REVIEW OF MARKETING AND AGRICULTURAL ECONOMICS

Vol. 54 No. 1 (*April* 1986)

# A Note on Victoria's Hen Quota Transfer System

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## Introduction

Hen quotas were virtually freely transferable within Victoria when they were first introduced in 1975. The 1980's have witnessed a series of changes to regulations over quota transfers. Initially these changes were components of a plan to phase out quotas but that is no longer on the policy agenda. Quotas remain but without the advantages of free transferability.

It is well established that restrictions on quota transfers in general lead to production inefficiencies. Another undesirable side-effect is that the value of quota and magnitude of quota rent are more difficult to measure when quota transfers are restricted, adding to the difficulties of assessing the effects of the regulations. In the Victorian egg industry these general problems are confounded by some features of the tender market for quota. The purpose of this note is to describe and analyse the effects of the Victorian hen quota transfer system on the efficiency of quota allocation and on the market price for quota.

## Background to the Present Arrangements

Hen quotas were instituted in Victoria on March 1 1975.[1] Initially quotas were freely transferable within Victoria subject to two constraints. First quotas were allowed to be transferred from the Melbourne metropolitan area to country areas but not from the country to the city. Second, quota could be accumulated only up to a maximum flock size of 100 000. These were fairly minor constraints. Quotas were virtually freely transferable by sale although leasing has never been allowed.

Largely due to concern about the high prices being paid for hen quota, the Victorian Government instigated an Inquiry into egg marketing arrangements in 1980. Following the first report of the Inquiry (McArthur *et al*, 1980), legislation was introduced to limit quota transferability after December 4 1980. The limitations were intended to last for three years, following which hen quotas would be abolished. Under the legislation introduced in December, 1980, quota could be transferred only with Ministerial approval, and this would be granted only if the sale was forced by circumstances entailing "serious hardship" on the part of the seller, or if the sale was part of a whole-farm sale. In the case of quota sold as part of a whole farm, a maximum price for quota was set. The maximum price began at $9 for transactions prior to March, 1981, and was to be reduced by 75 cents per quarter to zero by December, 1983. Quotas were to be abolished at the end of February 1984.

In 1982, there was a change of government and a change of heart, and the plan to eliminate hen quotas was abandoned. New provisions were introduced in December 1982, removing the control over quota prices but restricting the amount of quota an individual could acquire to 10 000 hen units. These provisions were further revised when the current rules were finalized in December 1983.

## The Current System

At present there is no direct control over quota prices and quota may be sold in two ways: attached to an egg producing business, or separately through a twice yearly quota tender market. The maximum quota that may be acquired in either way is 10 000 hens per producer. Thus any producer who already has 10 000 hens or more may not expand. At any particular tender sale a buyer may not buy

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Thanks are due to Garry Griffith, John O'Connor and Michele Veeman for helpful comments on earlier drafts.

[1] This section is based primarily on discussions with departmental officers who were involved in the Inquiry into egg marketing arrangements and in framing the subsequent amendments to legislation. The details can be found in the *Egg Industry Stabilization Act 1983* and amendments.

more than 1 000 units of quota. There is no limit on the amount of quota that a person may offer for sale at the tender market, but a producer wanting to sell a business including quota of more than 10 000 birds would have to find more than one buyer.

The rationale for these constraints on quota transfers was to slow concentration in the industry and prevent the demise of the "family" egg farm. It seems likely that these constraints will significantly hamper adjustment in the industry. The 71 producers who already have more than 10 000 hens own almost 70 per cent of the total flock so that the constraint on quota acquisitions is binding on 70 per cent of the industry (based on Egg Farmers of Victoria 1985).

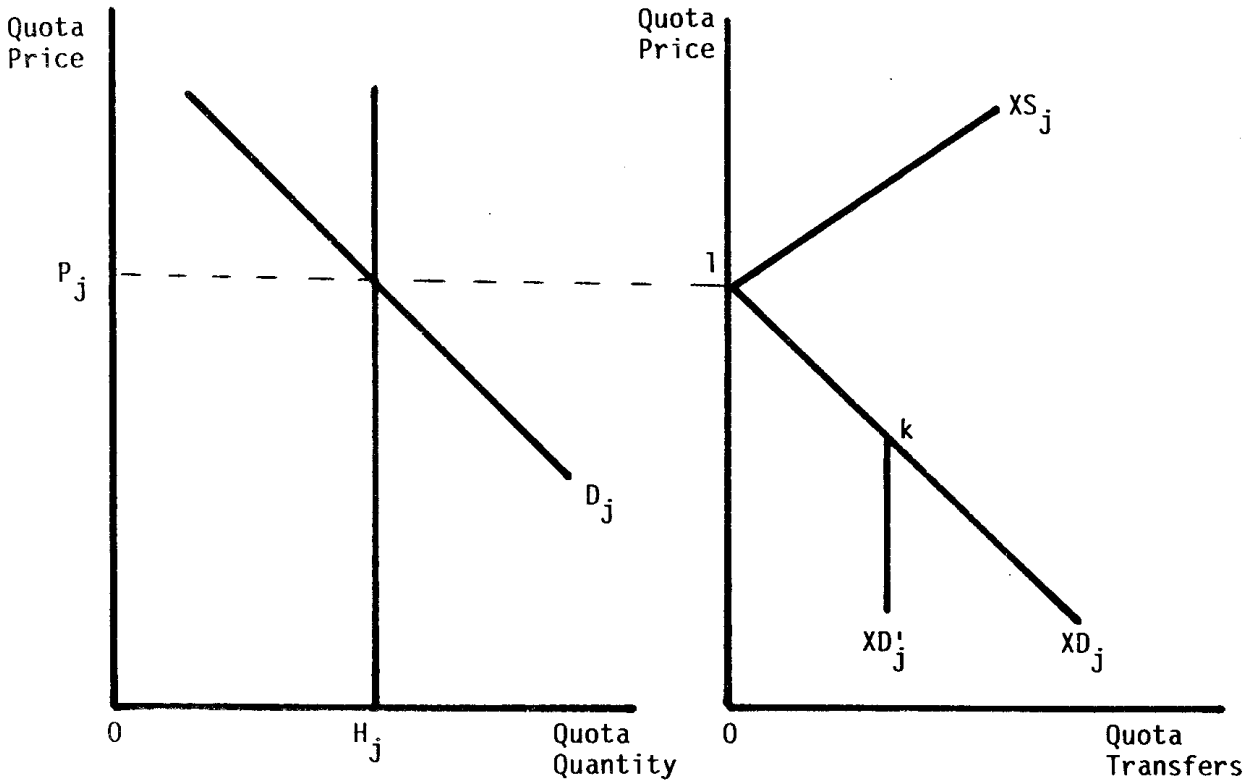
In addition to the constraints on transfers there is another source of inefficiency in the quota tender market. It works as follows. Buyers and sellers submit sealed bids and offers defining the quantities of quota that they wish to buy or sell and the prices they are willing to pay or accept. A successful bidder pays the total amount offered while a successful seller receives the average revenue thus obtained.

With each buyer paying the actual amount bid, the outcome is equivalent to perfect price discrimination by sellers so that all buyers' surplus is extracted. The market clears at a quantity for which the marginal supply price (as indicated by the schedule of offers) equals average revenue (as indicated by the schedule of bids). In this case the average revenue curve corresponds to the maximum "all-or-nothing" demand curve described by Friedman (1976, p. 15), and equilibrium is defined by the intersection of this "all-or-nothing" demand with supply. The result is a higher supply price and quantity than if quota were sold by private treaty or by auction, or if the tender authorities equated the marginal supply price with the marginal demand price.

### Theoretical Effects of the Tender System

The hen quota market is represented geometrically in Figure 1 which represents a typical individual producer (*j*) and Figure 2 which represents the total market.

Figure 1: *The Demand for Quota by an Individual Farmer*



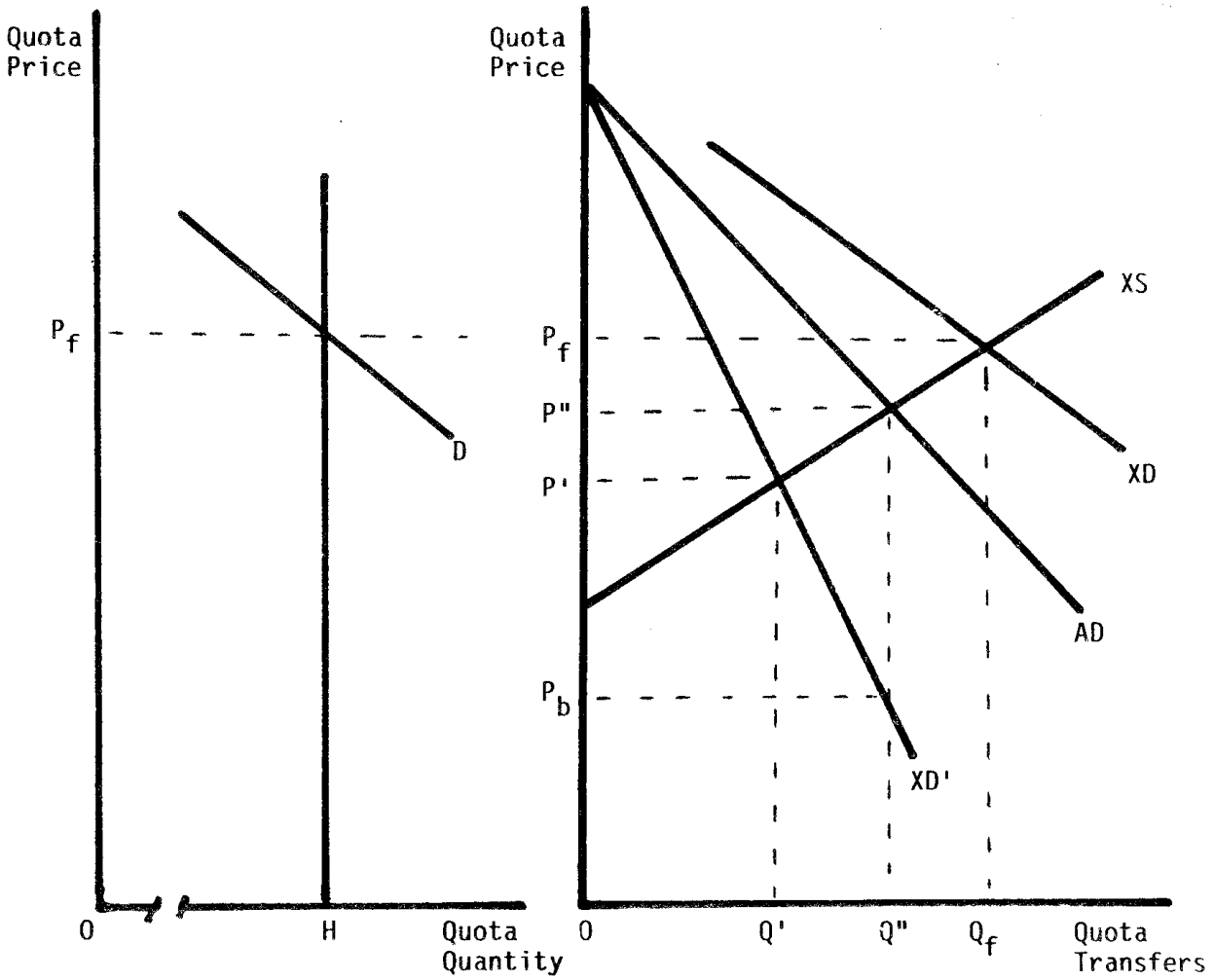
We may think of quota as an input to egg production that is used approximately in fixed proportions with hens. Thus, the demand for quota may be modelled as a standard application of the demand for a durable factor of production. For producer $j$, this derived demand for quota is represented by $D_j$ in Figure 1. It shows the quantities of quota that this producer would demand at various quota prices.

One non-standard feature of quota, as a factor of production, is that the total supply is absolutely fixed and, at any point in time, any producer owns a fixed quantity. The observed market is a transactions market in which only a fraction of the total stock is traded, as in the market for land, for instance. This calls for an application of the theory of reservation demand. Suppose producer $j$ owns a quota, $H_j$ of hens. Then his demand ($D_j$) defines a reservation price $P_j$ for that quantity. At prices above $P_j$ he would wish to sell quota and at prices below $P_j$ he would wish to buy quota, in quantities defined by his excess supply ($XS_j$) and excess demand ($XD_j$) functions for quota. These excess (or transactions) supply and demand functions are defined by subtracting the current quota ($H_j$) from demand ($D_j$). In a totally free market for quota, producer $j$'s position in the transactions market at any price would be defined by these excess supply and excess demand functions.

Now let us consider the effects of the tender market assuming, for the moment, that it is not possible to transfer quota in any other way. Under the tender rules, a buyer may only buy up to 1 000 units at a sale subject to his total not exceeding 10 000 units. Hence producer $j$'s demand for quota acquisitions is kinked to vertical at point $k$, corresponding to acquisitions of 1 000 units or 10 000–$H_j$ units, whichever is the smaller.

Turning to the aggregate market, the curves in Figure 2 are the horizontal sums of the corresponding curves in Figure 1, summed

Figure 2: *The Aggregate Quota Market*



across all actual and would-be quota owners. In a free market for quota the price would be $P_f$, given by the intersection of the aggregate demand ($D$) with the total quota quantity ($H$). The right hand panel indicates the transfers ($Q_f$) that would achieve this price given by the intersection of the aggregate excess supply ($XS$) and aggregate excess demand ($XD$. The horizontal sum of the individual constrained excess demands ($IkXD_j'$) is represented by $XD'$. In an auction market this demand would result in a quota price and quantity transferred of $P'$ and $Q'$. If the only distortions in the market were the limits on quota acquisition, the quota price and quantity would both be unambiguously lower than with freely transferable quotas.

The market is further complicated by the use of tenders and the redistribution of surplus from buyers to sellers. When submitting a tender, a would-be buyer or seller must choose a point on his excess supply or (constrained) excess demand for quota, defining both the price and the quantity. These bids and offers can be aggregated into supply and demand functions. However, any single bid (or offer) will refer only to a particular price and will not reflect the quantities that would be demanded (supplied) at higher or lower prices. The aggregated supply and demand curves will be stepped functions that must therefore lie everywhere to the left of (at most touching at a few points on) the true supply and demand functions. Only in the extreme case when each would-be buyer or seller submits an infinity of bids and offers will the underlying demand and supply curves be accurately reflected in the tenders. Thus the extent of the distortion depends on the costs of bidding, the transactions cost of using the tender market. This is a feature of all tender markets and is probably a comparatively minor disadvantage of the tender system for hen quota. While this effect is noted, it is not accounted for in the analysis below which concentrates on the effects of the practice of extracting all buyer's surplus.

In Figure 2, $AD$ represents the "all-or-nothing" demand for quota. At any specified quantity the corresponding price of the "all-or-nothing" demand refers to the maximum average price that could be obtained for that quantity by practising perfect price discrimination against buyers. This perfect price discrimination requires that price times quantity on the "all-or-nothing" demand curve ($AD$) equals the area up to that quantity under the usual demand curve ($XD'$), the buyers' total valuation of that quantity. In practice that requires tracing out the usual demand curve by charging the buyers' marginal valuation on each unit.

The average price and quantity is given by the intersection of the "all-or-nothing" demand ($AD$) with supply ($XS$) at $P''$ and $Q''$. Sellers receive this average price ($P''$) on every unit sold, but buyers pay more or less depending on their bids. The very last ($Q''th$) unit is sold for $P_b$ corresponding to the marginal valuation for $Q''$ units on $XD'$. The effect of this price discrimination among buyers is to increase the quantity and average price of quota transfers compared to if buying and selling prices were equated as in an auction market.

**The Net Effects**

The limits on acquisitions work to reduce demand, and alone would thus reduce quantities transferred and the price paid for quota.

The redistribution of surplus through the tender market acts in the opposite direction, stimulating transfers and increasing the price.

Buyers may avoid giving up all of their surplus by bidding below their reservation prices but above the market price. To do this requires predicting the market price. If buyers predict prices very well, an equilibrium at (or near) $P'$, $Q'$ would prevail. With less than perfect information, a relatively well informed trader could buy and sell on the same market, making a profit of up to $P''-P_b$ per unit.

The model in Figures 1 and 2 represents a particular tender market at a point in time. For subsequent sales the demand and supply curves would become modified from those in Figure 1 and Figure 2 by the transactions in the present period. Thus some of the efficiency losses may be reduced by smart trading and some may be transitory. Some, such as those arising from the 10 000 bird limit would be permanent.

The analysis above, has examined the tender market in isolation. As an alternative to the tender market, quota may be bought as part

of an egg producing business, subject to the constraint that the buyer's total quota must not exceed 10 000 hens. The existence of the alternative of selling the farm with quota attached modifies both the supply and demand functions at the tender market, compared to if there were no alternative, but does not affect the conclusions about the nature of effects of the tender rules. Having to buy the other assets of a farm must add considerably to the transactions costs of acquiring quota to expand an existing enterprise[2]. Compared to an auction market for quota, the tender market is better for sellers but worse for (at least some) buyers. In contrast, compared to a quota auction market, trading in quota attached to farms is likely to be worse for both buyers and sellers. Neither of these methods permits low cost trading in quota in continuously divisible units of quantities and time. With two alternative markets for quota existing at once (the tender market and the market for quota attached to farm), sellers will have incentives to allocate supply between the markets so as to allocate expected net supply prices. Thus, the tender price will tend to reflect the net return to sellers from selling quota attached to farms.

On balance it seems that, of the two aspects working in opposite directions, the effects of the constraints on transfers have dominated the effects of the peculiar tender system, and the observed quota price and quantities transferred have been below those that would have prevailed in a free market for quota transfers. In practice, the tender market is very thin. To date there have been three calls for tender at six month intervals. The results are published in the Victorian Egg Marketing Board's news-letter. In total only 59 575 units, 2.4 per cent of the total stock, were transferred by tender during that eighteen month period. Accurate information on whole-of-farm sales is not available, but it is believed that more quota has been sold in this way than through the tender market[3]. However, the rate of transfer is almost surely less than in New South Wales where quota transfers occur with almost total freedom. For example, in 1983–84, 288 642 hen quota units were transferred by sale and 797 879 quota units were transferred by lease (New South Wales Poultry Farmer Licensing Committee, 1984, pp. 8–11). A total of over a million quota units, over 30 per cent of the New South Wales total, were transferred by lease or sale in 1983–84[4].

**Concluding Comments**

The restrictions on quota transfers in Victoria were introduced initially to pave the ground for a plan to eliminate quotas in 1984. The more recent restrictions aim primarily to reduce the rate of concentration of the egg producing industry. The owners of 70 per cent of the total quota are disqualified from further expansion by the 10 000 hen limit. The rules in the tender market are distortionary and trade through that market is very small. At the same time, the alternative of trading in quota as part of whole-of-farm sales will be an unattractive option for many.

The current restrictions have almost certainly reduced the rate of concentration in the industry but at the same time they have discouraged all transfers of quota. As well as restricting transfers and leading to an inefficient pattern of quota use, the quota transfer arrangements in Victoria distort the price of quota. While the price reported at the tender market overstates the marginal tender buyers' valuation of quota, it most likely understates the value of quota that would be revealed by a free market.

## References

EGG FARMERS OF VICTORIA (1985), *Newsletter* 3 (9), September.

FRIEDMAN, M. (1976), *Price Theory*, Aldine, Chicago.

MCARTHUR, M., BREHENY, D. J. and O'CONNOR, J. G. (1980), *Committee of Inquiry into Egg Marketing in Victoria: First Report to the Minister of Agriculture*, Melbourne.

NEW SOUTH WALES POULTRY FARMER LICENSING COMMITTEE (1984), *Annual Report for the Year ended 30th June, 1984*, Sydney.

[2] To buy or sell quota in this manner requires buying or selling other assets along with a fixed amount of quota. A prospective buyer may not want to buy an entire business that may include some outdated equipment and land and buildings in an undesirable location, for instance. A prospective seller of quota may not wish to sell all of his farming assets along with the quota. The buyer may want more or less quota than can be bought at a whole farm sale. This will be particularly so for buyers who want to make small additions to their totals.

[3] Departmental Officers specialising in the egg industry have told the author just a few of the many whole-of-farm sales that have taken place during the past eighteen months would have included total quota in excess of that traded by tender. For instance, one sale included quota of 20 000 hens.

[4] These figures may involve double counting and therefore overstate the total transfers. The reported lease figures do not indicate the term of the lease, and may reflect repeated leases of particular units.