

Endogenous adjusted Output Quotas – The Abolishment of the Raw Milk Quota in the European Union

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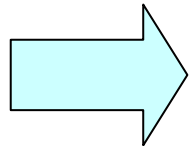
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Overview

- 1 Problem statement
- 2 Idea of the suggested approach
- 3 Necessary changes of the GTAP model
- 4 Used data
- 5 Results
- 6 Conclusions

1 Problem statement

- Four EU member countries wanted to terminate the milk quota system.
- CGE models are suited to analyze the impact of all EU countries.
- The current approach of implementing quotas seems not to be appropriate.

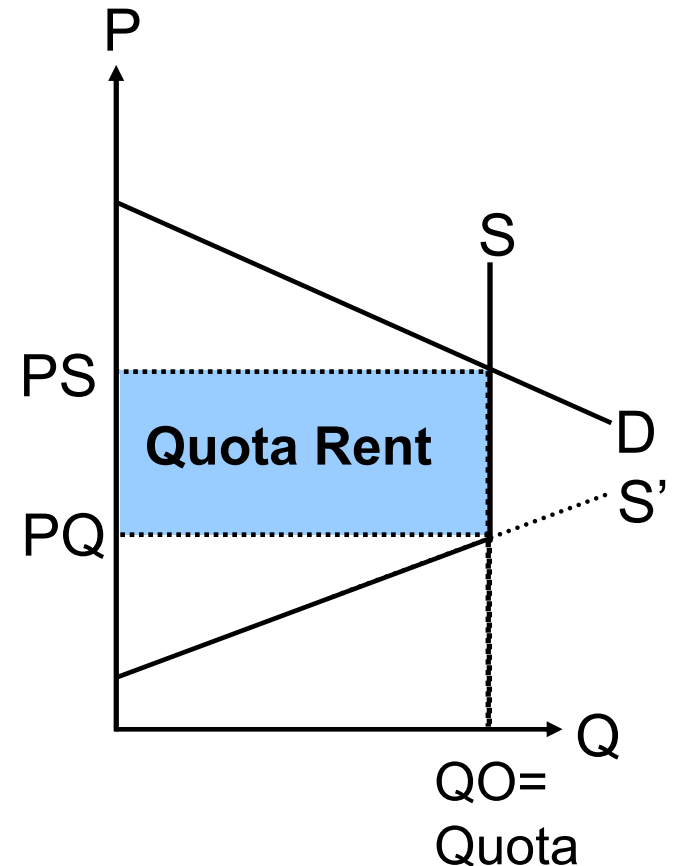
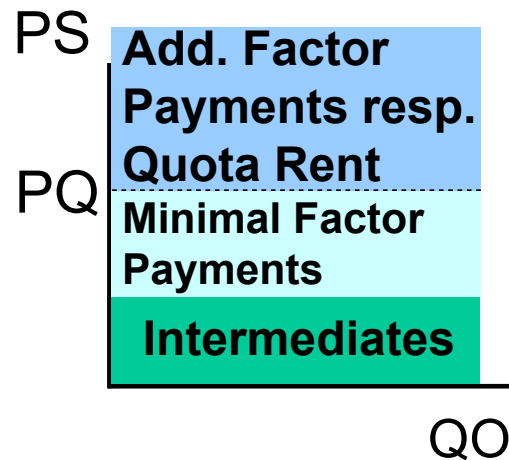
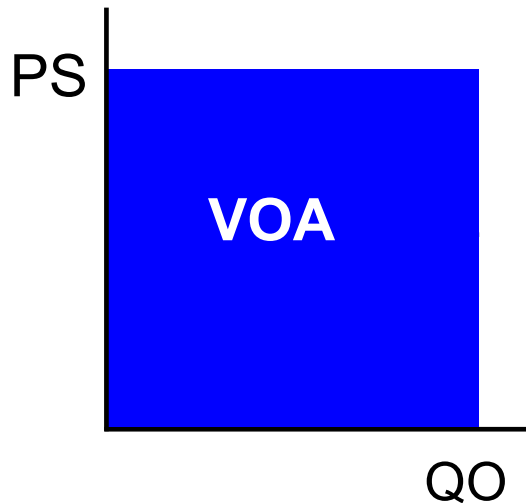


Suggestion of another approach which enables an endogenous adjustment of both quantity and quota rent.

2 Idea of the suggested approach

- We interpret the quota rent as additional factor payments.
- We assume that the quota rent is included in farm gate price (PS resp. VOA).
- Therefore no change of the global GTAP data base is required since the quota rent is still included in VOA.

2 Quota rent as additional factor payments

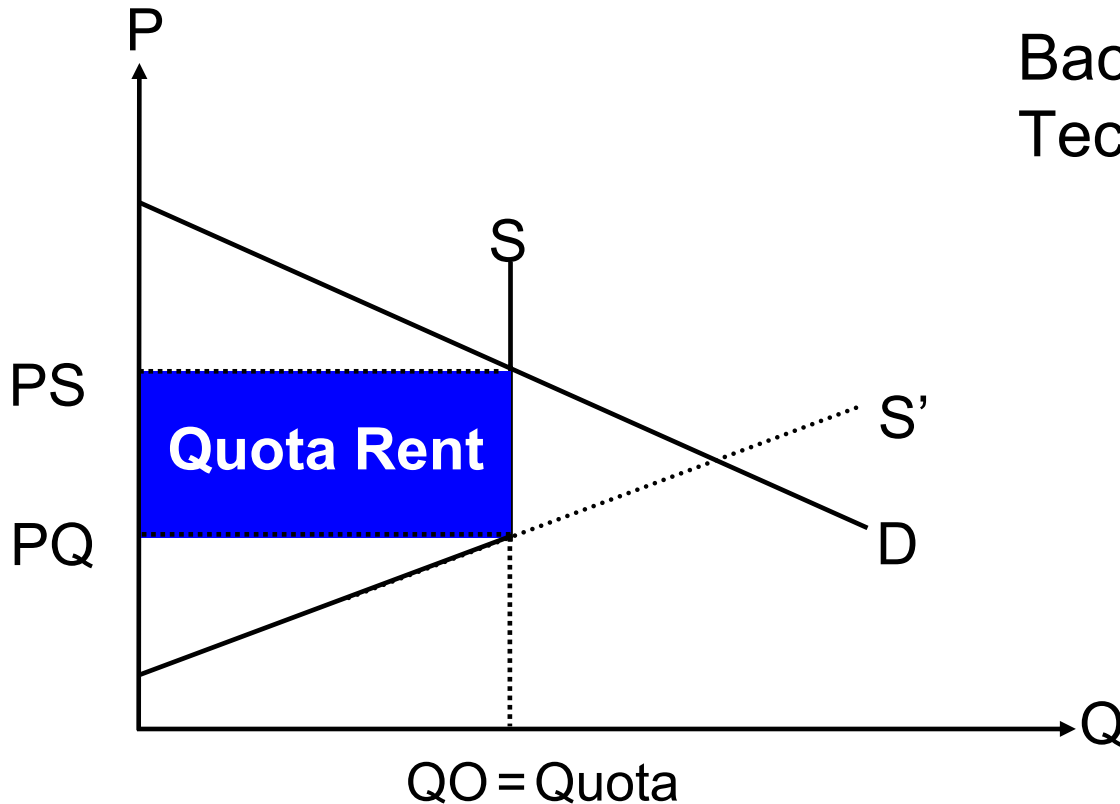


3 Factor markets

- We assume that the producing sector would use the same quantities of factor inputs regardless of whether it receives a quota rent or not. The quota rent does not generate any change in behavior with regard to factor use.
- Therefore no adjustments of factor markets are needed.

3 Maximum condition

Bach and Pearson, GTAP
Technical Paper No. 4



$$QQ = \frac{QO}{Quota}$$

$$TQ = \frac{PQ}{PS}$$

$\max(QQ, TQ) = 1 \quad \rightarrow \quad \text{COMPLEMENTARITY}$

3 Switch the zero profit condition

- In the GTAP model the zero profit condition holds at the value VOA resp. the price PS.
- The zero profit condition is modeled as change of the output price PS.
- We switch the zero profit condition from **PS** to **PQ**. Consequently, the cost shares of all inputs change.

3 Modification of the income

- The additional factor payment belongs to the regional income and has to be replaced by the quota rent.
- Being equal in the initial equilibrium they differ during the simulation.

→ General equilibrium is attained

4 Used data

- GTAP 5 data base (1997)
- Aggregation with 7 sectors and 17 countries resp. regions (all EU countries, Switzerland and the rest of the world)
- QQ and TQ are needed for the raw milk production of every EU country. Due to the lack of exact data we use the systematic sensitivity analysis by Arndt and Pearson.

5 Results: Price changes

	raw milk	
	μ	σ
Austria	-16.9	4.7
Belgium	-19.7	4.4
Denmark	-18.8	4.1
Finland	-19.2	4.4
France	-20.3	4.7
Germany	-20.3	4.6
Greece	-0.3	0.0
Ireland	-21.0	4.7
Italy	-19.9	4.6
Luxembourg	-18.8	4.1
Netherlands	-19.2	4.3
Portugal	-0.2	0.0
Spain	-21.1	4.9
Sweden	-19.6	4.5
United Kingdom	-30.5	4.2
Switzerland	-11.4	1.1
Rest of the world	-0.2	0.0

Results are percentage changes and refer to the situation of the base year (1997).

5 Results: Quantity changes

	raw milk	
	μ	σ
Austria	0.5	1.5
Belgium	3.6	4.4
Denmark	12.3	6.4
Finland	5.1	2.2
France	2.0	1.5
Germany	-0.9	1.2
Greece	-3.1	0.3
Ireland	16.9	8.3
Italy	3.3	1.6
Luxembourg	13.1	7.1
Netherlands	14.4	6.9
Portugal	-2.2	0.2
Spain	3.5	1.7
Sweden	2.2	1.7
United Kingdom	3.5	1.0
Switzerland	0.0	0.0
Rest of the world	-0.7	0.1

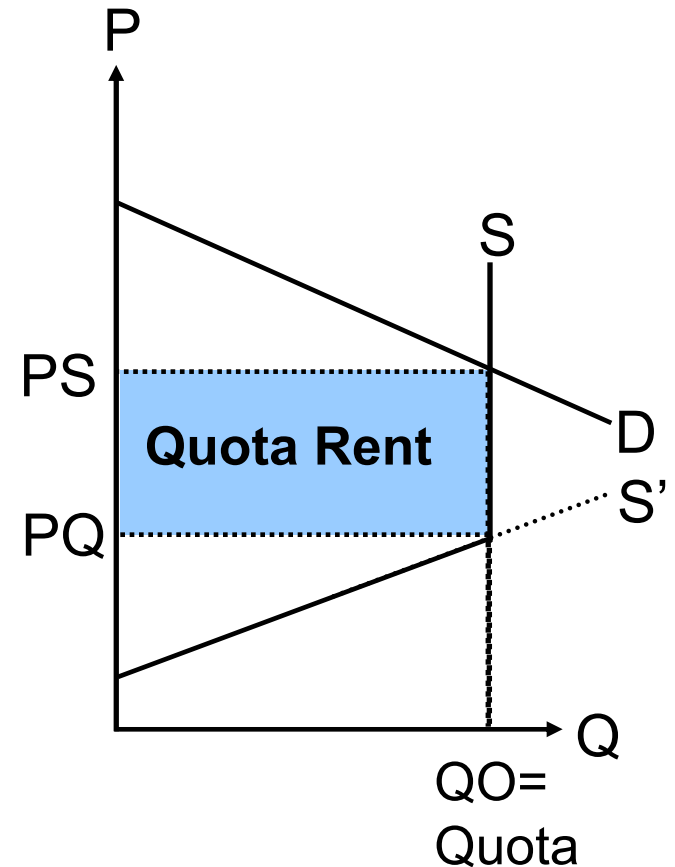
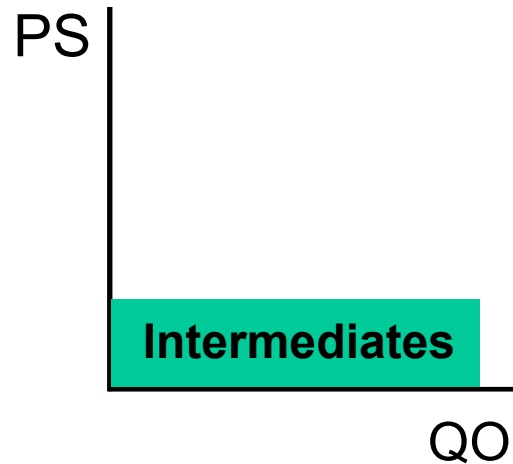
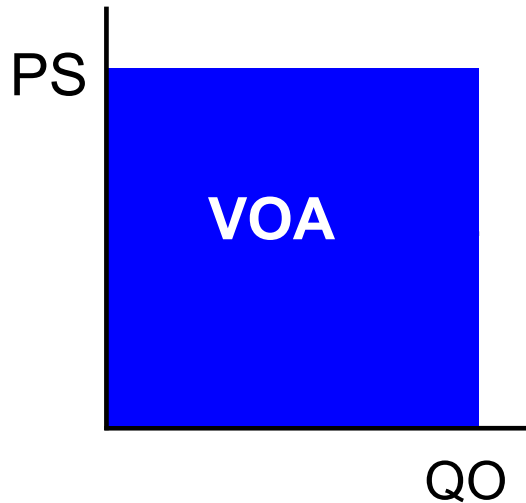
Results are percentage changes and refer to the situation of the base year (1997).

6 Conclusions

- The suggested approach allows the simultaneous adjustment of both produced quantity and quota rent.
- The abolishment of the raw milk quota in the EU would lead to a substantial decrease in raw milk prices in most member countries.
- The production of raw milk increases in Denmark, Ireland, Luxembourg and the Netherlands.

5 Text

2 Quota rent as additional factor payments



**Factor
Payments**

PS	Add. Factor Payments resp. Quota Rent
PQ	Minimal Factor Payments