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Agricultural Trade Diversion Due to EU Eastern Enlargement

A Quantitative Analysis Based on a Partial Equilibrium World Trade Model (WATSIM)

by

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1 Introduction

The eastern enlargement of the EU is the sixth round of enlargement since the EU came into existence in 1957. The common rule of all former enlargement rounds was that the acceding country accepts the *aquis communautaire* and adapts national legislation accordingly. Hence, in all rounds the Common Agricultural Policy (CAP) of the EC and later the EU has been assigned to the new member countries. This will also be the rule for the EU accession for Central and Eastern European Countries (CEEC).¹ With the exception of the last enlargement of the EU by the three former EFTA member states this policy shift has normally been associated with an increase in the level of subsidization of agriculture in the acceding countries.

According to the theory of customs union changes in the level of protection which are associated with forming a customs union can have various trade effects. The direction and scope of these depend on differences between the pre- and post-accession tariffs between the new partners and third countries. Accordingly, customs union theory makes a major distinction between trade creation and trade diversion (VINER, 1950; MOLLE, 1997). In former rounds of enlargement these effects very often have been significant with respect to agricultural trade because of big alterations in the applied tariffs before and after accession. Additionally, third countries have charged the EU of having contributed to an increase in the overall level of agricultural protection in the acceding countries thereby distorting trade and taking away export opportunities for other countries.

In the context of the eastern enlargement similar agricultural trade distortions are expected because protection levels for most agricultural products in the 10 acceding countries are below the current levels granted via the CAP in the EU even though there have been exceptions to this rule. Hence, one could assume that the effects of eastern enlargement should be rather straightforward and easy to measure. However, matters are a bit more complicated for at least three reasons: first, agricultural protection levels in the acceding countries vary product by product and country by country significantly. Second, the producer prices in CEECs and in the EU vary from year to year. Third, the most recent reforms of the EU's Common Agricultural Policy have been associated with a switch from straight-forward border protection towards a combination of various policy instruments. Particularly direct payments, production quotas, and set-aside programs have become more important.

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¹ The country aggregate CEEC includes the ten countries of the region with which the EU was still negotiating the terms of accession at the time of writing this article: Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, and the Czech Republic. Even though not all of the countries listed will join the EU on May 1st 2004 yet, the others are likely to follow soon thereafter.

Against this background the outline of the paper is the following: in section 2 we will provide an overview of the major agricultural trade issues related to eastern enlargement. We will also discuss the CEECs' agricultural trade patterns as they have evolved in the 90s. In section 3 the core elements of the model used for simulating policy experiments related to the EU enlargement will be briefly mentioned and most recent model developments will be elaborated on. In section 4 we will explain which policy experiments have been conducted and discuss the associated simulation results. In section 5 we will draw some cautious policy conclusions with respect to the effects of CEECs' EU accession.

2 Potential for Agricultural Trade Disputes

2.1 Major policy issues

After accession to the EU the CEECs will assume the CAP because of which it is expected that agricultural support levels will increase for most products in comparison to a pre-accession situation. This policy shift carries the potential to create international trade disputes because it might violate two major components of the WTO's rule of law. Both issues might create arguments based on which other WTO member countries will demand compensation:

- 1) An increase in external protection may violate the *WTO's rules on customs unions* (Article XXIV).
- 2) Some of the WTO commitments of the EU and CEECs for specific agricultural product groups may be exceeded in an enlarged EU. This relates mainly to product-specific agreements made in the *Agreement of Agriculture* (maximum export subsidies, upper bounds for domestic support and import protection).

Ad 1) In Article XXIV of the GATT treaty the rules for creating a customs union are set out. Out of the four articles stated here two aspects are particularly relevant for the eastern enlargement of the EU: first, the article states that in the case of creating (or enlarging) a customs union generally "all products" should be effectively subject to free trade between the new partner countries. This implies that normally no sector-specific exemptions are acceptable. Hence, transition periods for fully adopting the CAP may only be accepted with respect to policy instruments which do not not only to a limited extent (e.g. de-coupled direct payments) distort trade. Second, article XXIV implies that the average bound import tariffs after forming or enlarging a customs union should not be higher than before.

Ad 2) In the negotiations of the Uruguay Round the EU has managed to secure upper limits for agricultural protection which have resulted in relatively moderate reform pressure at the end of the 90s. Due to "dirty tariffication" the upper bounds for most agricultural products still contain plenty of "water": by using advantageous statistics when estimating the agricultural import tariffs associated with the variable levies for the major agricultural commodities, the upper bounds of the EU tariffs are in most cases not binding yet but still contain "water". This implies that the pressure to reduce agricultural import protection was not very significant at the end of the 90s yet (TANGERMANN, 2001). In the area of domestic support much depends on if "direct payments" continue to be classified in the "Blue Box" and, thereby, will be exempted from future reduction obligations.² Furthermore, most critical are the levels of agricultural export subsidies to which the EU and the CEECs have committed themselves. Due to world market developments the EU is expected to exceed the upper limits in the nearby future. The EU could get under additional pressure if the new member states

² In mid-2003 the EU finalised the "Mid-term Review" of its Common Agricultural Policy. Part of the compromise was a far-reaching even though no complete de-coupling of the direct payments. Additionally, all farmers who receive such direct payments have to comply with environmentally friendly production standards. These switches in the design of direct payments should make their classification in the "green box" in the on-going WTO trade negotiations more likely.

increase the export potential in specific product markets without having secured export subsidies of their own.

The situation is different for most of the CEECs. They became members of the WTO in the 1990s or renewed their membership on the basis of new agreements. While these agreements were negotiated, agriculture in the CEECs was exposed to relatively low levels of support. In many cases the CEECs obliged themselves to upper bounds of agricultural import protection, export subsidies, and domestic support which in most cases are far more restrictive than those of the EU. Only Poland, Slovenia, and Romania have set their upper bound tariffs, and in the case of Poland, the maximum amount of export subsidies at levels comparable to those offered by the EU (FROHBERG et al., 2002).³ If all CEECs, upon EU accession, assume the higher levels of support currently granted via the CAP, it becomes rather likely that they will exceed the upper bounds which they have agreed to in the WTO accession negotiations. This might result in additional demands of other agricultural trade partners of the CEECs and the EU for compensation (TANGERMANN, 1999). From this discussion the following questions arise:

- Who are the third partner countries whose imports are most likely to be diverted due to EU eastern enlargement?
- To which extent would the agricultural export potential of an enlarged EU be increased and for which products would this increase result in non-compliance with WTO commitments of the acceding countries?

2.2 Review of trade statistics

To simplify things the following discussion will be based on data for the aggregate of the CEEC countries. Figure 1 and 2 provide an overview of exports and imports of the most important agricultural commodities of the CEECs. To adjust for year-to-year variation average values for 1995-98 are shown. A comparison of CEECs' agricultural imports and exports indicates that the EU is in most product groups a net exporter with respect to the CEECs. The quantities of intra-regional trade with the relevant commodities will be netted out from post-accession maximum export subsidies (values and volumes). If this will also be the rule for the definition of commitments of the enlarged EU, the post-accession WTO commitments might be lower than they currently are (LEETMA et al., 1998).

In the case of wheat, barley, and sugar the EU exported substantial quantities to the CEECs. While there was some intra-industry trade in all product categories listed here the data reveal a dominance of EU's exports to the region. Only in the case of skim milk powder the CEECs exported a significant share of their total exports to the EU. Furthermore, the growth rates of bilateral trade between the CEECs and the EU are noteworthy. Wheat is the only product group for which EU's exports to the CEECs has declined in the mid-90s. Furthermore, CEECs' beef exports to the EU declined in the same period which is probably a result of declining demand for beef in the EU in the aftermath of the BSE crisis. In all other product categories intra-regional trade between the CEEC and the EU increased significantly and at very high average annual growth rates in the past few years already. In fact these trends indicate that the pre-accession Europe Agreements between the two regions have been effective in stimulating bilateral agricultural trade and, hence, have induced significant *trade creation* prior to the effective enlargement.

³ For a detailed discussion of the country-specific commitments related to the Uruguay Round Agreement on Agriculture see Frohberg et al. (2002).

Figure 1: Average imports of CEEC of major agricultural commodity groups, 1995-98

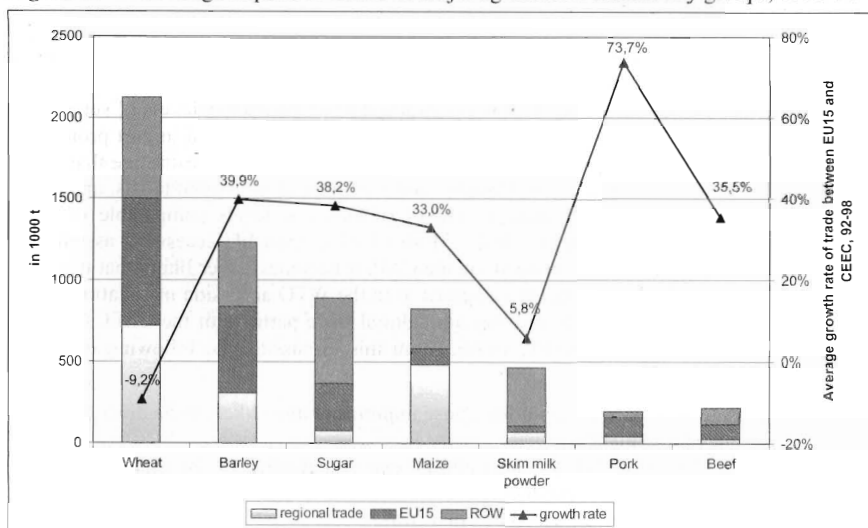
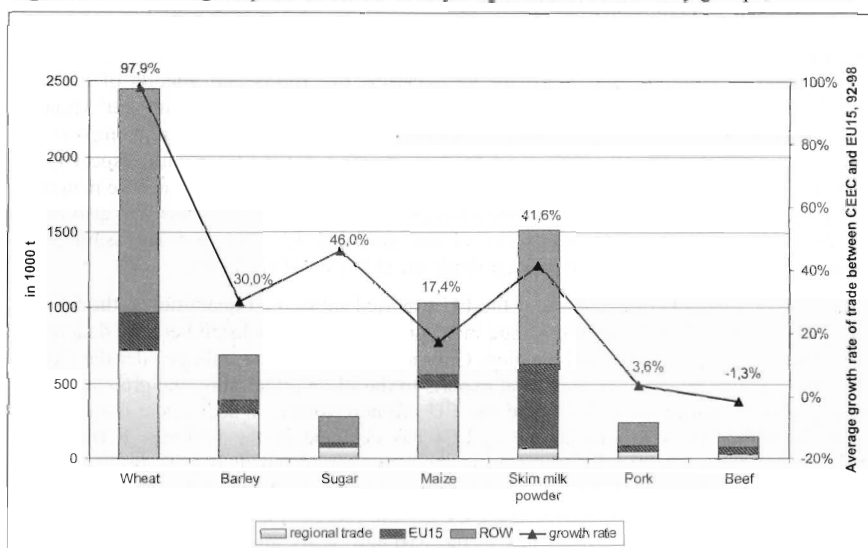


Figure 2: Average exports of CEEC of major agricultural commodity groups, 1995-98



Source: own presentation with data from WATSIM data base (2002).

3 World Agricultural Trade Simulation (WATSIM) model: new features

Numerous studies have addressed the effects of enlargement and have quantified the likely effects ever since the eastern enlargement of the EU was put on the agenda. Both partial equilibrium models (FROBERG et al., 2002) as well as general equilibrium models have been used (HERTEL et al., 1999; BACH et al., 1999; LIAPIS and TSIGAS, 1998; BANSE and TWESTEN, 2002). The way policy instruments are modelled and the underlying data base of the

respective models vary significantly. Furthermore, the focus of the various model-based analyses has been rather different. FROBERG et al., 2002 discussed to which extent an enlarged EU would be able in meeting the agricultural commitments agreed on in the Uruguay round of international trade negotiations. BANSE and TWESTEN, 2002 estimated the trade diverting effects for the “rest of the world”. Our study is supposed to complement these analyses by using the World Agricultural Simulation Model (WATSIM) which has been used in the past for various other agricultural trade liberalisation analyses (VON LAMPE, 1999).

The specific advantages of WATSIM for this sort of analysis are: it clearly indicates the bi-regional trade flows between the CEEC and the most important players in world agricultural markets. The model’s data base has been up-dated and various model features have been altered. Specifically, the model has been turned from a net trade model to a model which allows for bilateral trade and therefore is particularly prone to address the trade effects of eastern enlargement. Furthermore, progress has been made in representing output-reducing policies in both the EU and the CEEC such as set-aside and production quotas. In contrast to LIAPIS and TSIGAS, 1998 we show that such policies will have significant effects on the model projections. Furthermore, non-smooth policy instruments currently being granted under the umbrella of the CAP in the EU are explicitly represented in the model and, thereby, are enhancing the policy coverage of the model.

Until 2002 WATSIM has been formulated as an agricultural trade model using a world market concept. An Armington formulation had been adopted (HENRICHSMAYER et al., 2001) to allow the modelling of both imports and exports for the same region. Nevertheless the older model version did not reflect bilateral trade flows, but was clearing over the world market using a uniform world market price for every product. Until July 2002 the model has been fundamentally re-designed into a trade flow model which is formulated as a Mixed Complementarity Problem (MCP) in order to be able to directly reproduce non-smooth policy instruments like tariff quotas or export subsidies, which had been modelled before by logistic approximation functions.

Moreover, WATSIM has been changed into a quasi-dynamic model by solving for consecutive years using a naive price expectation.⁴ This means that activity levels (cropping areas, livestock numbers) are determined by the producer price of the current period. To make price expectations more realistic, a stock demand function would have to be formulated. Furthermore, WATSIM covers a wide range of policy instruments (e.g. ad-valorem and specific tariffs; production quotas; direct payments, direct and indirect subsidy equivalents; flexible levies or safeguards; tariff rate quotas; export subsidies, differentiated according to the target regions; quota decreases in the case of a violation of WTO export bounds).

The regional coverage of WATSIM has changed to some extent following demands for a closer focus on developing countries. A complete world database on agricultural trade policies is still missing. While they are monitored in some regions like the OECD countries regularly using a systematic approach, other country groups like most of the developing countries are still white areas on the world map of agricultural trade protection. In WATSIM, trade policy parameters are almost entirely based on the PSE/CSE database of the OECD, leading to specific tariffs (market-related PSEs) and price mark-ups for producers and consumers (other PSEs/CSEs). This means that many WATSIM trade regions are free-traders in the model, even though they may be characterised by much higher protection rates in reality. Furthermore, since the ratification of the Uruguay Round Agreement a lot of new trade control instruments have been implemented by WTO member countries in order to meet their commitments while still keeping support levels as high as possible.

⁴ See KUHN and WEHRHEIM, 2002 for a more detailed description of the model and the simulation results.

4 Model Simulations

4.1 Experiment design

The WATSIM model is a quasi-dynamic model, which means that the model solves for a series of consecutive years, currently 1997 to 2010. The output of a simulation run is a time path which may be compared with an alternative model run with modified policy parameters. In other words, there is a reference run and one scenario run. The following basic assumptions were incorporated in the reference run: In the EU15, minimum prices for wheat, barley, maize, other cereals, rice, sugar, beef, butter and cream, and skimmed milk powder are in force.

It is not taken care of bound subsidised exports in the simulations,⁵ because the final solution of this matter is still quite uncertain and the implementation rather complicated.⁶ Furthermore, tariff quotas for sugar, butter and cream, and milk powder exist for the EU, with the sugar quota being the most effective one. The tariff quota database in WATSIM is still far from complete and has to be improved as more data becomes available. This also means that the import quotas between the EU and the CEECs are not explicitly modelled. It is generally assumed that protection in the CEECs does not increase from its 1997 levels. This assumption implies that the effects of an Eastern enlargement of the EU not only include the effects of the accession itself, but also the pre-accession period.

The assumptions with which the enlargement scenario have been modelled are the following: There is a simplified pre-accession period from 1997 to 2003, and the accession in 2004. Pre-accession is first modelled by consecutively raising CEEC's tariff levels versus the rest of the world to the WTO bounds. Second, TRQs are introduced between EU and CEECs which slightly exceed actual trade volumes, allowing tax-free trade in both directions. When it comes to accession, the following changes are made: all tariffs between the EU and CEECs are set to zero; the possibility of charging levies and paying export refunds in bilateral trade is ruled out; the CEEC tariffs against the rest of the world are set at the EU level; all tariff quotas existing between the EU and the CEECs are abolished; the EU's indirect PSEs and CSEs are applied to the producer and consumer prices in the accession countries; additionally, full direct payments are paid to producers; the cropping area in the CEECs is reduced by a set-aside rate of 10 %.

On the one hand, this experiment design may be called a 'naive' enlargement scenario in a sense that it assumes that the full *aquis* will be applied to the acceding countries. At the time of writing this article various scenarios were discussed, for instance, to phase the direct payments in gradually. Hence, we chose to simulate one rather extreme options in order to give an idea about the maximum potential changes which may occur when enlargement and the full transfer of direct payments will become a reality. On the other hand, the way the accession is modelled indicates the potential of WATSIM to explicitly reveal a wide range of different policies.

4.2 Presentation and Discussion of Results

In the following, we will concentrate on the *changes in the enlargement scenario run compared to the reference run* of quantities and prices in the EU15 and the CEECs with a

⁵ Generally this is possible in WATSIM. If the export bound becomes binding, intervention prices or production quotas are reduced in order to meet these commitments.

⁶ Restricting subsidised exports to the WTO bounds for both the EU and the CEECs would mean that the commitments of the two regions joining a customs union will have to be combined into a common restriction.

special focus on changing trade patterns and subsidised exports.⁷ Apart from trade shares, results of other WATSIM regions will not be reported explicitly.

World Prices, Domestic Prices, Supply and Demand

The prices of the reference run are calculated without any additional policy change between 1997 and 2010 – so for instance without the intervention price cuts in the EU following the Agenda 2000 decisions: This option has been chosen in order to prevent that several policy effects may cancel each other out. Of particular importance are the developments of world market prices which reflect to a large extent the exogenous trends which are assumed by WATSIM in the areas of population growth, income growth, food demand trends, crop and livestock yields, and land area constraints, and inflation. The result of all these trends is a slight downward trend of world prices for most cereals, sugar and milk, while prices for animal products and sugar increase, caused by increasing world demand. The reference price trends suggest that the pressure on the EU will probably be less distinct than in previous decades, if no significant new liberalisation commitments will be made in the course of the on-going Millenium round of trade negotiations in the WTO. In our simulations, the only noteworthy world price increase caused by Eastern enlargement are observed for milk and milk products, which is a result of the quota regime that will be introduced upon accession. In contrast, for grains our results indicate that c.p. world prices will not be significantly affected by enlargement, which again is caused by the obligatory set-aside for cropping area.

Regarding the developments of domestic prices and quantities it can be observed that the changes compared to the reference run are much greater in the CEECs than in the EU, as can be expected, since the EU's market regime including minimum prices is transferred to the accession countries and not vice versa. Due to the introduction of minimum prices for protected commodities, producer prices rise considerably in the CEECs and create substantial production incentives. The most remarkable price jumps occur for sugar and milk products. Domestic demand and production reveal the greatest effects on the part of the CEECs, too. The most pronounced demand drops compared to the reference run occur with wheat and "other grains", but also sugar and milk products are affected. Production increases in the CEECs can be found for grains, pulses, sunflower and beef, while sugar and milk production decrease as a consequence. Crop production cannot be simply extended due to constraints to the total area and, additionally, the obligatory set-aside. Nevertheless it is still not certain which impact higher producer prices may have on the crop yields in the accession countries. Other products for which prices increase are bound by a quota which has been fixed for the CEECs at the production level of the year 2000 for sugar and milk. The production and consumption figures indicate that the CEECs' import demand from third countries might decrease considerably for regulated commodities. This will be checked in the next section.

Trade Shifts

The general impression the results give is that the main direction of trade flows between the EU15 and the CEECs will be reversed after enlargement. The CEECs can now exploit their lower price level due to lower production costs when accession takes place. Another factor is decreasing demand in the CEECs which leads to excess supplies which are 'exported' to the EU-15. Particularly grains will be shipped to the 'old EU15' region, but also sugar. At the same time EU grain and beef exports to CEECs decrease substantially, while those for sugar and milk will be higher than in the reference run. The most plausible explanation for this is that the production decrease in the CEECs due to the introduction of quotas will have to be

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Here we only summarise our major results. Again a more detailed discussion of the results can be found in KUHN and WEHRHEIM, 2002.

compensated for by imports from the EU-15. Since the trade barriers to third countries will increase, the EU15 becomes the more favourable origin for these imports.

Furthermore, the results indicate that agro-food imports from third countries to the new customs union decrease in most cases as if compared with the reference run. It seems that grain imports *of the EU15* from third countries will to a large extent be replaced by imports from CEECs. Additionally, grain imports *of the CEECs* from third countries will almost diminish. One exception from this trend would be increased milk imports by the EU. It is most likely that those countries who loose because of this trade diversion will demand compensations in the form of tariffs quotas.

The development of the ratio between EU25 imports and third country imports over the whole simulation period is increasing for most of the commodities. This is another indication that significant trade shares would be diverted away from third countries to future community members. The average annual increase of this ratio is 3.5 % (EU15) and even -3.1 % (CEECs) for the reference run, but 8.7 % (EU15) and 16.5 % (CEECs) in the scenario run. A prominent example for projected trade diversion effects is wheat imports by the CEECs, which will decrease by almost 90% from third countries, which means around 250.000 t from 'ROW' which contains the former states of the Soviet Union, or by 100.000 tons from the USA.

Another important question is "What can we expect for the ability of an EU25 to meet the WTO export subsidy bounds?" Based on our simulation the export trends after enlargement indicate that export bounds will be reached only to a limited extent. Results of our reference run indicate already that the EU15 would not face problems to meet the export commitments for almost all products unless further policy changes take place.⁸ These crucial results, however, have to be interpreted against the background of increasing nominal world market prices in our simulations.

Comparing the export subsidy results of the reference run (prior to enlargement) with those of the scenario run (post enlargement), there are some further changes that are worth pointing out. While butter/cream will not any longer need export refunds, minor quantities of beef and skim milk will be subsidised, but without threatening the commitment. For grains the situation will be more relaxed than in the reference run, which may allow the conclusion that Eastern enlargement will not significantly add to reform pressure regarding this market organisation. The situation would probably not look different when compensatory import quotas would be demanded by third countries for the increased protection levels they are confronted with. However, the results regarding export bounds have to be handled with caution and have to be interpreted against the data base of our model and assumptions of the simulation runs. While the trade diversion results are dominated by the changes of relative trade prices between regions, the level and amount of export subsidies depends on the absolute level of the minimum prices compared to the world price level. The price trends in WATSIM are very optimistic from the viewpoint of agricultural producers by forecasting an upward trend in nominal prices for all commodities. These endogenous price trends are in turn a result of the cumulative effect of the exogenous demand and supply trend shifters which are used in WATSIM. If we consider price trends forecasted by FAPRI, 2002, it can be seen that those are only slightly increasing in nominal terms assuming 1-2 % annual inflation.

5 Conclusions

The model we used for the simulations has various advantages: first, the most important agricultural policy instruments currently used in the EU can be modelled explicitly; secondly,

⁸ An exception is sugar, but this is due to the detail that WATSIM does still not distinguish between quota sugar which is eligible for export refunds, and preferential (ACP-) sugar and C-sugar.

the model is quasi-dynamic and therefore allows more accurate projections; third, the explicit representation of two way trade flows enables to analyse the evolution of bilateral trade patterns and not only that of net trade positions. However, some model limitations could not be removed by the time of writing this article because of which the results have to be regarded as being based on "work in progress".

Some of the limitations relate to data issues: For instance, WATSIM solves for consecutive years. The exogenous trend shift parameters are multiplied with the constants in double-log functions (e.g. human consumption) or to the yield parameter in production functions. A certain degree of endogeneity for crop yields would be desirable, but this would require the estimation of additional parameters. The second data issue concerns the behavioural parameter, i.e. supply and demand elasticities which are synthetic and not empirically estimated. Finally, the model is still lacking a lot of information on trade policies, particularly for the developing countries. Additionally, there are also some methodological issues that deserve mentioning. A quasi-dynamic model with naive price expectations, where no stock demand is explicitly modelled, can only forecast averages for long-term price movements. Another important modelling issue is the use of the Armington approach to approximate counter-trade. Armington models cause trade flows to be more persistent and less price-responsive than they may be in reality, particularly with respect to homogenous products.

Notwithstanding these data and modelling issues our analysis indicates a few interesting potential developments: A qualitative review of CEECs agricultural trade indicated that significant trade creation has already been induced by the pre-accession Europe agreements. In fact these agreements continue to liberalise agricultural trade between the EU and the CEECs further before the accession takes place. Based on the model simulations we argued that demand in the CEECs will drop for many products, while there will be no significant production increases for crops due to the obligatory set-aside. Nevertheless, further trade diversion could occur to a considerable extent: both, CEEC and EU15, would import less from the rest of the world than prior to accession. Based on the model's world market price projections and the representation of limiting production quotas, excess supply in an EU25 would not rise significantly for most products. Under these conditions our simulations suggest that problems with keeping commitments in the area of subsidised exports may actually not aggravate as significantly as most other studies indicate. This may look different when third countries start to demand tariff quotas as a compensation for increasing trade protection barring their exports to the enlarged EU. However, the extent of compensations that can be demanded by these countries will be rather limited for two reasons. First, some countries of the Former Soviet Union who have been major agricultural trade partners of the CEECs (Russia, Ukraine, Belarus) are not members of the WTO yet and therefore can not use the WTO as a forum to demand compensations. Second, there will be an intense debate over the question how much of these trade trends would have occurred even without the EU enlargement and in response to the phasing-out of the transition process in Eastern Europe and associated increases in agricultural productivity in the CEECs.

Abstract

This paper provides a quantitative analysis of the consequences of the eastern enlargement of the EU related to agriculture. The focus of the analysis is on respective trade effects. A qualitative review of statistics indicates that substantial trade creation but also trade diversion has already occurred prior to accession. This is a result of the pre-accession Europe Agreements between the EU and the acceding countries. Using a partial equilibrium model a complete transfer of agricultural policies as implemented in the EU in 1997 has been simulated. The results indicate that while supply effects in the enlarged EU may be limited due to the implementation of quotas, additional trade diversion would occur. Countries which loose trade shares because of the enlargement may successfully demand compensations if

they are members of the WTO. The results indicate that the model is well suited for such kind of trade analysis. At the same time the results are of preliminary nature particularly because various data problems remain.

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