through the standard Armington (1969) assumption of constant elasticity of substitution (CES) between domestically-produced consumption good CD and imported consumption good CM. Households choose the optimal level of domestic and import good and service for a given value of total consumption, by taking the Armington specification as constraint of the cost-minimisation static problem[4]:

$$\min_{CM_i, CD_i} P_i^C C_i = P_i^{MF} CM_i + P_i^D CD_i,\ i = g, s \tag{7}$$

$$\text{s.t.} \quad C_i = \Phi_i \left[\varepsilon_i \left(CM_i \right)^{\frac{\gamma_i - 1}{\gamma_i}} + (1 - \varepsilon_i) \left(CD_i \right)^{\frac{\gamma_i - 1}{\gamma_i}} \right]^{\frac{\gamma_i}{\gamma_i - 1}},\ 0 < \varepsilon_i < 1 \tag{8}$$

where P_i^{MF} and P_i^D are the consumer prices - i.e. they are inclusive of all taxes and import duties - of imported and domestic consumption good and service; γ_i is the elasticity of substitution between domestic goods and imports, Φ_i is the shift parameter, ε_i is the imports share parameter, and the subscript $i = g, s$ stands for good and service sectors.

Reflecting the structure of the Social Accounting Matrix (SAM), aggregate imports of consumption goods are then disaggregated across three regions, i.e. Arab countries[5], the EU and the rest of the world, through a Cobb-Douglas specification. The optimisation problem for the households applies to good and service and is given by:

$$\min_{\left\{ MC_i^j \right\}} P_i^{MF} CM_i = \sum_j P_i^{MFj} CM_i^j \tag{9}$$

$$\text{s.t.} \quad CM_i = \Phi_i^M \prod_j \left(CM_i^j \right)^{\varepsilon_i^j},\ \sum_j \varepsilon_i^j = 1 \tag{10}$$

where CM_i^j is households consumption of foreign good imported from region $j = AR, EU, RW$, P^{MFj} is the price of good imported from region j inclusive

[4] For simplicity the time index in static equations is from now on dropped.

[5] Arab countries are Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan's Free Trade Zone, Kuwait, Lebanon, Lybia, Mauritania, Morocco, Oman, Palestinian Authority, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates and Yemen.

of all taxes, Φ_i^M is the shift parameter, and ε_i^j is the share parameter of imports from region j. The elasticity of substitution between imports is therefore constant and equal to one, being the Cobb-Douglas specification a particular case of CES function.

2.2 Firms

On the supply side, constant returns to scale and perfect competition are assumed. Sectoral output in the domestic economy Q_i, $i = g, s$, is determined by a two-stage production process, which exhibits at the top tier a fixed-proportions, or Leontief, specification between intermediate input AQ and value-added output F_i:

$$Q_i = \min \left\{ \frac{F_i}{a_{i,1}}, \frac{AQ_i}{a_{i,2}}, \frac{AQ_j}{a_{j,2}} \right\} \tag{11}$$

where $a_{i,1}$ and $a_{i,2}$ are the fixed requirements of valued-added output F_i and intermediate input AQ_i respectively, for production of aggregate output Q_i.

At the second tier, intermediate input AQ_i is an Cobb-Douglas composite of domestic and foreign intermediate consumption goods, AQD_i and AQM_i. Value-added production is determined by a technology that allows for substitution between the two primary inputs, capital K_i and labour L_i:

$$\begin{array}{l} F_i = A_i L_i^{\alpha_i} K_i^{(1-\alpha_i)} \\ 0 < \alpha_i < 1,\ i = g, s \end{array} \tag{12}$$

where A_i is the time-invariant technological parameter and α_i is the labour share parameter. At the value-added production stage, firms minimise costs, given by $wL_i + rK_i$, subject to the above technology constraint (12).

Sectoral production Q_i can be sold on the domestic market or abroad. Exports and domestic sales are modelled according to a constant elasticity of transformation (CET) function, that represents the constraint for the producer maximising total sales:

$$\max_{E_i, D_i^S} PP_i^Q Q_i = P_i^E E_i + PP_i^D D_i \tag{13}$$

$$\text{s.t.} \quad Q_i = \chi_i \left[\theta_i E_i^{\frac{1+\psi_i}{\psi_i}} + (1-\theta_i) D_i^{\frac{1+\psi_i}{\psi_i}} \right]^{\frac{\psi_i}{1+\psi_i}} \tag{14}$$

where Q_i is total sectoral domestic production, E_i is exports, D_i is domestic supply, PP_i^Q is producer output price (i.e. net of taxes), P_i^E is producer exports price (which equals the world price of exports PW_i^E, given the absence of export subsidy), PP_i^D is producer domestic sales price (i.e. net of GST), θ_i is the export share parameter, χ_i is the shift parameter, and ψ_i is the elasticity of transformation between domestic good and export good, with $\psi_i > 0$.

Given the exports disaggregation provided by the SAM, total exports are allocated across three trading partners - Arab countries, the EU and the rest of the world - by means of the optimisation problem, in which a constant elasticity of transformation (CET) specification is adopted:

$$\max_{\{E_i^j\}} P_i^E E_i = \sum_j P_i^{Ej} E_i^j \tag{15}$$

$$\text{s.t.} \quad E_i = \chi_i^E \left[\sum_j \theta_i^j \left(E_i^j \right)^{\frac{1+\psi_i^E}{\psi_i^E}} \right]^{\frac{\psi_i^E}{1+\psi_i^E}}, \ \sum_j \theta_i^j = 1 \text{ for } j = AR, EU, RW \tag{16}$$

where sectoral exports E_i is given by regional exports E_i^{AR}, E_i^{EU} and E_i^{RW}, $P_i^{E,j}$ are producer export prices (all of them equal to PW_i^E), χ_i^E is the shift parameter, θ_i^j is the share parameter of exports to region $j = AR, EU, RW$, ψ_i^E is the elasticity of transformation between exports, and PE_i^j is the producer price of exports to region j.

The zero-profit condition for the firms ensures there is no extra-profit:

$$P_i^Q Q_i = P_i^X AQ_i + P_i^V F_i + vatd_i PP_i^D D_i \tag{17}$$

Intermediate inputs AQ and investment goods I are characterised by a CES Armington specification between domestic goods and total imports and by a Cobb-Douglas function for disaggregated imports. Given that functional parameters and prices are the same for all kinds of uses, optimal intermediate inputs and optimal investment are determined by (7)-(10).

2.3 Government

The government consumes an exogenous amount of good, raises taxes and tariffs, provides a transfer to consumers, and runs a balanced budget.

Government consumption is determined in the same fashion as in (7)-(10). Government revenue comes from the Value Added Tax (VAT), that applies with different rates to domestic and imported goods ($vatd_i$ and $vatm_i^j$,

$i = g, s,\ j = AR, EU, RW$), the tax on capital rent (t^K), the income tax (t^Y), and import duties, that apply with three different rates to Arab countries, the EU and the rest of the world (tm_i^j). The expenditure is given by transfer to household GT, and consumption of good GC.

3 Data and Calibration

The dataset is based on the Social Accounting Matrix (SAM) for Jordan constructed by Lucke (2001). The SAM is based on 1998 data, and uses the input-output coefficient matrix updated to 1998[6]. The original SAM has nine sectors producing goods and one sector producing services. The model is then simplified by aggregating all goods sectors. The domestic economy consists therefore of two sectors, producing respectively good and service. The base-year dataset is assumed to reflect a stationary steady state economy. Then parameters are calibrated in order to obtain a solution reproducing the benchmark equilibrium. All variables are then scaled, such that the initial labour force is normalised to one. The world prices of export PW_i^E and import PW_i^M are exogenously fixed to one. Real variables are then derived from the base-year nominal variables provided in the SAM.

The assumption of steady state allows to calibrate the dynamic parameters δ and ρ. From the capital accumulation equation and from the stationary steady-state condition $K_{t+1} = K_t = K_{ss}$, the depreciation rate of capital is:

$$\delta = \frac{I_{ss}}{K_{ss}} \tag{18}$$

The steady-state intertemporal condition for private consumption allows then to calibrate the consumers' discount rate as:

$$\rho = \left(1 - t^Y\right)\left(1 - t_0^K\right)\frac{r_0}{P_0^I} - \delta \tag{19}$$

The steady-state conditions apply also as terminal conditions.

4 Simulations

The model is implemented by means of the mathematical software GAMS (General Algebraic Modeling System). Many dynamic scenarios of opening up Jordanian trade can be considered. The main one is, of course, that

[6] The 1998 input-output coefficients have been updated by Lucke and Feraboli (2004).

provided by the EU-Jordan Agreement. The Agreement establishes the schedule for the gradual reduction of Jordanian tariff rates on EU-import goods. There are four groups of commodities subject to different tariff-reduction schedules. Services are not part of the Agreement.

Given that the model implemented has one imported good, the exercise simulating the EU-Jordan Agreement can be carried out by setting the import tariff rate over time according to the average of the schedule provided by the Agreement. This implies reducing gradually the base-year import duty at the entry into force of the Agreement until period 13, and then fixing the import charge for the next periods equal to that assumed in period 13. In order to make scenarios comparable, the same tariff reduction scheme applies to the full liberalisation scenario.

Table 1 shows the timetable of the average of custom duty reduction. The numbers in the left column show the number of years after the date of entry into force of the Association Agreement (AA). The figures in the right column indicate the percentage of the base-year duty charged in the relevant period.

Period	Import duty rate
entry into force of AA	70%
one year after	65%
two years after	60%
three years after	55%
four years after	45%
five years after	40%
six years after	35%
seven years after	30%
eight years after	25%
nine years after	22.5%
ten years after	20%
eleven years after	17.5%
twelve years after	12.5%

Table 1. Import duty reduction.

The gradual reduction on the import duty rate decreases prices. The fall in domestic prices boosts directly demand, investment might go up and output is expected to increase in the long-run. The loss in government revenue due to the import duty reduction is partially offset by the expansion in the tax base. The government must compensate the fall in revenue by undertaking counteracting fiscal measures, such as an increase in the domestic tax rates. Moreover, some intersectoral impact is expected. The sector in which trade openness takes place is likely to attract more resources in

the long-run, but also to suffer from a short-run negative impact due to the move from protectionism to free trade.

As pointed out above, a non-discriminatory process of trade liberalisation would ensure that no trade diversion effect takes place, and is likely to be more welfare-increasing. On the other hand, it would also decrease further government revenue, and would force the government to implement even more painful fiscal measures.

S1	FTA with the EU; VAT, capital tax and government transfer endogenous
S2	Full liberalisation; VAT, capital tax and government transfer endogenous
S3	FTA with the EU; VAT, income tax and government transfer endogenous
S4	Full liberalisation; VAT, income tax and government transfer endogenous

Table 2. Trade liberalisation scenarios.

Table 2 lists some of the trade liberalisation scenarios. Simulations can be divided in two sets. In one set (scenarios S1 and S3) the FTA with the EU is implemented. The other set (scenarios S2 and S4) includes simulations of non-discriminatory trade openness. In order to compare the outcomes, the additional closures and assumptions are the same across the simulations sets and the scenarios of broad liberalisation follow the same time schedule provided by the Association Agreement with the EU.

The simulations results show that the under non-discriminatory trade liberalisation GDP, capital, investment per head and real wage rate are always above their levels under the FTA with the EU. Figure 1 shows the impact on GDP per capita under simulations scenarios S1 and S2.

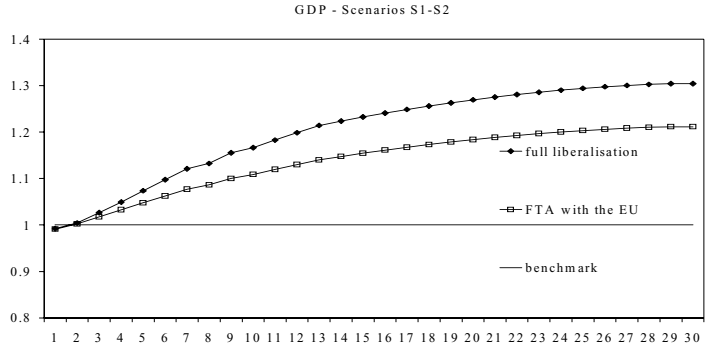

Figure 1. Impact on GDP per head.

The GDP level falls initially with respect to the benchmark value, due to the negative income effect on consumption demand. However, as domestic prices fall and demand goes up, it increases immediately and at all periods. As pointed out above, full liberalisation yields higher values of GDP at any period and higher steady-state value than the preferential trade agreement.

Figure 2 depicts the positive effect of trade liberalisation on the real wage rate. The effect is larger under the broad liberalisation scenario than under the FTA.

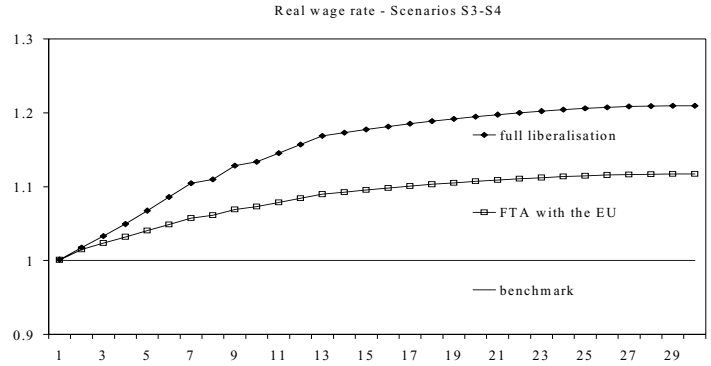

Figure 2. Effects on real wage.

The impact of trade liberalisation on capital per head is shown in Figure 3. Whereas previous studies on Jordan's trade liberalisation used static models and therefore they can not capture long-term effects, the introduction of dynamics allows to see how trade liberalisation affects savings and investment decisions.

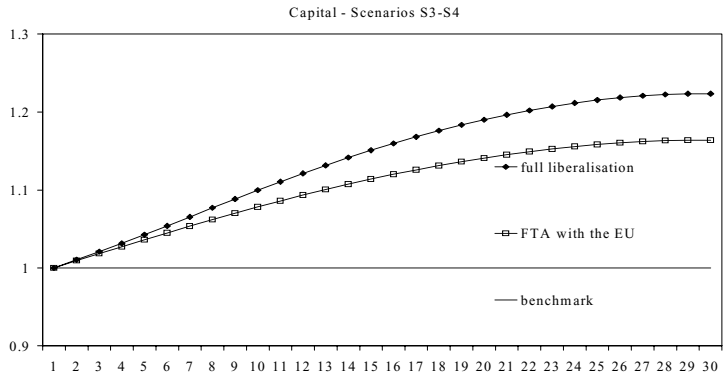

Figure 3. Impact on capital per head.

The fall in domestic prices raises investment demand, that leads to higher capital stock Under both scenarios S3 and S4 capital stock per head is above the benchmark value at all periods. Under full liberalisation its value is always larger than under the FTA. Scenarios S1 and S2 yields a similar picture.

At the sectoral level, trade liberalisation has two effects. It leads to higher competition in the formerly protected sector, which is harmed in the short-run by lower domestic prices. Output should therefore fall in the short-term. On the other hand, lower prices of intermediate input goods decrease costs of the goods sector, and hence they enhance production.

In the long-run, therefore there is a shift of resources from the service sector to the good sector, given that the trade liberalisation process takes place in the latter. However, in the transition to the steady state, the formerly protected good sector is harmed by opening up trade, because it faces now increased foreign competition. Production in the good sector initially falls very slightly relatively to the reference run, but then it keeps increasing, as shown in Figure 4.

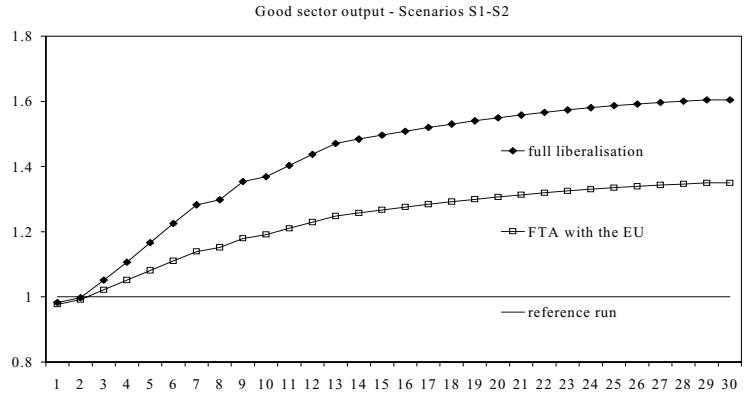

Figure 4. Output in the good sector.

Consequently, labour demand from the good sector also falls relative to the benchmark value, it recovers quickly, and finally ends up higher than the initial steady state, as can be seen in Figure 5.

The impact on welfare might be in principle ambiguous. On the one hand, lower domestic prices increase consumption and hence households' welfare. On the other hand, the reduction in government revenue due to cutting import duty rates forces the government to implement painful fiscal

measures, i.e. increases in domestic tax rates and reduction in transfer to households. This will negatively affect disposable income of households, who must ceteris paribus reduce consumption. Such an impact on welfare is therefore negative.

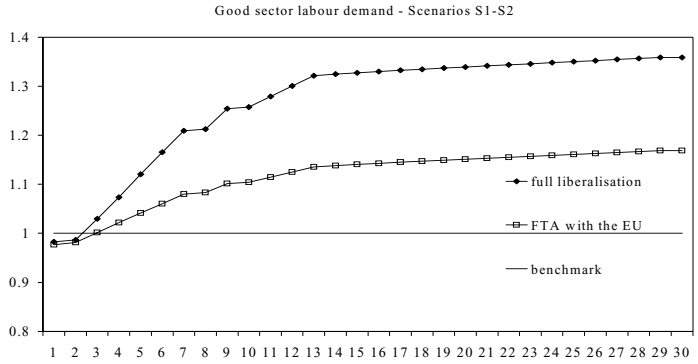

Figure 5. Impact on good sector demand for labour.

The overall impact on households' consumption and welfare depends therefore on the magnitude of the effects of lower consumption prices and lower disposable income. However, under all scenarios of trade liberalisation welfare rises, as suggested by economic theory.

A second question is whether broad liberalisation is, ceteris paribus, more welfare-enhancing for Jordan than the preferential trade agreement with the EU. Again, this depends on the magnitude of the two effects described above, and hence on the assumptions made in the model and the fiscal measures accompanying the process of opening up trade.

The simulation set gives a result that economic theory would suggest, i.e. full liberalisation scenarios (S2 and S4) yield larger increases in welfare than the relevant FTA scenario (S1 and S3) do. Table 3 provides a summary of welfare changes[7].

Scenario	Welfare increase (%)
S1	0.409
S2	0.560
S3	0.256
S4	0.415

Table 3. Welfare changes.

[7] Welfare changes are measured by equivalence variation.

Finally, as shown in Figure 6, it should be noticed that private aggregate consumption initially falls relative to the benchmark level, and then it increases in all periods.After some periods private consumption reaches the benchmark level and keeps increasing afterwards. Households have therefore to give up some consumption in the initial periods, in order to achieve higher future consumption.

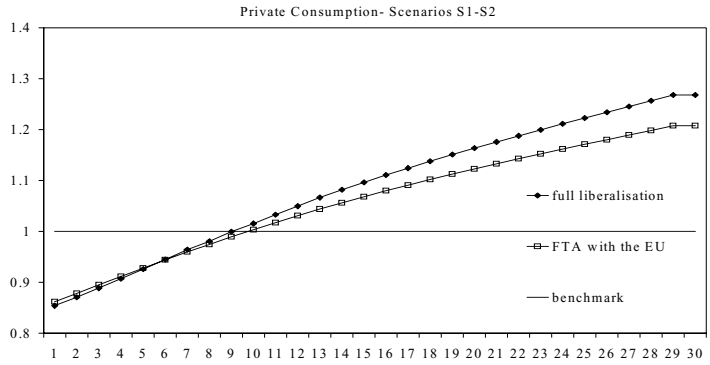

Figure 6. Private consumption per capita.

This clearly raises the question concerning the political feasibility of the trade liberalisation process undertaken by the Jordanian government. Whereas opening up domestic trade leads unambiguously to an increase in welfare, the government willingness to follow consistently a trade liberalisation policy might be harmed, given the "political price" to be paid in terms of short-run decrease in private consumption.

5 Conclusions

This paper has assessed the bilateral trade liberalisation process undertaken by Jordan by means of a dynamic CGE model. In spite of its simplicity, this model is able to capture intertemporal and intersectoral effects on Jordan of opening up domestic trade. The implications for the Jordanian economy of the PTA with the EU have been analysed, and the outcomes have been then compared with those yielded by a process of non-discriminatory trade liberalisation. The main conclusions drawn from the simulations are: (i) the Association Agreement with the EU brings about in Jordan positive long-run effects on GDP, capital, investment and real wage rate; however, non-discriminatory import tariff reduction would lead to even larger positive

effects; (ii) the impact of trade liberalisation on welfare is positive under all scenarios, but, as suggested by economic theory, a process of broad liberalisation would rise welfare in Jordan more than the Agreement with the EU does; and (iii) opening up domestic trade affects negatively private consumption in the short-run and raises concerns about political feasibility of the trade liberalisation process.

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