Assessing Reform Options for the Sugar Common Market Organisation – Quantitative Analyses with Interlinked Models

Referat

von

H. Peter Witzke

und

Arnim Kuhn

Eurocare und Institut für Agrarpolitik, Marktforschung und Wirtschaftssoziologie der Universität Bonn

Nußallee 21, 53115 Bonn; E-mail Kontakt: peter.witzke@eurocare-bonn.de

43. Jahrestagung der

Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues e.V.

vom 29. September bis 1. Oktober 2003 in Stuttgart-Hohenheim

Assessing Reform Options for the Sugar Common Market Organisation – Quantitative Analyses with Interlinked Models

Heinz Peter Witzke, Arnim Kuhn

Institut für Agrarpolitik, Universität Bonn

1 Introduction

The sugar market in the EU is still one of those enjoying the highest degrees of trade protection within the framework of the CAP. The domestic prices for refined sugar are more than double as high as world market prices, supported by a prohibitive MFN import regime[1] and a production quota system which regulates the main part of domestic supply and largely prevents downward pressure on domestic prices. Structural surpluses from domestic production and preferential imports exceeding domestic demand are disposed of on world markets with export subsidies.

Until today the EU has managed by and large to save sugar from significant WTO liberalisation commitments. However, the Common Market Organisation (CMO) for sugar is coming under pressure from at least two sides. The Doha round has been declared a "development round" paying more attention to the interests of developing countries who are likely to push for further commitments. Anticipating this pressure the EU has granted preferential access to a group of 49 "Least Developed Countries" (LDCs) from the year 2002 onwards for all but defence industry goods under the "Everything-But-Arms" (EBA) initiative. For a number of highly protected commodities including sugar, the EU has decided to restrict market access by phasing in preferential access step by step in the framework of import quotas, before unlimited duty-free access is finally granted after 2009. The imports from the LDCs at that time and later are difficult to estimate, but assuming that the sugar CMO is not changed, the existing price differential between EU markets and the international markets will be sufficient to boost production at least in some LDCs, and make these countries export their sugar to the EU in the first place.

[1] A "safeguard" mechanism is basically functioning as a flexible levy.

Some reform of the current sugar CMO appears to be almost unavoidable[2] therefore, and the EU Commission has launched a "Study to assess the impact of options for the future reform of the sugar common market organisation"[3]. In this article we focus on the methodology and selected results of two aggregate modelling systems used therein, namely the Common Agricultural Policy Simulation model (CAPSIM) and the World Agricultural Trade Simulation Model (WATSIM).

2 Methodological Approach

2.1 Modelling Systems Involved

The special conditions of the sugar CMO required a comprehensive methodological approach involving modelling systems from the farm to the world market level. Figure 1 contains the interactions between these models, which are described in the following.

At the top level **WATSIM** simulates the international trade impacts of reform options on third countries and international price levels. WATSIM is a trade-flow-based model comprising the total world production and trade of sugar, and covering 11 world regions. To analyse problems of bilateral trade concessions, WATSIM can handle region-specific tariff rate quotas (TRQs). Other important trade policies comprise intervention prices, which are modelled as minimum prices in WATSIM. Intervention price regimes are modelled by flexible levies which emulate safeguard measures, and, more importantly, by export refunds.

Even though well-equipped for an analysis of trade policies, WATSIM alone cannot handle appropriately the sugar sector in the EU and the Common Market Organisation (CMO). To address the main characteristics of sugar production and the sugar CMO on the level of EU Member States, the Common Agricultural Policy Simulation model (**CAPSIM**) is used. This model represents the EU sugar market and the markets of other agricultural products. Producer income is estimated according to the concepts of the Economic Accounts of Agriculture (EAA). Consumer welfare (equivalent variation), an estimate of the sugar industry profit and effects on the EU budget, permit to assess the overall welfare impacts on

---

[2] Under the sugar CMO in its current shape, imports of "EBA-sugar" from LDCs would make corresponding cuts of the sugar production quotas inevitable.

[3] Henrichsmeyer et al. 2003a. Preliminary conclusions from this study and various other sources of information are brought together by an interservice steering group in EU Commission 2003. The present article, on the contrary, has been drafted solely under the authors' responsibility.

the EU. Both WATSIM and CAPSIM are based on behavioural functions with elasticities specified in line with microeconomic theory. For exogenous factors, such as yields, trends are used. Due to their complementary nature the two models can iterate between each other: WATSIM provides world market prices and gross import flows to CAPSIM whereas CAPSIM yields a supply response resulting from the specification of quotas and sugar intervention prices. A price linkage equation provides the link between sugar and sugar beet prices given the world market prices and rules on collection of levies.

These sugar beet prices are input for two types of agricultural supply models which are both relying on an explicit optimisation framework. A special version of the activity-based supply model for Common Agricultural Policy Regional Impact analysis (**CAPRI**[4]) is used to estimate regional land use and crop mix in EU Member States on the NUTS 2 level. This version has been designed to explicitly reflect the peculiarities of the decision problem of sugar beet growers, including the stochastic nature of yields and an alleged relationship of future quota endowment and current quota use to explain the presence of C-beet production. The function describing the incentives to grow sugar beet in CAPSIM has been calibrated to mimic the behaviour of CAPRI, thus ensuring approximate consistency of these models.

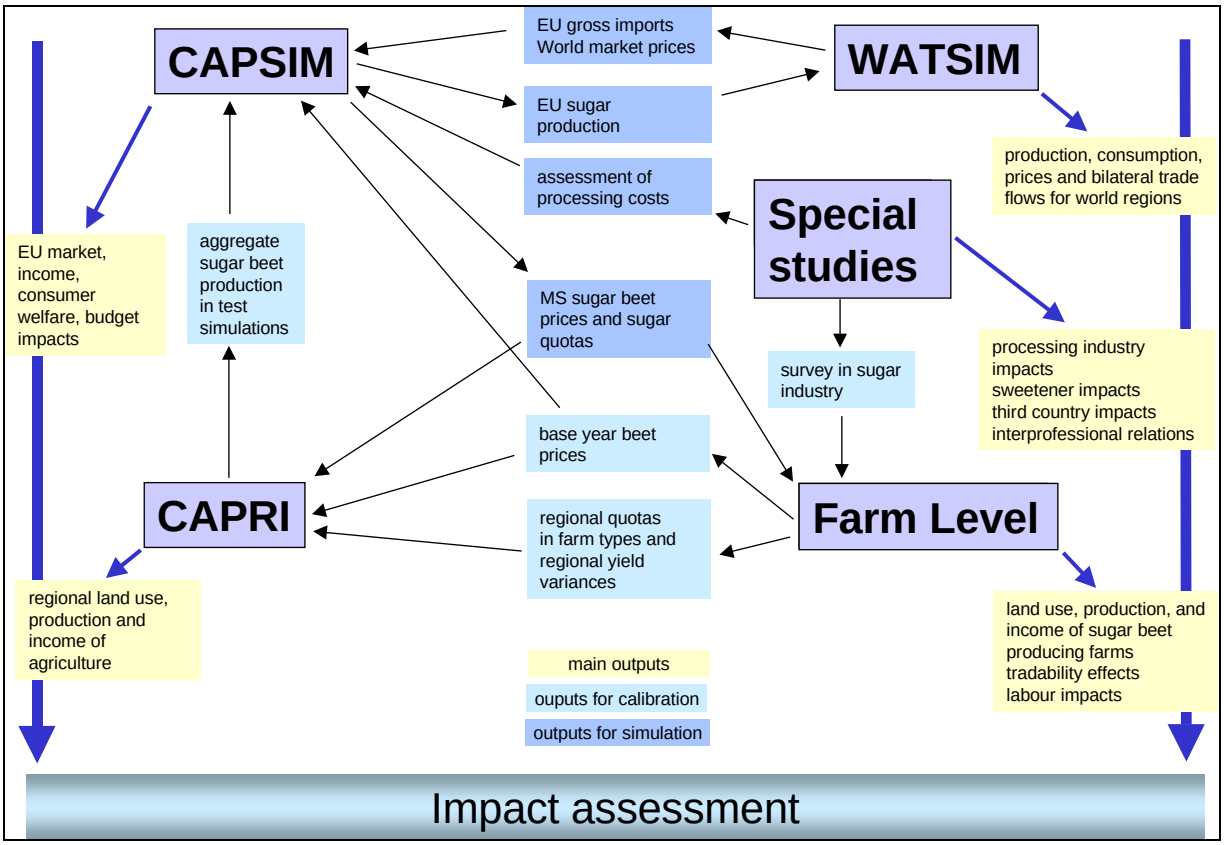
At the individual farm level, simple **farm management models** were used to predict the response of individual sugar beet growers which can be aggregated to regional and even national supply response. These models essentially involve a comparison of (expected) gross margins between sugar beet and alternative crops and a decision rule to switch to the most profitable crop consistent with agronomic restrictions, assuming that marginal cost are constant until the next resource constraint is binding. This approach simplifies considerably the true farm level decision problem but it provides plausible predictions, in particular when aggregated over hundreds of farms from the FADN network. The farm level models also yielded valuable evidence to feed the more aggregate models with certain data (base year beet prices and regional quotas). In addition **special studies** have been used in a flexible way to address a number of topics difficult to assess with formal modelling[5].

---

[4] See http://www.agp.uni-bonn.de/agpo/rsrch/capstr/capstr_e.htm for detailed information on the current system. Modification and operation of CAPRI was mainly handled by M. Adenaeuer from Bonn University with some help from Dr. Britz, also Bonn University, which is gratefully acknowledged here.

[5] Farm level analysis and special studies were performed at Hohenheim University under the responsibility of Prof. Dr. Zeddies (see http://www.uni-hohenheim.de/i3v/00032900/02924041.htm) with contributions by Dr. B. Zimmermann and W. Gamer.

Figure 1: Flowchart on Model Interactions



2.2 Specific Methodological Challenges

Linkage of beet and sugar prices

As the sugar sector involves the supply chain between beet growers, the sugar industry, sugar processing industries and final consumers, it would be desirable to model each of these types of agents and their interrelationships explicitly. Unfortunately there is little statistical information available on the sugar industry and processing industries. In this situation the imperfectly competitive sugar industry was modelled in a reduced form only. This form assumes a certain price linkage of beet prices to the relevant derived revenue from sugar and molasses, taking into account the EU levy system:

$$PP_{SBx} = (1 - \omega_1)*[\psi_{SUGA,SB} (P_{SUGAx} - LEV_x) - \omega_2] \quad (1)$$

where

PP_{SBx} = sugar beet price of type x (x = A,B,C)

P_{SUGAx} = derived revenue (sugar, molasses) per ton of sugar of type x (x = A,B,C)

$\psi_{SUGA,SB}$ = processing coefficient: tons of sugar per ton of beet

ω_1 = price linkage parameter 1: share of net revenue to cover sugar industry fixed cost and profit

ω_2 = price linkage parameter 2: variable processing cost per ton of processed sugar beet

LEV_x = levy on sugar of type x (x = A, B)

The price linkage parameters ω_1 and ω_2 have been determined to reflect the observed difference of quota beet prices and C beet prices in he base period in an entropy approach. They are steering the adjustment of beet prices to changes in EU sugar prices which turns out to be only slightly more than proportional.

Modelling beet supply

Earlier attempts to model the behaviour of beet growers has usually relied on profit maximisation (e.g Bureau et. al. 1997). Witzke, Heckelei 2002 followed this tradition but contrary to Frandsen et al. 2001 they recognised the heterogeneity of farms. Nonetheless this approach is affected by two problems.

- Marginal costs including opportunity cost of land of many (efficient) producers have to be very low compared to expectations by farm management specialists
- All efficient producers do not respond at all to changes in the prices for quota beets

To reconcile low prices of C beet with observed C beet production it is frequently alleged that fixed costs are born by quota beets alone while C beet only have to recover variable cost (Schmidt 2003). This is a plausible argument in the short run. In the long run farms should reduce their capacity if the C beet price permanently falls short of full cost coverage. The used machinery market or contract work suppliers may help in this adjustment. Given that the quota regime is in place for many decades now, almost without modifications, it is difficult to believe that the current situation is merely a short run equilibrium.

An alternative explanation incorporates yield uncertainty in the expected marginal revenue function of sugar beet which has two single sharp kinks in the deterministic case at the levels of the A and B quotas. Yield uncertainty is incorporated in the CAPRI model used in this

project in the form of 3 states of nature. This permits to explain some growing of C beet as an insurance strategy against revenues foregone when harvests are bad. At the same time it eliminates the implausible unresponsiveness of C beet producers to quota beet prices mentioned above. Nonetheless some problems remain. Farms with high production levels would still be very insensitive to quota beet prices because the empirical coefficients of variation are only about 0.14 on the EU average. For example in 3 Member States (DK, UK, FR) it has been estimated on the basis of FADN data in the context of this study that more than 50% of all sugar beet farms produce C beet in excess of 30% of quota beet for the three year average 1997-99. For these farms yield uncertainty is not an entirely convincing argument for C beet production. Furthermore farms have some possibilities to shift their quota use between years using the carry forward mechanism.

An additional motivation to produce C beet is the expectation that future farm level quota cuts may be smaller if C beet production is high, an expectation which might be promoted by the sugar industry. Conversely farmers may even hope to receive additional quota rights from the sugar industry if some rights are redistributed among farms. Both of these considerations imply that a ton of C beet may have a speculative value for farms on top of the market value of C beet. In the CAPRI model this virtual mark up has been derived from estimated discounted quota rents and an expected 2.5% of the national quotas at stake each year which is allocated to farm types according to their beet production. The details of this virtual mark up are described elsewhere (Henrichsmeyer et al. 2003b) but the empirical effects may be illustrated with the following table:

Table 1: Development of virtual mark up for future quota rents on beet prices (€/t) in DK at different prices and quotas

quota beet prices (€/t) quotas (1000 t)	56.7	49.6	42.4	35.3	28.1	21.0
1907	8.37	6.91	5.43	3.84	2.22	0.00
1525	7.39	6.17	4.24	3.35	1.81	0.00
1144	6.02	4.45	3.57	2.44	1.27	0.00
763	4.48	3.44	2.57	1.77	0.91	0.00
381	2.33	1.83	1.37	0.93	0.47	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00

The estimated mark up is about 8.4 € in Denmark at current prices and quotas. It decreases to zero as aggregate quotas and quota beet prices are reduced.

The above two motives for C beet production have been incorporated explicitly in the CAPRI model which also addresses a part of the aggregation problem by distinguishing 5 farm types. For consistency between the models linked together CAPSIM uses an "incentive revenue function" (see equation (3)) which mimics the CAPRI supply response. The shadow revenue thus determined is an argument for a conventional Generalised Leontief profit function:

$$\Pi(\boldsymbol{RN}) = \Sigma_s \Sigma_t \alpha_{s,t} RN_s^{.5} RN_t^{.5} \qquad (2)$$

where

$\boldsymbol{RN}$ = vector ($\boldsymbol{NREV}$, $\boldsymbol{PP}$)' formed by net revenues $NREV_j$ of activities j and prices PP_i of inputs i

and

$$NREV_{SB} = f(NREV_{SBa}, NREV_{SBb}, NREV_{SBc}, QT_{ab}) \qquad (3)$$

where

$NREV_{SB}$ = aggregate incentive revenue of sugar beet

$NREV_{SBx}$ = net revenue of sugar beet of type x (x = A, B, C)

QT_{ab} = combined A+B quota

Parameters of function $f(.)$ have been determined to minimise the deviations of CAPSIM and CAPRI results on sugar beet in a set of auxiliary calibration runs. This introduces indirectly, in an ad hoc manner, the empirical implications of the above uncertainty considerations in the CAPSIM profit function framework. In essence the pure profit function framework has been abandoned therefore to reflect the farm level information on the distribution of farm level C production and to achieve consistency in the interplay of different models.

Modelling import flows

WATSIM is a trade flow model which is making use of the Armington approach. The imports of a country are the sum of bilateral commodity inflows from several regions. Substitution of domestic for imported commodities occurs according to CES aggregator function.

In the presence of Tariff Rate Quotas (TRQs), imports from a certain region face a two-tier tariff. Within the TRQ, imports are taxed with a low or zero preferential tariff, while above the limit the Most-Favoured-Nation (MFN) tariff is applied. To analyse bilateral TRQs in the EU import regime for sugar (ACP-sugar, EBA), the handling of region-specific TRQs has been implemented in WATSIM as an MCP (Mixed Complementarity Problem):

$$TRQ_{i,r,s} \geq X^{M}_{i,r,s} \quad \perp \quad \left(tc^{OQT}_{i,r,s} - tc^{IQT}_{i,r,s}\right) \geq qr^{TRQ}_{i,s,r} \geq 0 \tag{4}$$

with

TRQ = Tariff quota (= own production in the case of LLDC imports to the EU)
X^M = Import trade flow
tc^{OQT} = over-quota tariff
tc^{IQT} =in-quota tariff
qr^{TRQ} = TRQ quota rent

As long as imports are below the quota, the quota rent qr^{TRQ} as a supplement to the in-quota tariff will be zero. As soon as imports are equal to the quota, the quota rent can increase from zero to the difference between the over-quota and the in-quota tariff. If the quota rent is at its upper limit, imports can further increase beyond the import quota.

In the case of LLDC imports under the EBA-initiative, the tariff quota after 2009 is officially abandoned, but technically the LLDC imports are still subject to a quota equal to their sugar production. This is because LLDC preferential imports are subject to "rules of origin".

3 Results for Alternative Reform Options

Most reform options are a mix of quota cuts, price reductions and compensatory payments. This article does not permit to show the full set of results (see Henrichsmeyer et al. 2003a). Instead we will focus on two reform options only: reducing the EU intervention price to abandon subsidised exports within the current sugar CMO and a complete liberalisation of the EU sugar market. These two options are most interesting and potentially controversial in methodological terms.

3.1 Features of the Reference Run

Any impact analysis requires a reference run against which to measure the impacts of the policy options to be analysed. A realistic reference run should incorporate expected changes in the political framework. Because these are quite uncertain three sensitivity scenarios have been distinguished but here we will only discuss the "medium" reference scenario. It implies that sugar imports into the EU would more than double, mainly because of additional imports from the LLDCs under EBA (see Table 2, "Reference 2011").

Table 2: EU-Market Impacts of selected sugar market reform options

		Base 1997/99	*Reference 2011*	***"Price reduction"***	*% Change to Reference 2011*	***"Liberali-sation"***	*% Change to Reference 2011*
Quota beets							
producer price	*EUR/t*	49	53	38	*-27%*		
production	1000 t	100665	77635	76262	-2%		
C sugar beets							
producer price	*EUR/t*	*15*	*18*	*19*	*2%*		
production	1000 t	17668	26052	14411	-45%		
Total beet							
producer price	*EUR/t*	*44*	*44*	*35*	*-20%*	*21*	*-53%*
production	1000 t	118333	103687	90673	-13%	63201	-39%
Quota		**14592**	**10797**	**10797**	**0.0%**		
Quota Production	1000 t	14528	10752	10674	-0.7%		
C-Production	1000 t	2653	3778	2031	-46%		
Domestic Supply	1000 t	17181	14530	12705	-13%	8559	-41%
Imports	1000 t	1741	4359	2240	-49%	4706	8%
LLDC	1000 t	82	2586	1367	-47%	56	-98%
ACP	1000 t	1537	1212	424	-65%	60	-95%
Main Exporters	1000 t	82	82	82	0%	4459	5338%
Total Supply	1000 t	**18922**	**18889**	**14945**	**-21%**	**13265**	**-30%**
Domestic Demand	1000 t	13046	12570	12677	1%	12831	2%
Total exports	1000 t	5876	6319	2268	-64%	434	-93%
C-Exports	1000 t	2653	3778	2031	-46%		
Subsid. Exports	1000 t	2986	2300				
Not subsidised	1000 t	237	240	237	-1.4%	434	81%
Total Demand	1000 t	**18922**	**18889**	**14945**	**-21%**	**13265**	**-30%**
EU-Price	*EUR/t*	*689*	*689*	*508*	*-26%*	*277*	*-60%*
World market price	*EUR/t*	*213*	*245*	*248*	*1.4%*	*254*	*4%*
Intervention price	*EUR/t*	*632*	*632*	*466*	*-26%*		

The reference run requires already a quota cut of 3.8 million tons to accommodate the additional imports (2.6 mio t), a decline in demand (0.5 mio t) and reduced WTO limits for subsidised exports, which have been estimated to decline by 0.7 mio t[6]. Currently negotiated new Economic Partnership Agreements with ACP countries might significantly increase the imports to be accommodated but are not yet included in the analysis.

EU market prices do not change against the base year in the reference run[7] but quota beet prices are rising, because the quota cuts reduce quota production below the level of domestic demand and levies would be zero. The cost of subsidised exports would have to be born by the EU budget therefore. Prices of C-beet are slightly increasing due to the increase in international sugar prices. EU production does not follow completely the quota cut because tighter quota limits will stimulate to some extent additional production of C – beet, which benefit in addition from higher international sugar prices.

[6] Unsubsidised exports out of quota production in the table correspond to some quantities of highly processed products which are simply held fixed. For an in depth analysis of processed products issues: Schmidt 2002.

3.2 Simulation of Reform Options

Impact of Intervention Price Reductions

The price cut reform option involves to reduce the intervention price such that all subsidised exports may be abolished. According to our simulations the intervention price would have to be cut by 26% which would bring down average quota beet prices by 27%.

In spite of the small increase in C beet prices there would be a significant reduction of C-sugar production because the farm level incentives to grow C beet as an insurance strategy against bad harvests or quota cuts are greatly reduced. Furthermore, imports would decline by almost 50% because some high cost LLDC suppliers will not find it profitable to use their preferential access to EU markets at 26% lower market prices. This applies in particular to ACP countries with relatively high production costs (Table 2).

The effect of price and quantity reduction causes reductions of agricultural income and profits of the sugar industry (Table 3). But, on the other hand, the price cut scenario benefits final consumers and the food industry, such that overall welfare gains are significant.

Table 3: Welfare impacts of selected sugar market reform options

		Agriculture		*Sugar Industry*		*Consumers / Food Industry*		*EU-Budget*		*General Welfare*
Reference run	*Mio €*	*136353*		*1438*		*631234*		*45237*		
Price reduction	Mio €	-1377	-1.0%	-773	-54%	2367	0.4%	1039	2.3%	**1257**
Liberalisation	Mio €	-3315	-2.4%	-1410	-98%	5713	0.9%	1043	2.3%	**2030**

Note: Impacts are changes in NVAF for agriculture, and in estimated profit for the sugar industry. Consumer impacts are equivalent variations, in percent of total final consumer expenditure. Budgetary impacts are mainly savings in export refunds.

Complete Liberalisation of the EU Sugar Market

In the full liberalisation scenario all Community intervention is abandoned. In particular quotas are abolished and all border protection is removed such that EU prices are equal to international prices. As a consequence, sugar from low-cost producers such as Brazil would enter the EU in significant amounts, essentially displacing former imports from LLDCs. Total

[7] The recent EU proposal of an average tariff reduction of 36% in the Doha Round is not included therefore.

imports only increase moderately. The resulting international sugar prices in the full liberalisation run were estimated to increase by about 4% against the reference run[8]. As expected there will be a large reduction of domestic production which is estimated to amount to about 40% in CAPSIM. It has to be acknowledged that the decline of EU supply in a liberalised sugar CMO cannot be predicted precisely. The complementary farm management analysis in this project (see Figure 1) yielded a drop in supply of about 50% which illustrates the magnitude we are expecting.

EU demand would increase but only by about 2% as demand elasticities are quite low and the raw product share in sugar products is usually very low as well. It is expected therefore that the EU will continue to export small quantities even after complete liberalisation.

The complete liberalisation of the sugar market would allow for the highest overall welfare gains compared to other options investigated, but it would also induce drastic losses for sugar beet farmers and pressure on the sugar industry to adjust to world market conditions. According to Table 3 the sugar industry profits would disappear in essence. This result hinges on the assumed average processing cost in the reference run (175 €/t), on its feasible decline with full competition and on the price setting behaviour of the industry which is incorporated here in equation (1). With lower beet prices there would be some income redistribution from agriculture to the sugar industry, but also a further drop in EU production.

4 Concluding remarks

This paper presented some details on the methodology and selected results from a major modelling effort to investigate the impacts on relevant stakeholders of various reform options for the EU sugar regime. Of these the pure price cut option and in particular the full liberalisation are less likely to be implemented than other options investigated in the same study, namely quota cut options and options involving compensatory payments to farmers. The full liberalisation would even move the resilient sugar sector beyond the stage of policy reform achieved in the Agenda 2000 arable crops regime. Substituting quota cuts for price

[8] In CIE 2002, p. 14 the world market price increase associated with full liberalisation of the EU sugar regime is estimated to be about 16%. Sheales, Gordon, Hafi and Toyne (1999, p. 41) make a comparable prediction of +20%. In both cases the reference situation (probably) does not yet incorporate the decline of EU supply due to the EBA initiative (3.5 mio t) which limits the additional effects of full liberalisation in this study. Higher price effects also tend to underestimate the supply flexibility of the large low-cost exporters, and Brazil in particular. Today about half of Brazil's sugar output is transformed into methanol and used for

cuts would reduce the redistribution from farmers to consumers but also the overall welfare gains. Compensatory payments could reduce the income loss to farmers at the expense of the EU budget. These effects are quite easy to anticipate without numerical illustration.

In spite of the methodological focus of this article it appears necessary to address a few points relevant for policy conclusions. The moderate income loss for agriculture is due to the modest importance of sugar beet for agriculture as a whole. The relative income losses are about 10 times higher for the group of sugar beet farms represented in the FADN sample and in highly specialised sugar beet farms these losses are even higher. On the other hand it might also be relevant for an interpretation that agricultural income per labour unit is about twice as high in sugar beet farms as in the average farm on the EU average. As long as the quota regime remains intact some additional welfare gains could also be achieved through tradability of quotas as has been investigated in the farm level analysis.

For the sugar industry the relative losses are overstated because processing of sugar beet is by definition the only economic activity covered by this sector whereas real companies are usually active in a number of related fields which may dampen the relative income loss to some extent. On the contrary the total final consumption expenditure denominator for consumer gains is evidently reducing their gains to very small numbers in relative terms. We have to acknowledge furthermore that it was not possible to model explicitly the price transmission from sugar on the wholesale level to the multitude of sugar containing food items. Consequently we cannot determine to what extent final consumers or the food industry owners will benefit from the drop in sugar prices.

Other aspects potentially relevant for an evaluation of reform options are labour market effects, the regional distribution of impacts within Member States and the effects on third countries, in particular the LDCs, and perhaps even an increased volatility of EU sugar prices. On the positive side all reform options with cuts or abolishment of intervention prices will certainly provide desirable incentives for long run developments, encouraging competitiveness in the EU and LDCs. These issues cannot be discussed here but they must not be forgotten when a more complete evaluation is required.

---

automotive fuel production. Since the latter use is implicitly subsidised, Brazil could easily fill a supply gap of 5-10 million tons on the world market with out increasing costs by simply relaxing its methanol regime.

5 References

BUREAU, J.C., GUYOMARD, H., MORIN, L., RÉQUILLARD, V. (1997): Quota Mobility in the European Sugar Regime, *European Review of Agricultural Economics* (24), pp. 1-30.

CIE (Centre for International Economics) (2002): Targets for OECD Sugar Market Liberalisation, Canberra and Sidney

EU COMMISSION (2003): Reforming the European Union's Sugar Policy, Summary of Impact Assessment, Commission Staff Working Paper (under linguistic revision), Brussels: http://europa.eu.int/comm/agriculture/index_en.htm (24.09.03).

FRANDSEN, S.E., JENSEN, H.J., YU, W., WALTER-JØRGENSEN, A. (2001): Modeling EU Sugar Policy – A study of policy reform scenarios. Danish Institute of Agricultural and Fisheries Economics, SJFI Working Paper no. 13/2001.

HENRICHSMEYER, W., ADENAEUER, M., KUHN, A., WITZKE, H.P., ZEDDIES, J., ZIMMERMANN, B. (2003a): Study to Assess the Impact of Options for the Future Reform of the Sugar Common Market Organisation, Main report, EuroCARE, forthcoming, Bonn.

HENRICHSMEYER, W., ADENAEUER, M., KUHN, A., WITZKE, H.P., ZEDDIES, J., ZIMMERMANN, B. (2003b): Study to Assess the Impact of Options for the Future Reform of the Sugar Common Market Organisation, Appendix, EuroCARE, forthcoming, Bonn.

SCHMIDT, E (2002): Proposal for a Basic Reform of the EU Sugar Market Regime (VO 1260/2001), available at: http://www.ifgb.uni-hannover.de/institut/veroeff/publikat.htm, Hannover

SCHMIDT, H. (2003): Evaluation spezieller institutioneller Ausgestaltungen der EU-Zuckermarktordnung, Bergen/Dumme: Agrimedia.

SHEALES, T. GORDON, S., HAFI, A., TOYNE, G. (1999): Sugar International Policies Affecting Market Expansion, ABARE Research Report 99.14, Canberra.

WITZKE, H.P., HECKELEI, T. (2002): Modelling EU Sugar Market Reform Options With Capsim: Methodology, Referat auf der 42. Jahrestagung der Gesellschaft für Wirtschafts-und Sozialwissenschaften des Landbaus (GeWiSoLa), Halle.