EU dairy policy analysis:

Assessing the importance of quota rent estimates*

Hans Grinsted Jensen and Chantal Pohl Nielsen
hans@foi.dk chantal@foi.dk

Danish Research Institute of Food Economics (FØI)
The Royal Veterinary and Agricultural University, Denmark
www.foi.dk

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Abstract

This paper discusses data issues related to one of the key instruments of EU dairy policy, namely the national production quotas. More specifically, the paper demonstrates the importance of initial assumptions and estimates of quota rents when analysing EU dairy policy. In addition to the consideration of the overall size of the quota rent, the analysis also demonstrates the importance of recognising that the EU dairy regime consists of national quotas – not an EU-wide quota. Hence it is the underlying relative competitiveness of EU milk producers at the national level that determines the size of the quota rents being earned in the individual EU countries. The paper highlights the need for further data work in order to be able to analyse EU dairy policy, including a survey to establish new estimates of national quota rents and an effort to disaggregate the single dairy sector in the standard GTAP database.

* Work in progress. This paper represents our first exploratory steps in analysing EU dairy policy.

1. Introduction

The European Union (EU) is a dominant player in world dairy markets. In 2001 the EU accounted for 36% of world dairy production, 27% of world dairy exports, and 14% of world dairy imports[1]. This position is at least in part due to the EU dairy policy regime, which supports dairy producers through various intervention and price support mechanisms and protects internal markets from foreign competition through extremely high tariffs and restrictive tariff rate quotas.[2] The EU dairy support scheme results in a systematic surplus production relative to domestic needs (by 10% according to Imber and Ruffer 2003), which is then sold on world markets with the help of export subsidies.

Against this background, reform of the EU dairy regime can have a potentially substantial impact on world markets. Dairy remains one of the most protected agricultural sectors in the EU. It consists of several interrelated policy instruments: a price support programme, government intervention purchases, production quotas, import tariffs and tariff rate quotas, as well as domestic consumption and export subsidies. The EU's Common Agricultural Policy (CAP) – of which the dairy policy is part – has long been under pressure for fundamental reform motivated by the need to temper a large and increasing CAP budget – not least in light of the accession of ten new Member States – and demanded by other countries determined to achieve more liberal conditions for global trade. On 26 June 2003 EU agriculture ministers adopted a new CAP reform strategy (European Commission 2003). The new CAP reform fine-tunes the dairy reform strategy that was initiated in 1999 as part of the Agenda 2000 deal by fast-tracking some elements whilst prolonging others. Certain price cuts are to be implemented earlier than planned, limits have been placed on intervention purchases of some products, compensatory payments are to be decoupled from production decisions, yet the production quota system has been prolonged until 2014/15.

Any venture into domestic and trade policy reform analysis must start with careful consideration of appropriate modelling techniques and data requirements. Integrating agricultural policy instruments and institutional features into an empirical modelling framework is often a particularly challenging task because agricultural policy typically consists of a myriad of individual instruments that are often blended into a policy package that pursues various objectives. It is important to understand how each of these instruments functions and how they affect economic behaviour at the farm, sector, and economy-wide levels. Furthermore, several of these instruments are linked to one another by design while others are indirectly linked by their effect on economic variables such as production and prices.

The purpose of this paper is to illustrate data issues related to one of the key instruments of EU dairy policy, namely the national production quotas. More specifically, this paper seeks to demonstrate the importance of initial assumptions and estimates of quota rents when analysing EU dairy policy. In addition to the overall size of the quota rent, the analysis also demonstrates the importance of

[1] Based on production and export quantities for butter, cheese, skimmed-milk powder, whole-milk powder and condensed milk, and import quantities for butter/butteroil, cheese and casein. Source: European Commission, Directorate-General for Agriculture.

[2] Indeed, with the exception of Australia and New Zealand, all the major dairy producing countries support milk production. According to the OECD (2003), Producer Subsidy Equivalents (PSEs) have recently (2000-2002) ranged from virtually zero in New Zealand and 14% in Australia to 44% in the EU, 48% in the USA, 54% in Canada, and almost 80% in Japan.

recognising that the EU dairy regime consists of national quotas – not an EU-wide quota. Hence it is the underlying relative competitiveness of EU milk producers at the national level that determines the size of the quota rents being earned in the individual EU countries.

2. EU dairy policy – Binding production quotas generate rents, but how large?

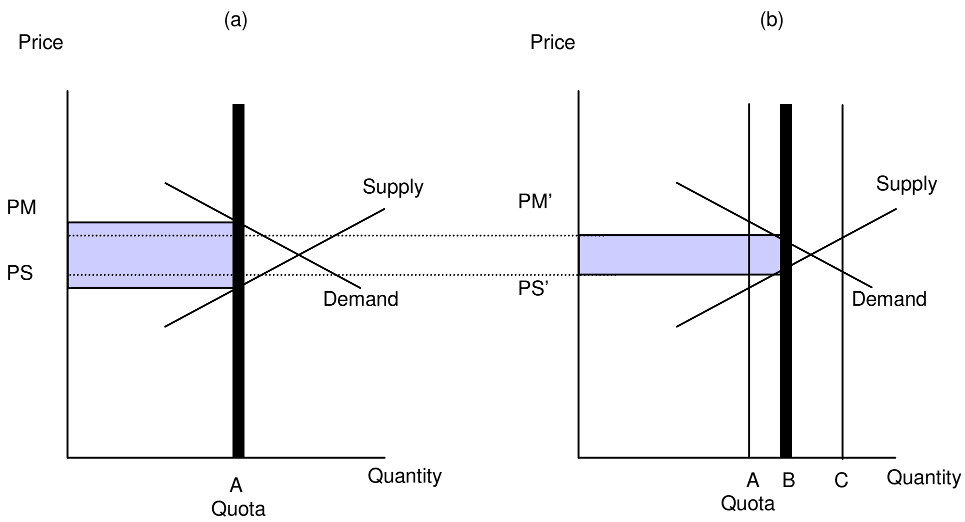
Most existing studies of EU dairy policy take a partial equilibrium (PE) approach focusing exclusively on the dairy sector (e.g. Bouamra-Mechemache et al. 2002, 2000, e.g. Burrell 1989, 1985) or as part of the agricultural sector considering linkages between the milk sector and other agricultural sectors (e.g. Fuller et al. 1999). Only a very few studies take a general equilibrium (GE) approach to analysis of EU dairy policy. Benjamin et al. (1999) use a CGE (Computable General Equilibrium) model of the French economy, while Lips and Reider (2002) and Tongeren (2001) use a global CGE approach to analyse EU dairy policy. CGE models allow for the analysis of economy-wide effects and take explicit account of agricultural and non-agricultural sectoral linkages, i.e. competing demands for factors of production and intermediate inputs. In terms of country coverage several studies treat the EU-15 as a single region (e.g. Fuller et al. 1999), whilst others (e.g. Bouamra-Mechemache et al. 2002 and Lips and Reider 2000) explicitly consider heterogeneity within the EU. With few exceptions (e.g. Fuller et al. 1999), past studies have very limited non-EU coverage. The existing studies also differ in terms of the precision with which the individual EU dairy policy instruments are modelled and the underlying data assumptions.

As already stated, this paper focuses exclusively on the EU milk production quotas and the associated quota rents. The EU milk quota system places a ceiling above the quantity of milk that may be produced in each member state. If the quota restricts production (the quota is said to be binding) then consumers are paying a higher price for milk than what is warranted by production costs. Figure 1 (a) depicts this situation where the quota at quantity A restricts milk production and consumers (dairies) are paying the market price PM for milk, while the costs of production for the producer are equal to the producer (supply) price PS. The difference between the prices PM and PS is the so-called quota rent associated with milk production when the quota is binding.

Figure 1 (b) illustrates the situation where the milk quota A has been expanded to quantity B. The resulting increased supply lowers the consumer price PM and increases the producer price PS, thereby reducing the quota rent per unit of output. If the quota was expanded even further to the right, beyond the intersect of supply and demand to quantity C, then the quota would no longer be binding and the quota rent would be reduced to zero (PM = PS).[3]

[3] In the simple example illustrated here the supply and demand curves are fixed and the only change being made is the size of the milk quota. In the real world supply and demand curves would also be shifting in response to income growth on the demand side and changes in relative factor prices on the supply side.

Figure 1. Binding and non-binding production quotas



The empirical analysis in this paper takes as its point of departure a global CGE framework. In the illustrative simulations undertaken here we have chosen to let the milk quota rent be endogenously determined by the model whilst the amount of milk produced is exogenously fixed. If the simulation subsequently causes the quota to no longer be binding, we re-run the simulation reducing the milk quota rent to zero (PM = PS) exogenously and allow the quantity of milk being produced to be determined endogenously.

In the base year 2001 all milk quotas in the EU-15 were binding wherefore all member countries initially had positive milk quota rents. The interesting question is how large are these rents? Based on a review of recent EU dairy policy studies, Salamon et al. (2002) conclude that estimation of quota rents is one of the greatest challenges for economic modellers. Determining the size of quota rents amounts to determining whether a country is capable of competing (unsupported) on world markets or not. In an analytical sense, one has to determine the position of an individual country's supply curve in an unregulated market.

There are several approaches taken in the literature. Given information about market prices, the most direct way of estimating quota rents is by using farm accounts to determine marginal costs. The difference between the market price and the marginal cost is the value of the quota rents. Guyomard et al. (2002) apparently take this approach based on national accounts data provided in the European Community's Farm Accountancy Data Network (FADN), yet their study does not make entirely clear how they have arrived at their estimates. Moreover, comparing with Danish farm accounts the estimates seem unrealistically high.

Alternatively, quota rents can be estimated indirectly by using observed quota (rent or lease) prices supplemented by assumptions about the annual value of this quota to induce estimates of marginal costs. This is the approach taken by e.g. Jansson (2002), who supplement the information by 'expert estimates' and simple assumptions if quota price data are not available. Using this approach, the annual value of the quota depends on whether or not farmers are assumed to expect compensation for future changes to the quota system. Jensen and Frandsen (2003), for example, argue that past experience with policy changes (e.g. intervention price reductions) shows that farmers have been compensated.[4] For this reason, they assume an infinite time horizon when calculating the annual value of the quota rent. Jansson (2002), on the other hand, assumes a depreciation horizon of 8 years.

These different assumptions have significant implications for the size of the quota rent and hence the supply response to e.g. a milk price decline. Using Denmark as an example, consider an observed quota price of 422 Euro/ton (Jensen and Frandsen 2003). Using an interest rate of 4% and an infinite depreciation time, this implies that the value of the milk quota is equal to 17 Euro/ton. Given a consumer price of 331 Euro/ton the marginal cost of production (PS) is estimated to be 314 Euro/ton (331-17). If instead one assumes full depreciation over just 8 years (still with a 4% interest rate), the estimated value of the milk quota increases to 62 Euro/ton, thereby lowering the assumed marginal cost (PS) to 269 Euro/ton (331-62).

Others base their analyses on more or less qualified guesstimates. Bouamra-Mechemache et al. (2002), for example, simply assume three different levels of quota rents in the different Member States (high: 45%, intermediate: 35%, and low: 30%) and use these assumptions to 'estimate' marginal production costs by subtracting the unit quota rent from the observed market price.

In any case, the existing literature (e.g. Jansson 2002) indicates that there seem to be substantial differences in quota rents among member countries because production costs differ depending on climatic factors, production efficiency, technology, input prices, etc. Models that operate with an EU aggregate cannot – by definition – take account of this heterogeneity and must assume a common EU-wide quota rent. The OECD PEM model, for example, operates with an EU quota rent estimate of 20% of the market price, which amounts to 25% of the producer (supply) price.

3. Illustrative simulations to assess the importance of quota rent estimates

The simulations undertaken in this paper serve the purpose of illustrating the importance of the assumed or estimated initial quota rents for dairy policy analysis. A second aim is to illustrate the importance of having country-level detail. The point of departure is the standard GTAP model and database (Version 6.2). Four different adjusted databases have been created, as shown in Table 1. The set of "small" quota rents is based on Jensen and Frandsen (2003), while the set of "large" quota rents is from Guyomard et al. (2002). Each of these sets is estimated at the country level and averages of these are used to create the databases where the EU-15 is treated as a single region.

[4] The Agenda 2000 reform of the CAP, for example, compensated farmer with 17.24 € per ton of quota for price reductions.

Table 1. Four different initial databases				
	EU-15 as one region	EU-15 as individual countries	Small quota rents	Large quota rents
QS_Agg	X		X	
QL_Agg	X			X
QS_Disagg		X	X	
QL_Disagg		X		X

To appreciate the differences in small and large quota rents, Table 2 shows the initial quota rents incorporated into the 2001 base year data as a per cent of producer prices (PS). The calculated values of quota rents in € per tonnes in the Jensen and Frandsen (2003) study are determined by using a 4 per cent real interest rate with infinity depreciation time. This corresponds to an annual cost of 0.04 times the cost of acquisition (the quota price). The quota rents estimated by Guyomard et al. (2002) are, as already mentioned, based on cost estimates using FADN data. Note also that not only is the overall level of quota rents different, but so is the ranking of countries. In other words, these two sets of estimates reveal different evaluations of the relative competitiveness of milk producers in the individual EU countries.

Tabel 2. Milk quota rents in the EU15 – Two different sets of estimates

	------------------------ Jensen and Frandsen (2003) -------------------------					-- Guyomard et al. (2002) --
	*Quota Price	Value of Quota Rent	*Consumer Price PM	Producer Price PS	Quota rent as per cent of PS	Quota rent as per cent of PS
	€/t	€/t	€/t	€/t	%	%
Belgium/Lux.	785	31	300	269	11.5	31.8
Denmark	422	17	331	314	5.4	41.6
Germany	801	32	297	265	12.1	45.3
Greece	281	11	457	446	2.5	36.8
Spain	360	14	263	249	5.6	37.5
France	726	29	308	279	10.4	35.2
Ireland	429	17	265	247	6.9	49.1
Italy	412	16	323	307	5.2	36.8
Netherlands	1182	47	334	287	16.4	36.0
Austria	833	33	404	371	8.9	45.9
Portugal	400	16	299	283	5.7	26.9
Finland	167	7	411	404	1.7	24.4
Sweden	182	7	320	312	2.2	15.2
United Kingdom	564	23	276	253	9.1	42.6
EU-15			307	280	9.5	38.3

Note * The estimated quota prices and the associated consumer price (PM), is based on Jansson (2002)

In order to assess the importance of these different estimates for dairy policy analysis, two sets of illustrative simulations have been performed using each of the four databases. The first simulation simply eliminates EU dairy export subsidies (a highly contentious aspect of EU dairy policy seen in an international perspective). The second simulation lifts the quantitative restrictions embedded in the dairy Tariff Rate Quota (TRQ) regime.

The necessary adjustments to the standard GTAP model to incorporate TRQs are well documented in Elbehri and Pearson (2000) and therefore we limit the following to a brief description of the extra data used in order to apply the TRQ module. The standard GTAP database does not contain information about which trade flows are regulated by quotas, including whether they are in-quota, on-quota, or over-quota. Moreover, it does not contain information about quota volumes, the in-quota tariff and the over-quota tariff. Hence, extra data must be supplied to the model. More specifically, three data items are required: (1) the ratio of imports over the TRQ volume, (2) the in-quota tariff, and (3) the full extra power of the tariff levied on over-quota imports.

The EU has notified 12 dairy TRQs to the World Trade Organisation (WTO). Four of these are bilateral TRQs (i.e. the import preference concerns a specific country), the rest are global TRQs (i.e. quotas are not allocated to specific countries and so in principle the preferences are available to any exporting country). Table 3 provides an overview.

Tabel 3. EU dairy TRQs notified to the WTO, 2001/2002

TRQ no.	Description	Quota (t)	Quota fill	From country
Bilateral TRQs				
TRQ no.	**Description**	**Quota (t)**	**Quota fill**	**From country**
12	Butter	76,667	100%	New Zealand
13	Cheese for processing	4,000	97%	New Zealand
		500	100%	Australia
14	Cheddar (whole cheeses)	7,000	100%	New Zealand
		3,250	100%	Australia
15	Cheddar	4,000	100%	Canada
Global TRQs				
TRQ no.	**Description**	**Quota (t)**	**Quota fill**	**From country**
71	Skimmed milk powder	68,000	62%	n.a.
72	Butter	10,000	95%	n.a.
73	Emmental	18,400	8%	n.a.
74	Gruyere, Sbrinz	5,200	13%	n.a.
75	Cheddar	15,000	99%	n.a.
76	Cheese for processing	20,000	70%	n.a.
77	Pizza cheese, fresh	5,300	17%	n.a.
78	Other cheeses	19,500	78%	n.a.

There is only one aggregate dairy sector in the standard GTAP database, and so the information at the individual TRQ level – in-quota tariffs, over-quota tariffs, fill rates – has been aggregated.[5] Moreover, the GTAP TRQ module does not enable a sector to have both bilateral and global TRQs operating in the same sector. Hence, the global TRQs have been "translated" into bilateral quotas using actual import quantity shares provided in the WTO Integrated Data Base. Since 2001 dairy TRQs have been administrated as licenses on demand and dependent on past trading performance. This latter condition effectively limits eligibility to secure a share of the quota to established importers of the product and so this "translation" of global into bilateral TRQs seems to be a reasonable description of the actual functioning of the global TRQs. The actual import quantities in the WTO Integrated Data Base are also used to calculate the ratio of imports over the TRQ volume (for data item 1 above). The in- and over-quota tariffs are taken from the USDA's calculations of ad valorem equivalents (http://www.ers.usda.gov/db/Wto/WtoTariff_database/) and they are aggregated using quantity-based

[5] There are two alternative aggregation methods, one considering the magnitude of tariffs, the other considering the sector-wide quota rent. For the current purpose the second method has been applied.

import weights (for data items 2 and 3 above). Finally, in the standard GTAP, it is assumed that all rents associated with import tariffs accrue to the importing region. However, in the case of the EU dairy TRQs, it has been decided to allocate 80% of the rents to the exporters that benefit from bilateral TRQs (i.e. Australia, New Zealand, and Canada), whilst for the global TRQs, it is presumed that the EU importers benefit from the bulk of the rents, leaving just 20% to the exporting regions.

4. Results

The first illustrative simulation simply removes the EU's dairy export subsidies. Tables 4 and 5 show the effects on EU milk production and dairy exports. Removing dairy export subsidies completely eliminates EU exports to third countries (Table 5). This effect is identical for both the small and large initial quota rent cases. The effect on domestic production (Table 4), however, differs depending on the initially assumed quota rents. Aggregate EU milk production is reduced by 4% in the small quota rent situation, whereas it is reduced by only 1% in the large quota rent situation. The disaggregate results help explain this difference.

Eliminating EU dairy exports to third countries diverts dairy sales from the world market to the internal market, thereby increasing competition on the EU common market. This of course leads to lower internal EU market prices and reduced quota rents. In the case of small initial quota rents, the value of these rents is reduced to zero in all 15 countries (PM = PS, c.f. Figure 1). In the case of large initial rents, for some countries the rents are large enough to absorb declining market prices (i.e. they still have PM > PS), wherefore the quotas remain binding. Assuming large initial quota rents simply means that milk producers are less sensitive to policy shocks such as this.

Table 4. Abolishment of dairy export subsidies – Effects on milk production

	2001	Small Quota Rents		Large Quota Rents	
	Milk production 1000 t	Percent change	Change 1000 t	Percent change	Change 1000 t
B_L	3627	-7.4	-268	-0.2	-7
DNK	4553	-26.3	-1197	-9.6	-437
DEU	28191	-1.7	-479	0	0
GRC	778	-7.2	-56	0	0
ESP	6495	-5.1	-331	0	0
FRA	24879	-5.6	-1393	-0.3	-75
IRL	5390	-9.3	-501	0	0
ITA	10764	-5.6	-603	0	0
NLD	11291	9.9	1118	0	0
AUT	3300	-1.7	-56	0	0
PRT	1983	-1.5	-30	0	0
FIN	2530	-10.5	-266	-6.1	-154
SWE	3339	-5.6	-187	-6.3	-210
GBR	14715	-0.8	-118	0	0
EU15	121835	-3.6	-4368	-0.7	-884
EU15	121835	-4.0	-4873	-0.9	-1097

Eliminating EU dairy exports on world markets (which initially accounted for 27% of world exports) creates increased demand for dairy products from other dairy exporting countries such as New Zealand, Australia and Canada. This is in turn puts pressure on world market prices, thereby leading to declining EU imports from non-EU countries (Table 5). When large initial quota rents are assumed, producers can withstand larger market price decreases without reducing production, and therefore we observe larger declines in imports from third countries in this case.

The results in Table 5 also highlight the importance of the different rankings in the small and large quota rent estimates. In the set of small quota rents, Denmark, for example, ranks as one of the low quota rent countries (i.e. relatively less competitive) and consequently reduces its internal EU exports due to more intense competition internally. In the set of large quota rents, Denmark ranks as one of the high quota rent countries (i.e. relatively more competitive) and consequently increases its internal EU exports as internal competition intensifies.

Table 5. Abolishment of dairy export subsidies - Effects on dairy exports

	Small Quota Rents			Large Quota Rents		
	Imports from third countries	Internal EU exports	Exports to third countries	Imports from third countries	Internal EU exports	Exports to third countries
B_L	-32.2	2.8	-99.4	-37.1	7.8	-98.9
DNK	-37.9	-10.6	-99.6	-67.9	33.8	-98.9
DEU	-33.3	4.4	-99.4	-41.0	-1.6	-99.0
GRC	-36.9	-24.3	-99.7	-66.3	1.6	-99.2
ESP	-31.6	-17.3	-99.6	-57.8	-0.2	-99.1
FRA	-27.4	-12.7	-99.5	-34.9	-14.8	-99.2
IRL	-36.6	5.7	-99.5	-60.9	27.9	-99.0
ITA	-21.7	-19.7	-99.6	-29.2	7.5	-99.2
NLD	-36.8	73.9	-99.0	-42.4	47.2	-98.6
AUT	-27.2	-10.3	-99.6	-39.7	-21.5	-99.3
PRT	-23.8	-22.4	-99.7	-53.4	-42.6	-99.5
FIN	-26.5	-25.8	-99.6	-64.9	4.9	-99.1
SWE	-26.8	-28.0	-99.6	-57.7	-41.2	-99.4
GBR	-29.3	-22.1	-99.7	-37.5	-36.2	-99.5
EU15	-27.6	-0.2	-99.5	-38.2	-1.7	-98.9

What does abolishing EU dairy export quotas mean for third countries? The effect on milk production and dairy exports from these countries are shown in Tables 6 and 7. The other main dairy exporters experience substantial increases in exports – Australia: 22%-25%, New Zealand: 11%-12%, Canada: 27%-29%, and the USA: 20%-24%. These increases in exports naturally feed back into milk production increases, particularly in Australia and New Zealand (8%-9%). Using small or large initial quota rents leads to differences in third country effects (production and exports) of between 0.5 and 1 percentage points.

Table 6. Percentage change in milk production in non-EU countries due to abolishment of EU export subsidies

	Small Quota Rents		Large Quota Rents	
	Dis-agg. EU15	Agg. EU15	Dis-agg. EU15	Agg. EU15
CEEC	1.3	1.3	0.7	0.9
AUS	8.7	8.9	8.0	8.1
NZL	7.9	8.0	7.7	8.0
JPN	1.3	1.3	0.6	1.1
CHN	0.4	0.4	0.0	0.3
IND	0.0	0.0	-0.1	-0.1
ROA	0.8	0.9	0.3	0.6
CAN	2.3	2.3	2.0	2.2
USA	0.9	0.9	0.7	0.8
LAM	0.6	0.6	0.5	0.5
AFR	1.7	1.7	1.1	1.4
ROW	1.0	1.0	0.8	0.9

Table 7. Percentage change in dairy exports from third countries due to abolishment of EU export subsidies

	Small Quota Rents		Large Quota Rents	
	Dis-agg. EU15	Agg. EU15	Dis-agg. EU15	Agg. EU15
CEEC	26.1	28.8	22.6	23.2
AUS	24.0	24.5	22.4	22.3
NZL	11.4	11.5	11.2	11.6
JPN	10.2	12.1	1.8	-0.3
CHN	27.4	27.9	23.9	23.3
IND	42.3	43	39	38.5
ROA	22.3	22.6	21.2	20.9
CAN	28.1	28.6	26.6	28.2
USA	23.3	23.7	20.6	20
LAM	26.0	26.4	24.4	24.4
AFR	69.1	70	65.3	64.6
ROW	35.0	35.5	33.7	34.9

The EU clearly benefits from removing its dairy export subsidies in terms of economic welfare (Table 8). At the aggregate EU level the gains are larger in monetary terms when assuming small initial quota rents than when assuming large initial quota rents. Efficiency gains are simply greater in the small rent case because production in the policy-distorted milk sector is reduced by more than in the large quota case (c.f. Table 4). Table 8 also shows that countries with internationally competitive, non-supported dairy producers such as New Zealand and Australia benefit from the elimination of EU export subsidies. The USA, on the other hand, looses in terms of economic welfare due to a slight increase in production of milk, which like in the EU is supported by various policy instruments, thereby accentuating efficiency losses. These observations support the conclusion that own domestic and trade reforms provide the greatest benefits.

Table 8. Changes in welfare (Equivalent Variation) due to abolishment of EU dairy export subsidies, mill. USD

	Quota rents			Small Quota Rents		Large Quota Rents	
	small	large		dis-agg	agg	dis-agg	agg
B_L	84	67	CEEC	-55	-53	-60	-58
DNK	184	133	AUS	20	21	18	17
DEU	257	197	NZL	67	69	52	47
GRC	26	44	JPN	-185	-188	-175	-171
ESP	84	79	CHN	-38	-35	-32	-32
FRA	419	280	IND	-4	-4	-6	-6
IRL	64	13	ROA	-86	-86	-80	-83
ITA	250	312	CAN	-89	-88	-88	-90
NLD	354	217	USA	-122	-118	-120	-126
AUT	22	19	LAM	-83	-86	-91	-96
PRT	15	19	AFR	-164	-166	-160	-162
FIN	73	63	ROW	-425	-421	-399	-397
SWE	24	24	Total	-1165	-1154	-1141	-1158
GBR	46	78					
Total	1900	1543					
Agg. EU15	1951	1498					

Due to time constraints, we are not able to describe the results of expanding the dairy TRQ quotas in detail. We will limit ourselves to noting that expanding the dairy TRQ quotas by 300% results in notable benefits only for New Zealand. Milk production in New Zealand increases by 6% as a result of dairy export growth of 8%-9%. The Central and Eastern European countries and the Rest of World region also increase their exports, but this has very little effect on the underlying milk production in these regions. Permitting more dairy imports into the EU does not result in any notable reduction in EU milk production.

5. Conclusions and areas for future work

The illustrative reform scenarios analysed in this paper have shown that the assumed or estimated initial quota rents associated with the EU dairy production limitations do matter for the results. Whether one uses small or large initial quota rent estimates has a notable influence on the magnitude of changes in production, exports and economic welfare observed in the EU – both as individual countries and at the aggregate level. The effect of the initial data assumptions on third country results is less significant.

This paper represents our first exploratory steps in analysing EU dairy policy. There is clearly a far way to go before one can thoroughly analyse real-world reforms of the policy, such as that embodied in the 2003 CAP reform. Both significant data and modelling efforts are required. First of all, the milk production quotas should be introduced in the model as a complementarity problem in which the linkages between producers of raw milk and buyers of raw milk are taken into consideration. Also, careful efforts should be put into gathering reliable marginal cost estimates for milk production at the individual country level. Alternatively, milk quota price information at the national level could also be used. To this end we have initiated a survey among agricultural economic researchers in the EU

(European Network of Agricultural and Rural Policy Research Institutes, ENARPRI, www.enarpri.org) that deal with EU dairy policy in the hope that this will provide better grounds for estimating quota rents at the national level.

Furthermore, to provide a more policy-relevant analysis, it would be beneficial to disaggregate the EU dairy sector into categories such as butter, cheese, skimmed-milk powder, whole-milk powder, and other dairy products. This would allow a more appropriate representation of the individual policy instruments. The possibility of embarking on such a task is currently being discussed with colleagues at Trinity College, University of Dublin.

Finally, future policy-relevant analyses of the EU dairy policy should include the rest of the Common Agricultural Policy, including representation of the EU budget and interregional transfers, accession of the ten new member states, and a baseline that incorporates growth forecasts and relevant policy changes.

6. References

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