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## EXIT REPORT

**To:** Timothy Buehrer, Component Lead  
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**From:** James Fetzer  
**Component:** Trade Environment (Component A)  
**Date:** 20 November 2006  
**Subject:** Exit Report for Support to the Trade Policy Analysis Unit

### Accomplishments

I was asked by the Trade Policy Analysis Unit (TAPU) to come to Egypt for two weeks to assist them with modeling the possible impact of further liberalization of agricultural trade from the EU partnership agreement. On the first day of my visit, we discussed the major issues that the group faced in modeling the impact of the EU-Partnership agreement, particularly estimating the value of Egyptian production and accounting for the tariff rate quotas implemented in the agreement.

One particular issue they face is that for some products, they have production data measured by quantity, but not the value needed to calculate the market share of Egyptian production relative to imports. I suggested that they consider using average unit values for imports and exports from their trade data or prices of similar products from other sources in combination with the volume data to estimate the value of the production data.

In order to provide the group with perspective of entire modeling process, we decided initially model three products which they felt were important. The group selected three products that in the available data made up the largest volume of Egyptian agricultural production; potatoes, tomatoes, and watermelons. They then compiled baseline data from 2004 for the model, including the value and quantity of trade flows between Egypt and both the EU and the rest of the world, initial duties for imports from the EU and the rest of the world, as well as production volumes for the three products. There were no imports for watermelon and no imports from the EU for potatoes. Since the impact estimated by most partial equilibrium models depends on initial market shares, these models would estimate no impact in the Egyptian market for these two products. To estimate the value of Egyptian produced tomatoes sold to the domestic market, we decided to assume that Egyptian shipments of tomatoes sold to the domestic market had the same average unit value as that of imports of tomatoes from the EU. The unit value of imports from the EU reflects the attributes of EU produced tomatoes and Egyptian market conditions, while the unit value of exports of Egyptian produced tomatoes to the EU reflects the attributes of Egyptian tomatoes and EU market conditions. We felt that in the case of tomatoes, the difference in EU and Egyptian markets conditions is greater than differences in attributes between EU

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and Egyptian produced tomatoes, and therefore the unit value of EU imports was more reflective of shipments of Egyptian produced tomatoes to the Egyptian market.

Using this methodology, imports from the EU were less than one-hundredth of a percent of Egyptian production (and would have been even smaller if the higher export unit value had been used to value production), virtually assuring that the model would estimate a very small impact on Egyptian production from liberalization of EU tomato imports. However, we proceeded to model the impact of liberalization for imports tomatoes from the EU for demonstrative purposes.

We used a non-linear Armington model developed by Francois and Hall (1997) and sometimes referred to as the COMPAS (Commercial Policy Analysis System) model which has been used to estimate changes in trade policy by the USITC and others. Since the non-linear Armington model assumes that shipments to other markets are held fixed, it does not estimate changes in Egyptian exports of liberalization in the Egyptian as other models such as TAPES or GSIM (another model developed by Francois and Hall that is can be directly run from a spreadsheet or from within WITS) do, it provides estimates of the impact on EU imports and Egyptian shipments to the Egyptian market and provide an additional model to compare future estimations from the TAPES model.

Applying the non-linear Armington model to tomatoes, we found that removing the five percent duty on imports from the EU would lower the “internal price” paid by consumers by about 3.0 percent and increase the “border price” collected by EU importers by about 1.8 percent. The intuition behind this result is that the existing 5 percent duty created a wedge between the price paid by consumers and received by importers of 5 percent and that removal of the duty would make these prices equal, causing the internal and border prices to converge. As a result of these price changes, imports from the EU were estimated to increase by about 9.6 percent in volume. However, given the very small initial market share of EU import of tomatoes in the Egyptian market, the impact on prices and shipment levels of Egyptian produced tomatoes was estimated to be virtually zero.

I pointed out to the group that while partial equilibrium models such as the non-linear Armington model may be more dependent on initial market shares than is appropriate for some products, there are few alternatives available which can be used which do not rely on initial market share, although there are continuing research efforts to develop such models. I also pointed out that in order to minimize the burden of estimating production, products for which imports from the EU are free of duty or which there are no imports from the EU should be eliminated from the modeling analysis (although they may be subject to other types of analysis), and that the priority in terms of estimating production data should be placed on products which face higher duties and have higher market shares.

As the next step, I advised the group to organize the necessary trade data for all agricultural products, dropping products for which imports from the EU are duty free or there are no imports from the EU. In absence of other criteria for selecting products to prioritize in estimating production, I suggested that they prioritize products for which the value of total Egyptian imports is expected to increase by the most if duties on imports from the EU were eliminated. This involves modeling the impact of removing duties from EU imports with only trade data in the model, which effectively assumes that Egyptian production is not affected. In practice, the products with the largest impact will be ones with large duties on imports from the EU and for which EU imports are large shares of total imports, holding elasticities constant.

The subsequent work organizing the trade data was time consuming for the group. I was able to assist them in preparing and concurring the trade data to be used for modeling, show them how tools such as pivot tables and the “vlookup” function in Microsoft Excel and queries in Microsoft Access could be used to quickly concord the data while allowing for later adjustments to the data. While I understand that some of the group has had training with MS Excel and Access, I think that future training with these and other applicable software focused on applications specific to manipulating trade data would be very useful. Also, a considerable amount of time was spent stripping out formatting and unnecessary “totals” rows from the data. In future, it may be more efficient for the data provided to the group have the least amount of extraneous formatting so that it can be easily manipulated in Excel and Access.

Originally we planned on measuring the ad valorem equivalent (AVE) of duties for imports from the EU as measured by the reported collection of duties as a share of c.i.f. value of imports from the EU. However, this measure seemed to provide inaccurate results for many products. While checking whether this was a problem with the source data or the manipulation of the data by the group, we proceeded by estimating a AVE directly from the tariff schedule, taking simple averages of both ad valorem and specific rate in cases where there were different rates within a six digit HS category.<sup>1</sup> These AVEs seemed more realistic for products subject only to ad valorem duties, but the AVEs seemed too low for products subject to specific duties. The group is following up on this issue to make sure the appropriate units are being used for applying the specific duties.

The group also adjusted the rates for instances where preferential rates were granted to imports from the EU in 2004. For products where tariff rate quotas allow for a reduced duty for a limited quantity of imports from the EU, I advised the group to assume that the lower rate in-quota rate is appropriate to use as the prevailing duty for products where shipments volumes from the EU were less the quota and the over-quota rate is appropriate if shipments volumes were above the quota. If shipments were equal to or very close to the quota amount, I advised to group to construct a price wedge between the two duty rates using the average unit value of imports compared to a world price or price in less distorted market. Since shipment volumes from the EU for all products were either below or above the quota amounts, no price wedges were constructed in this case.

After assembling the trade data and eliminating products for which imports from the EU are duty free or for which there are no imports from the EU, there were 241 six digit HS lines for agricultural products remaining for which the modeling was appropriate.<sup>2</sup> Estimating the impact of removing duties from EU imports without production data (effectively assuming that shipments of Egyptian produced products that are not affected by the removal of the duties) they found that the products with the largest impact on the overall value of imports were the ones where duties from the EU were the largest and the EU share of all imports were the largest. As mentioned earlier, I advised the group to prioritize the estimation of production data for goods for which the impact on the value of total imports was the greatest.

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<sup>1</sup> Arguably, the AVEs could have also been constructed using weighted averages, although this would have been more time consuming and biased away from high and prohibitive duties on items with a six-digit HS category.

<sup>2</sup> Additional examination of existing liberalization under the EU partnership agreement allowed us to reduce this number to 220 six digit HS lines. Also, for some milk and cream products, (HS 0402.21 and HS 0402.29) and some cheese products (HS 0406.20, HS 0406.30, and HS 0406.40), some but not all parts of the six digit category faced reduced duties from the EU-Partnership agreement. Because of time limitations, we decided not to adjust the duties faced on EU products for these lines. However, this may be reconsidered in future modeling by the group.

I also advised the group to estimate the value of production data by starting with disaggregated data for Egypt reported to the FAO and then using information with production data and unit values and prices from other sources. Although the FAO data has many gaps in coverage, it has the advantage of already being concorded to the appropriate HS tariff lines, making it a good base to work off of. I suggested that in cases where production quantities, but not values were available, the group use the average unit values for imports or exports or other price data to value production, depending on what they feel is most appropriate and reasonable. In some cases where production values were available from the FAO, the value of Egyptian exports were greater than production, indicating that there is a problem either with the production or export data that will have to be resolved by the group in the future.

Using this approach and discarding cases where exports exceeded production, the group was able to estimate production for thirty-nine six digit HS lines. Using the non-linear Armington model and default elasticities, that are the same across products (substitution elasticity=4, aggregate demand elasticity=-0.5, Egyptian supply elasticity=2, Import supply elasticity=10), the group estimated the impact of eliminating duties on the imports from the EU.

I suggested that the group make sure they are able to interpret changes in price and quantities, which are the direct output from the model before trying to interpret other derived outputs such as welfare effects. I also emphasized that the relative comparison of results across products may be more useful than the interpretation of the absolute levels of the results.

HS lines which were estimated to have the largest impact the value of Egyptian produced shipments in the Egyptian market were pasta (HS 1902.20), chocolate and other preparations containing cocoa (HS 1806.31), homogenized preparations of jams (HS 2007.10), chocolate and other preparations containing cocoa (HS 1806.90), cocoa powder (HS 1806.61), and vegetables (HS 2001.90), all estimated to increase by about ten to twenty percent. The relatively large impact on Egyptian produced shipments was generally due to a combination of high duties for imports from the EU (ranging from 22 to 32 percent) and high market share for imports from the EU (ranging from about 12 to 47 percent). For about twenty-three of the six-digit HS lines, elimination of duties of imports from the EU were estimated to have less than a one percent impact on the value of Egyptian produced shipments in the Egyptian market. For all but two of these HS lines, the market share of imports from the EU was less than one percent. For two remaining HS lines in this group the market share of imports from the EU was about 4 percent and the duties were modest duties of five percent or less.

In the future the group will need to decide for what products production values need to be estimated and look to other sources to estimate the value of Egyptian production or at least the share that Egyptian products make up of the market place. This may also involve imputing a market share from data that is at a higher-level aggregation consulting research that has been done which gives some estimate of production or market share.

If the group wants to estimate the impact of liberalization on Egyptian exports, they may need to use a model other than the non-linear Armington model. The choice of model depends highly on the type of information that the group wants to affect the estimated results. The non-linear Armington model can be used if they want to model the impact of the Egyptian market using information about EU production and imports from Egypt and the rest of the world, but ignoring the impact in the Egyptian market. If they want to account for

the impact in the Egyptian market and information about Egyptian exports to the EU and other countries, then the TAPES model appears to be an appropriate tool to use. The GSIM model developed by Francois and Hall (2003) could be used to simultaneously account for impacts in the Egyptian, EU, and other markets when estimating the impact on Egyptian exports. However, the data requirements for GSIM are greater than with the others. To use GSIM, both trade and production data for Egypt, EU, and the rest of the world needs to be estimated or assumptions need to be made about the data (for example, if EU and Egyptian production data is readily available, it may be necessary to assume that rest of world production is zero, or effectively not affected by the liberalization). The appropriate choice depends on what data is available for the important products and what assumptions and data the group wants or is willing to let drive the results.

There was also interest by group in feedback from me regarding a research project in which they were attempting to estimate the impact of antidumping and countervailing duties on the Egyptian economy. Although we did not have enough time to discuss this in length given the time spent on assisting the group with the EU-Partnership modeling, I provided comments on the paper and guidance on what direction I thought would be most fruitful. In particular, I noted that they should avoid strong statements such as their argument that there is always a net welfare loss associated with AD/CVD duties, unless they can prove it is true in all cases (I think that this would only be true if the supply elasticity of dumped imports is perfectly elastic) and that I think that the long section on injury analysis distracts the reader from the central focus of the paper.

## Issues

- How to implement a model of the impact of the terms of changes in the EU-Egypt partnership agreement on the Egyptian economy.
- Identification of significant products for modeling efforts.
- Finding data needed for modeling efforts:
  - Production data
  - Ad valorem equivalents (AVE) for specific tariffs and NTBs
- Commenting upon analysis of the impact of dumping duties on ceramics on the Egyptian economy.

## Risks

- Continued lack of adequate data to accurately model behavior, particularly in production.
- Given relatively modest market shares or tariffs for imports of most commodities from the EU, the potential impact of changes in tariffs are likely modest for nearly all commodities.

## Counterpart Contacts

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## **Documents Reviewed**

- Models previously developed for use by the TPAU
- Information available over the internet and from Egyptian sources to update data in model

## **Next Steps**

- Training with applicable software focused on manipulating trade data should be offered to the staff.
- The unit needs further assistance in adapting their existing models to Egyptian data and assumptions.