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The Impact of Tariff-Rate Quotas and Imperfect Competition on Market Access

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Abstract: *The paper focuses on the question of how imperfect competition affects agricultural trade. Given that the buyers' concentration in livestock and meat-markets is relatively high, imperfect competition is assumed in the analysis. It is shown theoretically that imperfect competition causes market distortions and additional margins which burden consumers and producers. Therefore, tariff-rate quotas (TRQs) should be eliminated in favor of pure tariff systems. In all those cases where TRQs are considered politically "indispensable", measures that ensure the allocation by auctions should be employed. The experience from auctioning TRQs for white wine and meat-products in Switzerland shows that the danger of collusion among bidding firms can be reduced if the access to the auction procedure is open to all interested firms. There is a great need for reform towards competitive auctions in order to eliminate quota administration methods that are anti-competitive and that cause rent-seeking. Further research should concentrate on the systematic analysis of auction results in order to improve the auction design for an efficient allocation of TRQs.*

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The Impact of Tariff-Rate Quotas and Imperfect Competition on Market Access

1. Tariff-Rate Quotas (TRQs) and imperfect competition

Tariff-Rate Quotas: An important result of the Uruguay Round was the shift from the earlier quantitative restrictions towards tariff-rate quotas. However, many of the over-quota tariffs are so high that they have a prohibitive effect on trade ("dirty tariffication", Tangermann, 1996). Furthermore, tariff-rate quotas also limit the import of processed products. Consequently, TRQs create quota-rents and protect not only the farmers but also the firms in the down-stream industries. The effects depend on the method of how TRQs are allocated .
Imperfect Competition: The question how TRQs are allocated among the importing firms is a core element of competition. In case of limited access to import rights the assumption of perfect competition might be rather unrealistic. A characteristic element of agricultural market structure is the high "buyers' concentration". In recent years, numerous empirical studies have revealed an ongoing concentration process; in particular, Dobson (1999), Rogers/ Sexton (1994) and Goodwin (1994) stress the buyer power in agricultural markets. It is noteworthy that concentration on markets for raw products is higher than on markets for processed products, where substitutes are generally more frequent.[1] The buyers' concentration on the meat market is relatively high and we might assume imperfect competition. A recent analysis by Abdulai (2001) shows that price transmission in the Swiss pork market is asymmetric, "in the sense that increases in producer prices that lead to declines in marketing margins are passed on more quickly to retail prices than decreases in producer prices that result in increases in the marketing margins."

The purpose of this paper is to analyze the effects of TRQs and imperfect competition on market access (chapt. 2). In chapter 3 the role of auctions in allocating TRQs is examined. As only 5 % of the TRQs are allocated by auctions (World Trade Organization, 2000), we show the experience of auctioning TRQs in Switzerland. Based on this experience we try to characterize the pre-conditions for competitive auctions.

2. Analysis of tariff-rate quotas under imperfect competition

2.1 Different effects of quotas and tariffs

Helpman and Krugman (1992, p. 27) begin their analysis with a reference to Adam Smith: "This is the idea that international trade increases competition and thus, conversely, that protection creates domestic monopoly." Two hundred years after Adam Smith, Bhagwati (1995) demonstrated that different types of protection varied in their effects on monopoly power. In short: import quotas create more market power than tariffs.

[1] For Switzerland, Tab. 4 Appendix shows the concentration ratios for different degrees of processing.

In order to compare the effects of quotas and tariffs under imperfect competition, some assumptions are necessary. We proceed in the following manner:

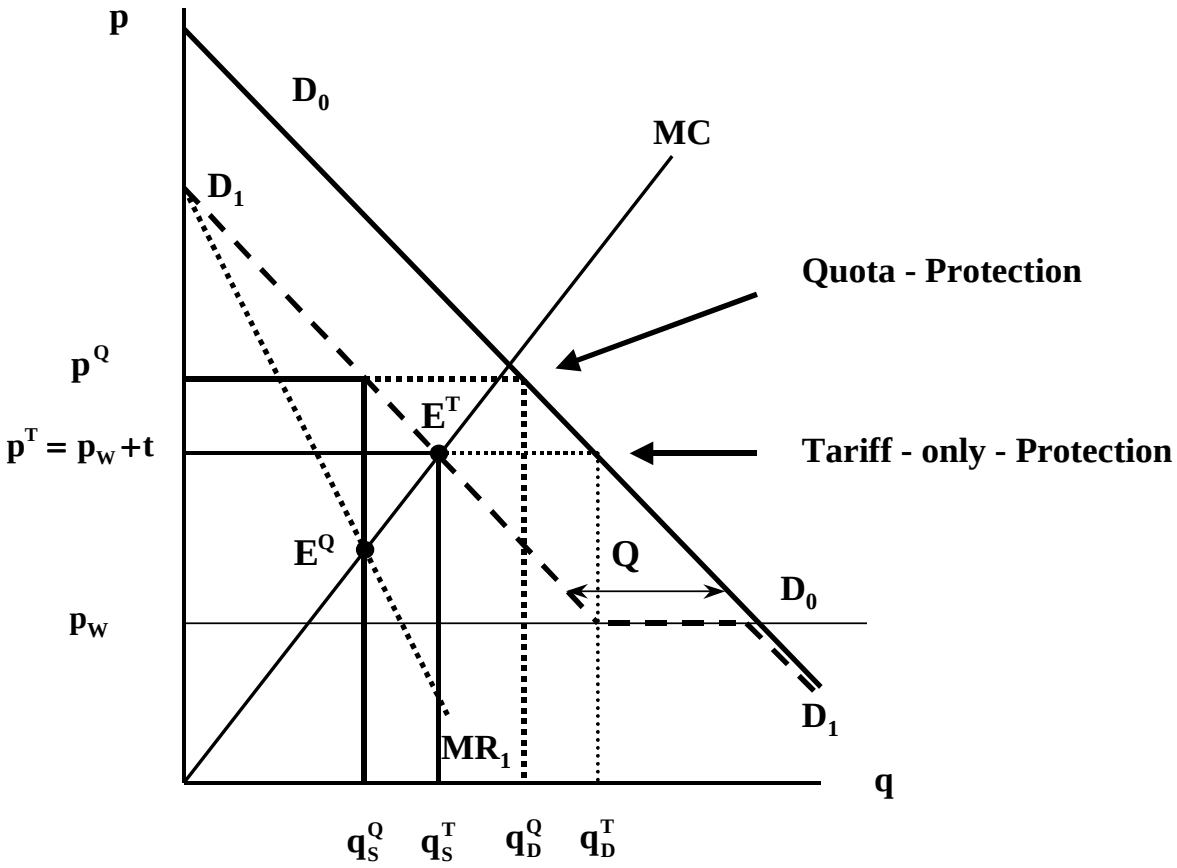
1. We start the analysis with the simplest case of imperfect competition, the case of a single domestic firm. This firm acts as a monopolist towards retailers and consumers.
2. In chapter 2.2 the monopolist will also act as a monopsonist towards farmers. We first assume that this dominant firm does not act as importer but that the quotas are allocated to other firms which act as price-takers.
3. In chapter 2.3, we will grant domestic monopoly access to import-quotas. This allows us to investigate the ability of a dominant firm to optimize profits and quota-rents in the protected market.
4. We assume that the WTO tariff-rate quota has the following characteristics:
   (a) The within-quota tariff is "minimal" and will here be set equal to zero.
   (b) The over-quota tariff is relatively high, as mentioned before, and has a prohibitive effect on imports ("dirty tariffication"). Therefore, there is no difference compared to the quotas before the Uruguay Round. In chapter 2.4, we will analyze the case where over-quota tariffs are lowered in order to limit monopolistic behavior.
5. Further assumptions are:
   (a) the case of a "small country";
   (b) the products are homogeneous, in other words, domestic and foreign products are perfect substitutes;
   (c) non-decreasing marginal costs of the firms.

Firstly, in order to compare the effects of quotas and tariffs on price support we fix a certain quantity Q (Fig. 1). Then the two types of protection can be discussed:

1. **Quantity Q is imported by setting the tariff t:** If the monopolist wishes to set a price above p^T, he will be unable to do so. In fact he cannot use his monopoly power. At any price above p^T, the "monopolist" would lose his market because the imports obstruct his intention to set higher prices; the price level p^T can be regarded as an upper limit on his price. The demand for domestic products is perfectly elastic on the level of p^T; the supply of the domestic products by the "monopolist" is q_S^T.
2. **Quantity Q is imported by setting the import-quota Q:** If the monopolist tries to set the price above p^T, it will be impossible because the imported quantity cannot exceed the quota Q. An import quota of Q shifts the demand curve facing the domestic monopolist to the left to $D_1 = D_0 - Q$. The new demand curve D_1 includes the tariff equilibrium E^T. Maximum profit for the monopolist is attained at the point E^Q where marginal revenue MR_1 equals marginal costs MC.[1] A reduced quantity q_S^Q is supplied at a price p^Q which is above p^T.

[1] MC of the domestic monopolist is identical with farmers' supply.

Fig. 1: Comparing Quotas and Tariffs



As quotas facilitate the exertion of market power, the same import quantity leads to different results: quotas charge consumers more than tariffs and dead-weight losses of a quota system are higher compared to a system of tariff-only-protection (Bhagwati, 1965).

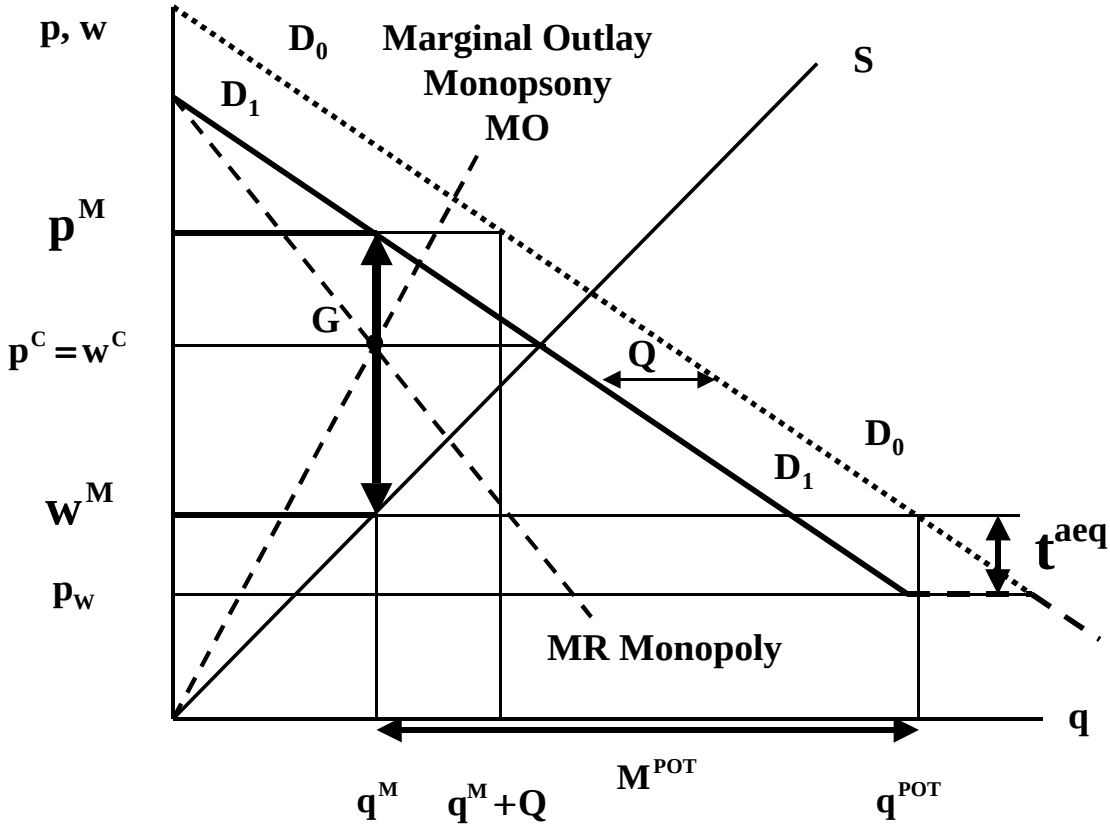
2.2 Imperfect competition and trade distortions

The following assumptions are made to facilitate the adaptation of the model to the case of high "buyers' concentration":

1. The dominant firm has a monopolistic position towards retailers and consumers and is able to set prices at the level of $p^M \geq p^C$,
2. Moreover, it behaves in a monopsonistic way towards farmers and pays them a price which is lower than under perfect competition ($w^M \leq w^C$).

The wedge between p^M and w^M indicates the distortion caused by imperfect competition. In order to show this in Fig. 2, we assume that the firm has no further costs except those for purchasing the products from the farmers.

Fig. 2: The Monopoly/Monopsony-Model



The monopsonist reaches the optimal purchase quantity where marginal costs equal marginal revenue at the equilibrium G. The marginal cost to the monopsonist of buying additional units is described by a "marginal outlay" schedule MO (Carlton, Perloff, 1994, p153). Given the supply S, the farmers offer the quantity q^M at the price of w^M. In the absence of any competition, the monopsonist pays the farmers a price below his marginal costs. Thus, market power generates disadvantages for both producers *and* consumers. The effects on both of these groups depend on elasticities of demand and supply, i.e. the less elastic the response to price changes, the greater the disadvantage.

Given: Demand function D_0 : $p = a_D - b_D q_D$ (1)

Domestic-supply function S: $w = b_S q_S$ (2)

$a_D, b_S, b_D > 0$

Import quota Q: We assume that Q is smaller than the quantity imported under free trade.

The quantity of demand for domestic products q is:

$$q = q_D - Q \quad (3)$$

We can derive the demand function D_1 for domestic products by substituting q_D in (3) by (1):

$$q = \frac{a_D - p}{b_D} - Q$$

$$b_D\, q = a_D - p - b_D\, Q$$

$$D_1 : p = a_D - b_D\, Q - b_D\, q \qquad (4)$$

The profit π, defined as revenue minus costs (outlay O for farmers' products), is as follows:

$$\pi = p\, q - w\, q_S \qquad (5)$$

$$= a_D\, q - b_D\, Q\, q - b_D\, q^2 - b_S\, q_S^2$$

The first-order condition for maximum profit is:

$$\frac{d\pi}{dq} = a_D - b_D\, Q - 2\, b_D\, q - 2\, b_S\, q_S = 0 \qquad (6)$$

As in the equilibrium, the equation for the optimal quantity q

$$q = q_S \qquad (7)$$

is valid, we obtain the optimal quantity of purchased domestic products q_S from (6):

$$q_S = \frac{a_D - b_D\, Q}{2\,(b_D + b_S)} \qquad (8)$$

Trade distortions: The effect of imperfect competition on farm prices is important: The reduced purchases of the dominant firm weakens the farmers' protection. Alternatively, this reduced level of protection could be realized by raising an equivalent tariff t^{aeq}. The change towards a pure tariff system would not lead to a deterioration in the farmers' position, but the dominant firm would lose its market power. Consequently, it would be possible to import the quantity M^{POT}, which is higher than the quota Q. The consumers' burden would be lightened. Therefore, we can draw the following conclusions:

Under imperfect competition, the quota is smaller than the potential market access offered by a pure tariff-system, which guarantees farmers an equivalent level of protection. Only under perfect competition is the quota identical with the potential market access offered by tariff-only protection.

2.3 Domestic monopoly and access to imports

The problem of the applied model is the fact that it is based on a static view of competition. As a rule, the dynamic view concentrates on the question of how market entry is regulated; in our case the access to the import quotas.

What are the consequences in case of **restricted access** to import quotas ?

As in chapter 2.2, it is assumed here (as an extreme case) that only the dominant firm enjoys access to import quotas. The dual role - market power on the domestic market and on import - is shown in the following model (Fig. 3):

Demand function : $p = a_D - b_D q_D$ (cf. chapt. 2.2)

Domestic-supply function $w = b_S q_S$

$a_D, b_S, b_D > 0$

Import quota Q: We assume that Q is smaller than the quantity imported under free trade.

The total quantity of supply is defined as follows:

$$q_{TOT} = q_S + Q, \text{ if } w > p_W \tag{9}$$

Optimal solution in the monopoly/monopsony-model: The profit π, defined as revenue R minus costs C (outlay for domestic and imported products), for the relevant interval p *and* $w > p_W$ is:

$$\pi = R - C \tag{10}$$

$$= p\,q_D - w\,q_S - p_W\,Q$$

$$= a_D\,q_D - b_D\,q_D^2 - b_S\,q_S^2 - p_W\,Q$$

$$= \underbrace{a_D\,q_D - b_D\,q_D^2}_{R} - \underbrace{\left[b_S\,q_{TOT}^2 - 2\,b_S\,q_{TOT}\,Q + b_S\,Q^2 + p_W\,Q\right]}_{C} \tag{11}$$

As in the equilibrium, the equation for the optimal quantity q

$$q = q_D = q_{TOT} \tag{12}$$

is valid, the profit function can be formulated as follows:

$$\pi = -\left(b_D + b_S\right)q^2 + \left(a_D + 2\,b_S\,Q\right)q - b_S\,Q^2 - p_W\,Q \tag{13}$$

The first-order condition for profit maximization is given as:

$$\frac{d\pi}{dq} = -2\left(b_D + b_S\right)q + a_D + 2\,b_S\,Q = 0 \tag{14}$$

$$q = \frac{a_D + 2\,b_S\,Q}{2\left(b_D + b_S\right)} \tag{15}$$

The optimal quantity of domestic products q_S is:

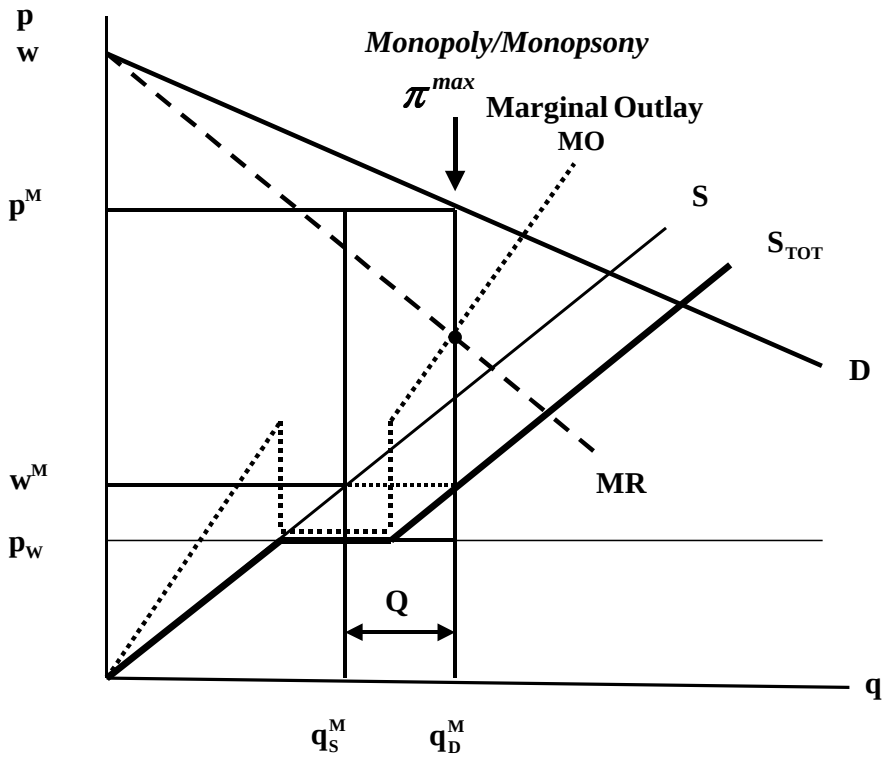
$$q_S = q - Q = \frac{a_D + 2\,b_S\,Q - 2\,b_D\,Q - 2\,b_S\,Q}{2\,(b_D + b_S)}$$

$$q_S = \frac{a_D - 2\,b_D\,Q}{2\,(b_D + b_S)} \tag{16}$$

When equation (16) is compared with (8) in chapter 2.2, both expressions have the same denominator, though the numerator in (16) is smaller than in (8). In other words: If the dominant firm can import as well ("dual role"), the domestic quantity decreases! Hence, the level of farm-price support is likewise reduced.

Quota administration methods which restrict access to imports increase the effect of market distortions. Compared with the case where domestic monopoly has no access to import quotas, the dual role aggravates the situation of consumers and producers. Under imperfect competition, strong links between domestic-market shares and import-quota distribution intensify the problem of inefficiency and market distortions.

Fig. 3: Maximum of profit and quota rents in case of monopolistic pricing



2.4 Expanding tariff-rate quotas and/or tariff reductions

There are two issues in the field of "Market-Access": expanding the tariff rate quotas and/or tariff reductions. How should this question be answered if there are reasons to assume imperfect competition ?

Expanding tariff-rate quotas

The inefficiency of monopolistic pricing is not eliminated by expanding tarif-rate quotas. Firms in protected markets can still avoid competition and the process of structural adjustment is impeded. This inefficiency can only be eliminated by establishing a pure tariff system which allows greater market access without lowering farm prices.

Reduction of tariffs

There are actually two ways to escape from the monopoly/monopsony situation.

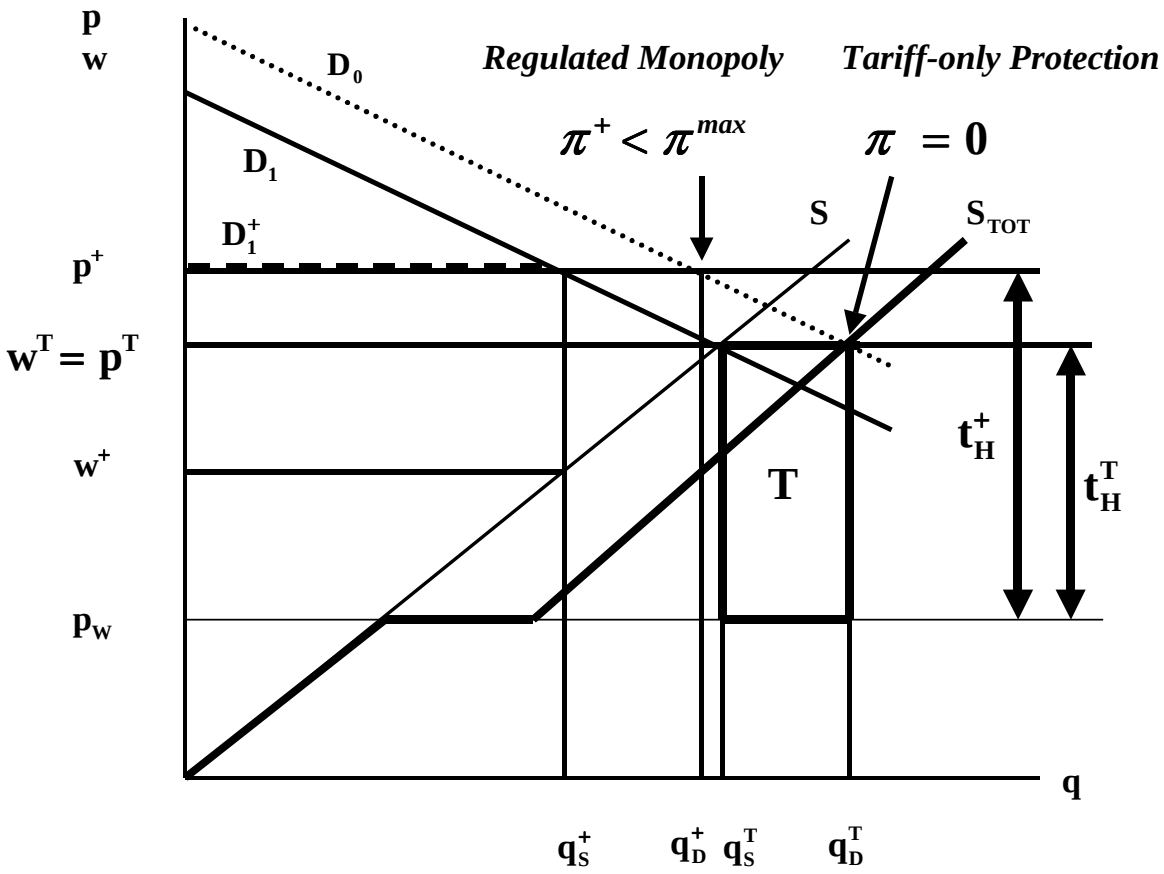
1. The reduction of the over-quota tariff to t_H^+ restricts market power towards consumers, because the monopolist's demand is kinked from D_1 to D_1^+;
2. Similarly, a higher within-quota tariff t_L would diminish the monopsonistic scope of pricing.

In the WTO, raising tariffs is generally viewed as an additional impediment to larger market access. In Fig. 4 the over-quota tariff t_H is reduced from a prohibitive high level to t_H^+, while the within-quota tariff t_L remains "minimal" (= 0). However, the indirect effect of tariff reduction is apparent: as a reduction of the over-quota tariff to t_H^+ the scope of monopolistic pricing is restricted and the price cannot exceed the level of $p^+ = p_W + t_H^+$. Therefore, the monopoly is "regulated" and it's profit is restricted to π^+ which is smaller than the "unregulated" monopoly profit π^{max} in Fig. 3. As a consequence of the restricted scope of monopolistic pricing, the lower price p^+ increases the quantity of demand q_D^+ and the farm supply q_S^+; the farm price moves onto the level w^+. Compared with the situation in Fig. 3, the burden for consumers is lower and farmers receive a higher price: $p^+ < p^M$ and $w^+ > w^M$. A gradual adjustment of tariffs, from the top and the bottom, brings the equilibrium away from the extreme monopoly/monopsony equilibrium towards tariff-only protection. When $w^T = p^T$, there is no longer any scope for monopolistic or monopsonistic pricing. Thus, the government collects the tariffs T.

With regard to the problem of imperfect competition and trade distortion the reduction of over quota-tariffs in the next WTO negotiation round is an issue of high priority.

Between monopoly and competitive market: The assumptions made for the monopoly/monopsony-models reflect an extreme situation, or a kind of "worst-case". It is clear that a wide range of approaches are possible between the two models "monopoly / competitive market" that are "less extreme". The consequence is that the wedge between farmer and consumer prices is smaller and trade is less distorted. The adaptation of the model to a specific market problem is a matter of further research. Modeling imperfect competition is rather complex because the reality is it too. Helpman/Krugman (1992, p.181) formulate this appropriately: "*There is only one way to be perfect, but many ways to be imperfect.*"

Fig. 4: Restriction of market power through reduction of the over-quota tariff t_H



3. Quota administration methods: experience from auctioning TRQs

3.1 Quota administration methods and competition on agricultural markets

After the beginning of the Uruguay Round, economists suggested the method of quota auction. One of the earliest studies was realized by Bergsten *et al.*(1987), who characterized the auction mechanism as follows:

- **a)** Access to import quotas is open to all interested firms. This characteristic of auctions is of special importance from the point of view of competition.
- **b)** Auctions enable the government to capture the quota-rents, which, under administrative distribution, flow to the importers and are problematic from the point of view of redistribution.

Auctions show at which level the equivalent tariff should be fixed in order to guarantee the same protection as through a pure tariff system. Auctions can act as a bridge towards a pure tariff system.

Skully (1999, p. 31) has analyzed the effects of the various administration methods under the condition that allocative efficiency is consequently pursued: “On this basis, market methods dominate all others and therefore should be encouraged. Historical allocation and discretion-

ary methods [State trading organizations and producer groups] are the least desirable and therefore should be disciplined." This important conclusion based on economic analysis is in contradiction to the real TRQ-administration: only 56 of the total number of 1,371 TRQs were auctioned in 1999. The question of why there are so few TRQ auctions arises. Skully's answer is clear: "It would be naive, however, to ignore distributional effects: who gets the rent does matter. In fact, in the *realpolitik* of trade policy, it matters far more than global allocative efficiency."

Despite strong opposition of the involved groups, TRQs have been auctioned in recent years. We show the experience of auctioning TRQs in Switzerland. Based on this experience we try to characterize the pre-conditions for competitive auctions.

3.2 Liberalization of Swiss white-wine market: the role of auctioning TRQs

The case of Swiss white wine is an interesting example because different methods of administration quotas have been applied since import restrictions were first implemented in the thirties of the last century. The interesting question is to know how the various administration methods have regulated the market access for firms. As we will see, the experience reflects a long way of "trial and error".

Historical shares: Before implementation of the Uruguay Agreement of Agriculture on 1 July 1995

Import quotas were allocated on the basis of historical shares. The system was very rigid and provided a high degree of certainty for importers. Their business consisted in importing wine in barrels and bottling it for the domestic market. As the gap between border- and domestic prices was relatively wide, high rents were reached by the quota holders. Newcomers claimed better access to imports time and again; different attempts towards more flexible allocation schemes were launched by the administration, but they were all "unsuccessful". Strong rent-seeking was characteristic and quotas were considered as a "historical right" of the quota holders.

Allocation on Demand: 1 July – 31 December 1995

In line with the Uruguay-Round Agreement on Agriculture, tariff-rate quotas were implemented on 1 July 1995. The relatively big difference between the fixed within-quota and over-quota tariffs caused a run on the quotas: 800 firms applied for the quotas, and the total quantity demanded was 50 times higher than the available import-quota. The allocation on the basis of the demanded shares caused enormous distortions. Consequently, the system was no longer applicable.

First come, first served : implementation on 1 January 1996

The government decided to allow imports to the lower in-quota tariff on a first-come-first-served-basis, until the quota of 150,000 hl (= ca. 20 % of total consumption) was fully used. As the gap between the two tariffs still remained wide, there was a strong incentive to bring

the imported wine through customs as quickly as possible, in order to obtain the rents. A few big firms were able to organize transport capacities (trucks and railroad wagons) so that the whole quota was completely used at the end of the first week in January 1996. This was only possible because the (few) firms bought large quantities of low-quality wine. [1] This rent-seeking behavior had the following trade-distorting effects:

- Low-quality wine displaced high-quality products
- Larger operators had an advantage over smaller firms ("specialists")
- Export-countries of further origins were disadvantaged[2]

After the collapse of the system, the majority of firms had to import white wine at the over-quota tariff. In order to avoid increasing conflicts among importers, the government reduced the over-quota tariff for white wine in bottles from sfr 5.70 /liter to sfr 3.- /liter[3] during the whole year of 1996.

Auctioning TRQs and expanding the quota

After the turbulence of the previous period, the first-come-first-served-system was replaced by an auction. At the same time, the government expanded the quota-amount from 160,000 hl 1997 to 190,000 hl in 2000 (ca. + 20 %) during the period 1997-2000. This was a remarkable step towards a liberalized and market-oriented system. After the negative experience with the behavior of the few big importers at the beginning of 1996, there was some doubt about the planned auction; the incentive for the biggest bidders to collude still existed. Therefore the auction was implemented with the restriction that the amount of allocated quotas per bidder could not exceed 10 % of the total quota amount. Another important element of the auction design was the fact that all interested firms and persons resident in Switzerland were allowed to send their (sealed) bids to the administration.

Fig. 5 shows the results of two of these auctions: for the first time in 1997, the value of a quota to importing firms was visible. At the same time, the results reflect the existence of quota rents that were hidden under all the previous systems of quota allocation. This transparency was a necessary condition for broad acceptance of the auction system. Retailers and consumers were aware of the fact that the reason for higher domestic prices was the restricting import quota and not the fact that quota holders had to pay for the right to import. Auctioning the quotas did not increase the price for imported wine; but the rents were transferred to the government.

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[1] One of the earliest description of the "import derby" was made by G. Johnson: " Before World War II, the Canadian tariff quota was on a quarterly basis. At the beginning of each quarter Canadian farmers would rush their cattle into American markets, particularly at St. Paul, in order to take advantage of the lower tariff of 1.5 cents per pound instead of the above quota tariff of 3.0 cents per pound. The result was that the prices of cattle, particularly certain grades, on St. Paul market were depressed with loss to both Canadian and American farmers. The quota added to price instability rather than reduced it." There are three kinds of costs which result from the rush to the border: 1) an unnecessary dip in domestic prices; 2) unnecessary domestic storage costs; and 3) unnecessary rent-seeking costs induced by the existence of a common resource. In Skully, D.W., 1999, *op. cit.*, p. 19.

[2] In those days - by hazard - there was a boat from Argentina loaded with white wine that was bought by a Swiss importer; exceptions like that can happen but in normal situations, further origins are disadvantaged.

[3] 100 US-Dollars = 170 Swiss francs (Dec. 2000).

Another important result of the auction was the fact that collusion among bidders did not occur. The principle, enclosed in the auction rules, was to keep entry barriers as small as possible in order to eliminate incentives for collusion. This is a consequence of a problem that we know from Modern Industrial Organization: not the market structure but the degree of free entry and exit determines the behavior of the firms on markets. Quota administration methods can have an impact on competition among firms in regulated markets: limited access to import quotas increases anti-competitive behavior.

The auction of TRQs brought the extensive behavior of rent-seeking to an end. Since the first auction in 1997, quotas have been allocated to the firms that make the best use of the access to imports. New trends in consumer taste and changing preferences have been the dynamic forces in the last decade. The auction enabled those entrepreneurs who realized the opportunities of the liberalized market to develop their business in recent years. Firms with innovative strategies were able to assess the utility of an additional unit of the imported goods and they did not have difficulties in formulating their bids. They never complained about auctioning quotas increasing uncertainty because they knew - and still know - that uncertainty is an inherent element of markets.

The auction provided important information about the question whether the TRQs were binding or not. The expansion of the quota from 160,000 hl in 1997 up to 190,000 hl in 2000 caused decreasing average bids per liter. The substantial enlargement of the market access, step-by-step each year, has been lowering the difference between border- and domestic prices. Although the lowest bid of the last auction in 2000 has become small, the TRQ still remains binding. Further expansion of quotas would end in a situation where the lowest accepted bids would become zero and the TRQ would not be binding anymore. This situation would correspond to a system of tariff-only protection, where the domestic price will be supported to the level of the (within-quota) tariff.

The effects of trade liberalization on Swiss farmers are ambiguous because of the fact that wine is a very heterogeneous product. For producers of wine of a mediocre quality, prices have been decreasing more than for winegrowers who developed their own vinification and marketing years ago. Many of these successful winegrowers started their own business early in the 1980s on the red-wine market which was less protected than the white-wine market. They made the experience that the added value of vinification and marketing was very high and not comparable with all other sectors of agriculture where these opportunities are limited.

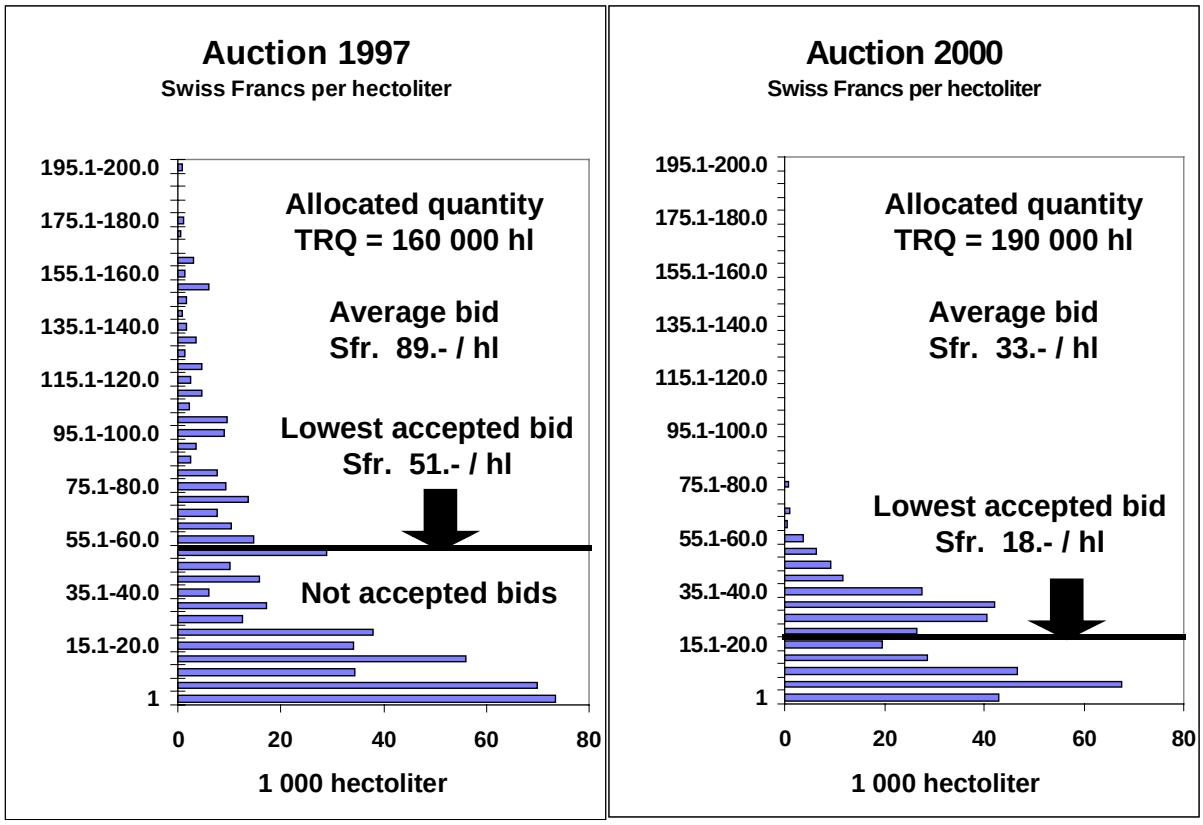
Global tariff-rate quota for wine: 1 January 2001

As from 1 January 2001, a global quota has been implemented and contains all categories of wine (red and white wine, sparkling wine, wine for vinegar, etc.). The global TRQ of wine gives market access for 170 mio. liters per year at a relatively small within-quota tariff.[1] Importers can select their wines without any limits of origin or quality. The new quota will not be entirely used because consumption of wine is changing significantly: “less quantity – more quality”. Under these market conditions, the fill-rate will amount to about 90 – 95 %. As the quota will not be binding, no danger of strong rent-seeking should be expected (as this was the

[1] sfr 50 - 80 per 100 liters; US $ 30 – 50 per 100 liters

case in the past). Therefore, imports will be allowed on the first-come-first-served-basis.[1] In case of changing market conditions towards binding quotas, the quotas should be allocated again by auctions.

Fig. 5: Auction Tariff-Rate Quotas of White Wine by the Swiss Office of Agriculture



3.3 Experience from auctioning TRQs for meat-products in Switzerland[2]

Implementing the TRQ-auction step-by-step

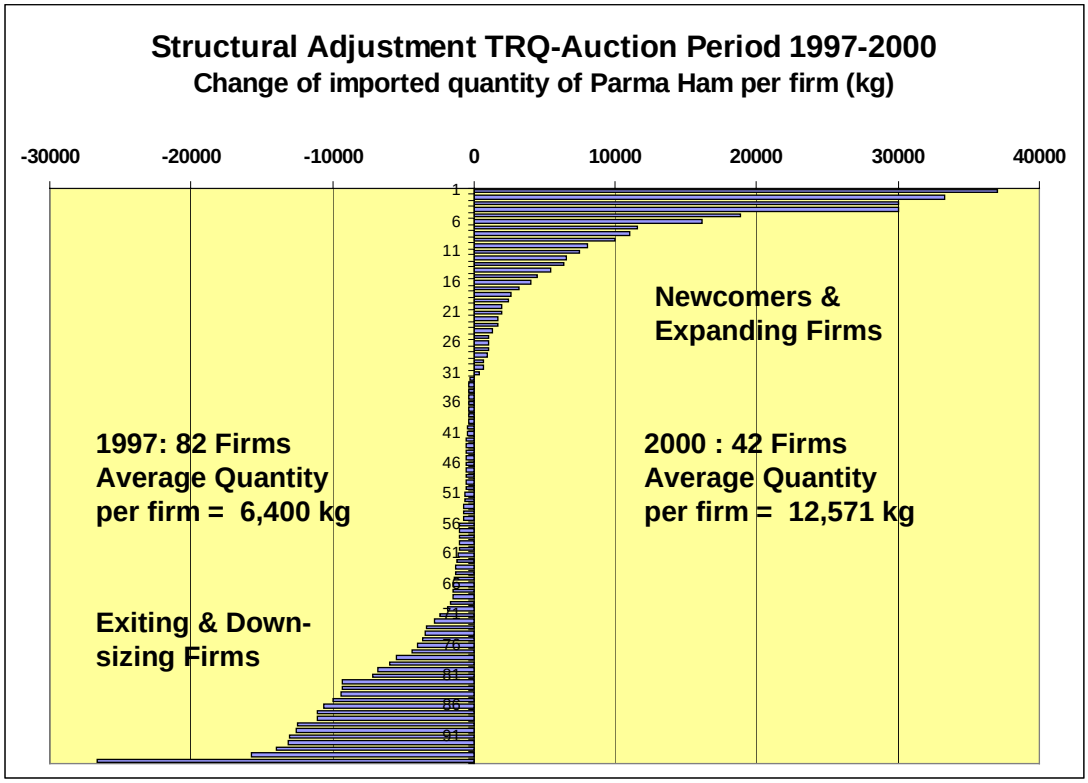
Every change of quota allocation affects the firms because rents are reallocated. The step towards auctioning quotas will inevitably change the former market shares of the firms. The fear of disruption of the involved firms used to be the main reason against auctions. The implementation of auction procedures step-by-step takes into account that there is a trade-off between a more efficient commerce and the present situation. The case of TRQ-auctions of meat-products can serve as an example for it: In 1997, only 30 % of the total quota amount were auctioned and 70 % were allocated on the basis of the previous market shares.[3] In 1998, only one year later, 40 % were allocated by auction. As the firms became familiar with the new system, in 1999 the whole quota (100 %) was auctioned.

[1] The first-come-first-served-method requires only little administration.
[2] "Meat-products": ca. 20 % of total meat imports are "specialities" from different countries, especially from Italy
[3] "Base plus tender" system, in: Bergsten, C.F., *et al., op. cit.*, p. 179

Structural adjustment towards a more efficient commerce

Before 1997, TRQs were allocated on the basis of historical shares. There was little structural change among the quota-holders. Since the implementation of the first auction in 1997, the conditions to get import quotas have changed fundamentally. As the example of the most famous product "Parma ham" shows, the number of importers has decreased from 82 in 1997, to 42 firms in 2000. Among these 42 firms in 2000 there are 17 newcomers; some of them are not really new firms because they were founded by merging former (smaller) firms. But this makes evident that the economic pressure towards more efficient firms was very strong. Under the system before TRQ-auctions, many of the firms were not competitive; they existed only because of the import-regulation. There were the "outsiders" who claimed better access to import quotas, though all their negotiations to find an agreement were not "successful". The only way to get a reallocation of quotas under strong economic pressure towards more efficiency was the allocation by auction. Fig. 6 shows how firms have been changing their activities for the period 1997-2000: ca. one third of the firms in 1997 have been able to develop their business and to expand their quota-shares, two thirds have reduced or given up their activities since 1997. It is an important fact that all these structural adjustments have occurred *within* the TRQ framework; it was the method of auction that made it possible.

Fig. 6: Structural Adjustment towards a more efficient commerce

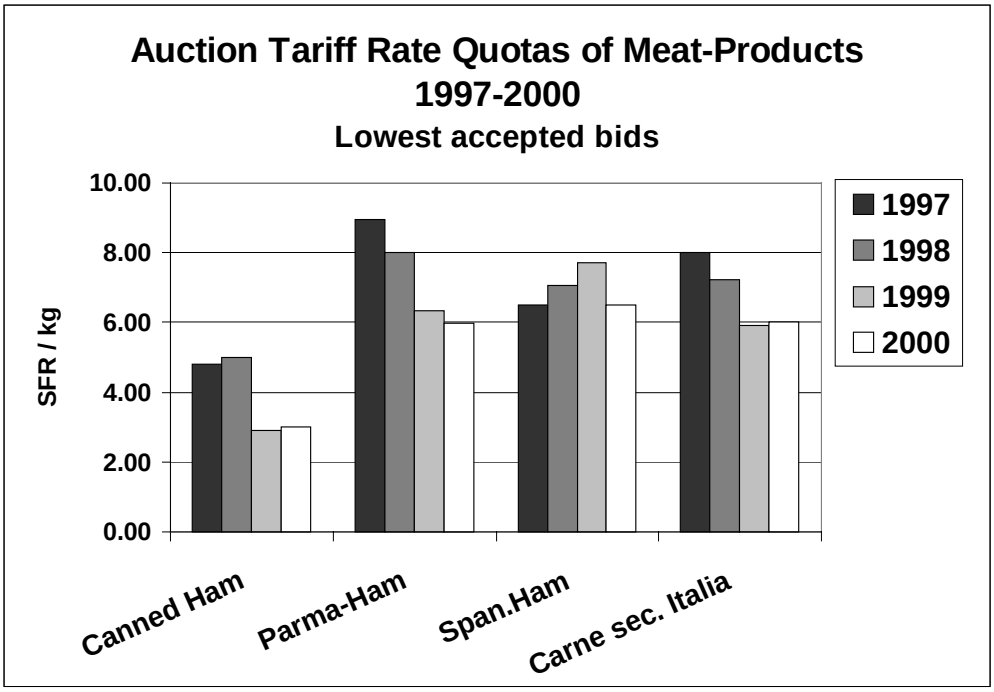


Changing market conditions and the role of auctions

Auctions provide information about changing market conditions: Fig. 7 shows the lowest accepted bids for TRQs of different meat-products. Increasing values are a result of stronger

consumer preferences and indicate the positive welfare effects in case of expanding the specific TRQ. As market conditions permanently change, trade policy should either adjust the different TRQs to the new trends as soon as possible, or group all covered product categories "as broadly as possible"(Bergsten, 1987, p. 177). In our example it would be welfare improving to eliminate country-specific TRQs (Parma ham and *carne secca* from Italy and ham from Spain). Compared with the liberalized Swiss wine market, imports of meat and meat-products are still divided into different specific TRQs . Product- and country-specific TRQs create inefficient trade patterns, whereas global TRQs allow importers to source from the most competitive foreign supplier.[1] Another problem of setting quotas for narrow product ranges and for different countries is the danger that only a few firms are in the business and collusion among bidders may occur.

Fig. 7: Auction Tariff-Rate Quotas of Meat-Products by the Swiss Office of Agriculture



Opposition against auctions

The main part of meat import (about 80 %) TRQs are not allocated by auctions. The quotas are allocated by a rather complicated system, so-called "prise en charge": an importer is obliged to buy in a given proportion to his quota and over a considered period of time, domestic meat (or cattle) of the same type as the imported meat. This system is the complete opposite of the auction: access to the import rights is impeded by high entry barriers. In principle, it is an anti-competitive method of TRQ allocation and corresponds to the market model in chapter 2.3, where a dominant domestic firm has exclusive access to imports. Trade distortions, strong rent-seeking and asymmetric price transmission (Abdulai, 2001) is characteristic

[1] An interesting proposal to improve efficiency of trade has been elaborated by Skully, D.W., 1998, Auctioning Tariff Quotas for U.S. Sugar Imports, Sugar and Sweetener, USDA Economic Research Service, SSS-223, May 1998.

for Swiss meat market. Opposition against TRQ-auctions comes from the present quota-holders (Tab. 4 Appendix).

3.4 Auctioning TRQs and imperfect competition

The inherent problem of quotas, as it was mentioned in chapter 2, is the experience that quotas create more market power than tariffs. McCorriston (1996, p. 372) has shown how import quotas create oligopsony power: "the results confirm that perfect competition among license holders should be rejected" and that "concentration in the holding of quota licenses is another source of nonequivalence [between import quotas and their equivalent tariffs]".

De Gorter (1999, p. 9) explains the situation where "it is possible for one group to purchase the entire portion of the right to import (domestic or foreign), and then withhold part of the licenses to maximize revenues." Under these conditions, auctions may not work efficiently and a change towards allocation TRQs by auctions is not advisable. But as the example of auctioning TRQs on the Swiss white-wine market shows, the problem of collusion among bidders does not arise, when no entry barriers impede the access of firms to the auction procedure. The question of whether a market is "contestable" or not is in fact a fundamental question of competition policy. Following the idea of keeping entry-barriers as small as possible, the auction design should ensure open access to the right to import. Further research on auction mechanism should therefore focus on the following questions :

- **Ex ante:** *What are the pre-conditions for competitive auctions ?*
  (auction design: criteria for participation, maximal quota per firm, uniform or discriminatory[1] pricing, frequency of auctions, transferability of quotas, transition measures e.g. implementation of auctions step-by-step, rules of access to data on the bidding firms, etc.)
- **Ex post:** *Do auction results provide information in order to test if collusion among bidders has occurred or not ?*
  (systematic analysis of auction results)

As the example of auctioning TRQs on the Swiss white-wine market shows, import regulations can be liberalized in two steps:

1. Auctions can serve as an instrument of competition policy: open access to import rights can break up monopolistic market structures and will lead towards a more efficient allocation of TRQs.
2. Auctions can act as a bridge towards tariff-only protection: replacing quotas by tariffs will lead to gains in market access.

[1] discriminatory pricing: "pay what you bid"

4. Conclusions

1. Different effects of tariffs and tariff-rate quotas

The WTO agreement of Agriculture (1994) contains not only tariffs but also tariff-rate quotas. Both instruments guarantee a certain agricultural protection. However, the analysis shows that under imperfect competition protection through tariffs costs less than through tariff-rate quotas. This applies mainly to tariff-rate quotas which have relatively high over-quota tariffs ("dirty tariffication").

A further effect of high barriers is the protection of firms in downstream industries, and consequently there is less competition in these areas as well. The buyers' concentration on the meat market is extremely high and we might assume imperfect competition. Imperfect competition causes market distortions and additional margins which burden consumers and producers. Therefore, tariff-rate quotas should be eliminated in favor of pure tariff systems.

2. Market access and imperfect competition

Under imperfect competition, caused by market power, the quota is smaller than the potential market access offered by a pure tariff-system which guarantees the farmers the same level of protection. Potential market access would be higher if this level of farm price support was achieved by means of a tariff. Expanding quotas as an alternative would not be an appropriate way to improve market access because the inherent problem of inefficiency and trade distortion still remains. Under a TRQ-regime, firms in protected markets can still avoid competition and the process of structural adjustment is impeded. Therefore, replacing quotas by tariffs will lead to substantial gains in market access without the farmers being disadvantaged.

3. Problematic dual role: strong position on domestic market and on imports

As the analysis of imperfect competition shows, every accumulation of market power is distorting. The link between domestic market dominance and access to import quotas is a particularly significant problem. If the dominant firm can also import, the domestic quantity and the level of farm price support decreases even more. Compared with the case where domestic monopoly has no access to import quotas, this dual role aggravates the situation of consumers and producers. Under imperfect competition, strong links between domestic market shares and import-quota distribution intensify the problem of inefficiency and trade distortion.

4. Reforms towards auctioning TRQs

In all those cases where tariff quotas are considered politically "indispensable", methods should be used which ensure that the import quotas are allocated by auctions. The experience from auctioning TRQs for white wine and meat products in Switzerland shows that the danger of collusion among bidding firms can be reduced if the access to the auction procedure is open to all interested firms. As the demand of the imported products is relatively large, the quotas are fully used and the market access can be assessed as a substantial concession to all exporting countries. One of the most important property of auctions is the fact that the results provide information about the bidding behavior of the firms; this transparency makes visible

- the actual level of support of a TRQ;
- the equivalent tariff that would alternatively provide the same level of support as the implemented quota;

- the amount of quota rents, which would be obtained by the importers if the government allocated TRQs by other methods than auctions;
- the potential collusion among bidders and special agreements among firms in bidding rings.

There is a great need for reform towards competitive auctions in order to eliminate quota administration methods that are anti-competitive and encourage rent-seeking behavior. Further research should concentrate on the systematic analysis of auction results in order to improve the auction design for an efficient allocation of TRQs.

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Appendix

Tab. 1: Tariff rate quotas by countries 1999

	Tariff Quotas by countries 1999	**Number**
1	Norway	232
2	Poland	109
3	Iceland	90
4	EC-15	87
5	Bulgaria	73
6	Hungary	70
7	Colombia	67
8	Korea	64
9	Venezuela	61
10	United States	54
11	South Africa	53
12	Barbados	36
13	Switzerland	28
14	Costa Rica	27
15	Slovakia	24
	All other 22 countries	293
	Total number of tariff quotas	1368

Source: World Trade Organization, 2000, Tariff Quota Administration Methods and Tariff Quota Fill, Background Paper by the Secretariat, May 2000, p. 19

Tab. 2: Tariff rate quotas by product category 1999

Tariff quotas by product category 1999	**Number**	**Percent**
Cereals	217	15.8
Oilseeds	124	9.0
Sugar	51	3.7
Dairy	181	13.2
Meat	245	17.9
Eggs	21	1.5
Beverages	35	2.6
Fruit & Vegetables	354	25.8
Tobacco	13	0.9
Fibres	18	1.3
Coffee, tea, etc.	56	4.1
Other	53	3.9
Total number of tariff quotas	1368	100.0

Tab. 3: Tariff rate quotas by principal administration method 1999

Administration methods 1999	**Number**	**Percent**
Applied tariff	642	46.8
First-come, first-served	147	10.7
Licenses on demand	337	24.6
Auctioning	56	4.1
Historical importers	75	5.5
Imports undertaken by state trading enterprises	21	1.5
Producer groups or associations	9	0.7
Other methods	15	1.1
Mixed allocation methods	60	4.4
Non specified	6	0.4
Total number of tariff quotas	1368	100.0

Source: World Trade Organization, 2000, Tariff Quota Administration Methods and Tariff Quota Fill, Background Paper by the Secretariat, May 2000, p. 22

Tab. 4: Concentration in Swiss agricultural imports

Import concentration and degree of processing 1998

Tariff-rate quota	Number of Importers	Concentration ratio CR4 in %
Processed products		***36***
Red wine	1000	10
White wine	500	17
Dried ham	83	33
Dried meet	51	40
Sausage	97	40
Corned Beef	30	53
Fontal	59	58
Intermediate products		***67***
Potatoes (for consumption)	84	61
Poultry	86	67
Eggs (for consumption)	25	74
Raw products		***90***
Frozen vegetables	40	66
Wheat	29	67
Wheat durum	19	77
Milk powder	17	84
Lamb & goat meet	18	90
Potatoes (for processing)	6	93
Loins (beef)	6	98
Eggs (for processing)	7	98
Seed potatoes	8	98
Slaughterhouse by-products	6	99
Veal	2*	100
Pork	2*	100
Beef for Buendnerfleisch	2*	100

Source: Report from Federal Council dated February 24th 1999, on custom tariffs measures 1998 (allocation of tariff quotas)

* The " Viehbörse" imports on behalf of its menbers (approx. 1 500 butchers); The "GVFI", Association for the Import of Cattle and Meet, imports on behalf of large whole salers