

Supply Management and Production Quota Value Caps: Future or Folly?

Presented By:

Alex Cairns

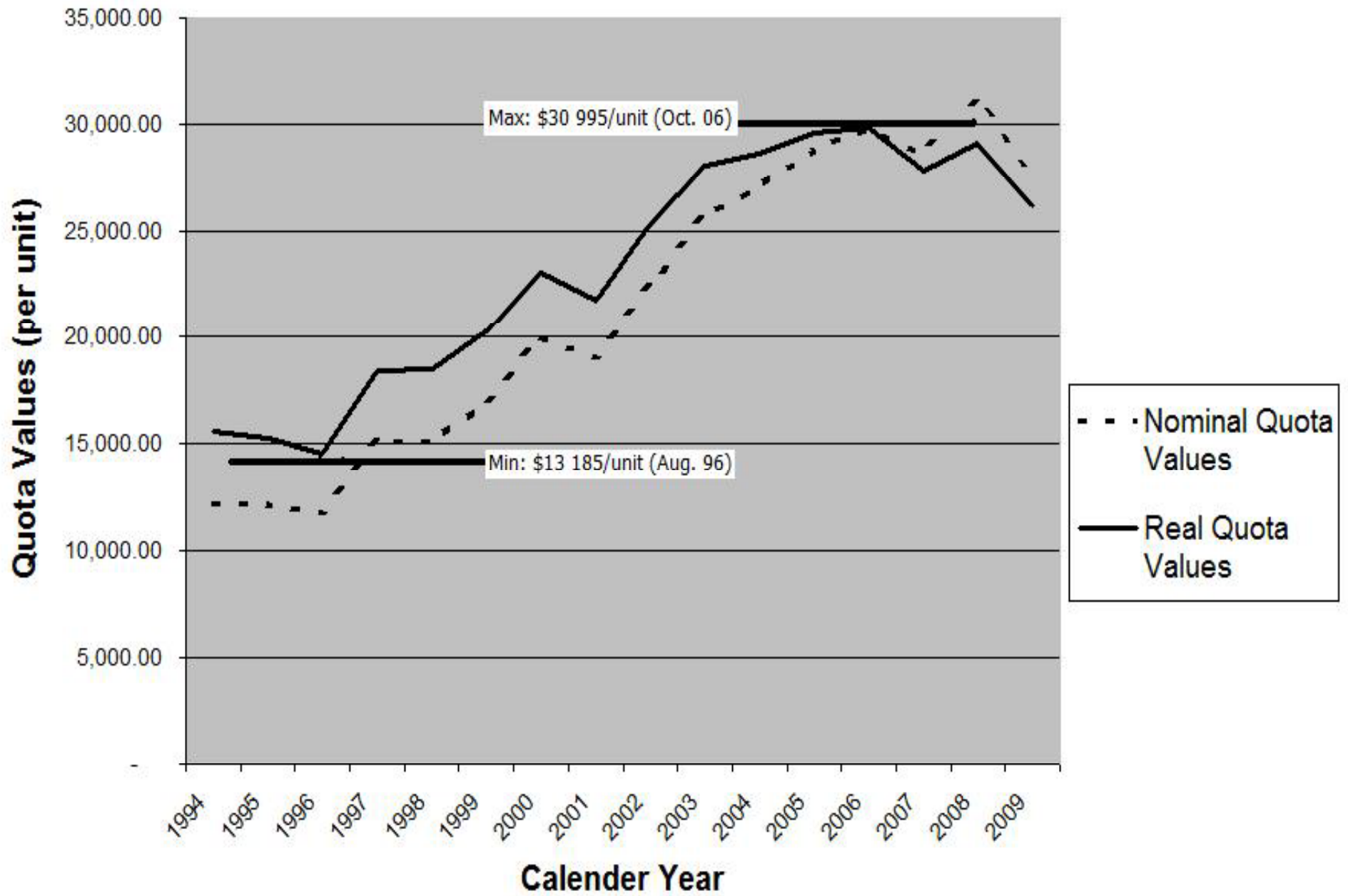


Introduction

- Reliance on production quota in order to regulate supply
- Initially production quotas were distributed for free based on historical production
- Recently, quota values have accelerated
 - Between August 1994 and November 2006 quota values tripled
 - As a result, the DFO intervened on the exchange



Quota Values on the Ontario Exchange (1994-2009)



Introduction

- Problems with high quota values:
 - Inhibits efficient producers from expansion
 - Barriers to new entrants
 - Criticism from non-supply managed agricultural sectors
- This study seeks to examine the source of the accelerated growth in quota values which has led to DFO intervention on the exchange.
 - Is intervention necessary? If so, what policies can reduce quotas while minimizing losses to efficiency?



The Ontario Quota Exchange

- The quota exchange is a secondary market
 - Regulated and governed by the DFO
 - A unit of quota is equal to the right to produce a kg. of butterfat per day (approximately 1 cow).
 - Monthly
- Demand-side: efficiency gains, technological advances, natural production increases, etc.
- Supply-side: predominantly determined by the lifecycles of producers



Why have quota values increased?



Perceived Sources of Growth

■ Quota-Price Treadmill

- Conference board report (2009) – identified political lobbying by dairy farmers looking to maintain their profit margin
- As quota values increase there are requests for high milk prices.
- Role of political lobbying

■ Speculation

- DFO felt that consistently increasing quota values suggested that producer's may have in part viewed quota as a stable investment rather than as a productive asset

Policy Risk

- The policy risk is a proxy of the effects of threats to quota values
 - Increases Policy Risk- Increased liberalization of dairy industry
 - Lowers Policy Risk - Political support for supply-managed sectors
- Reduction in risk should make purchasing quota more attractive
 - Farmers are typically assumed to be risk-averse



Capitalization Formula

- Barichello's Capitalization Formula:

$$CV = \frac{R \times (1 - j)}{(r - g + j)}$$

Where: CV = Per unit quota price

R = Return from owning quota

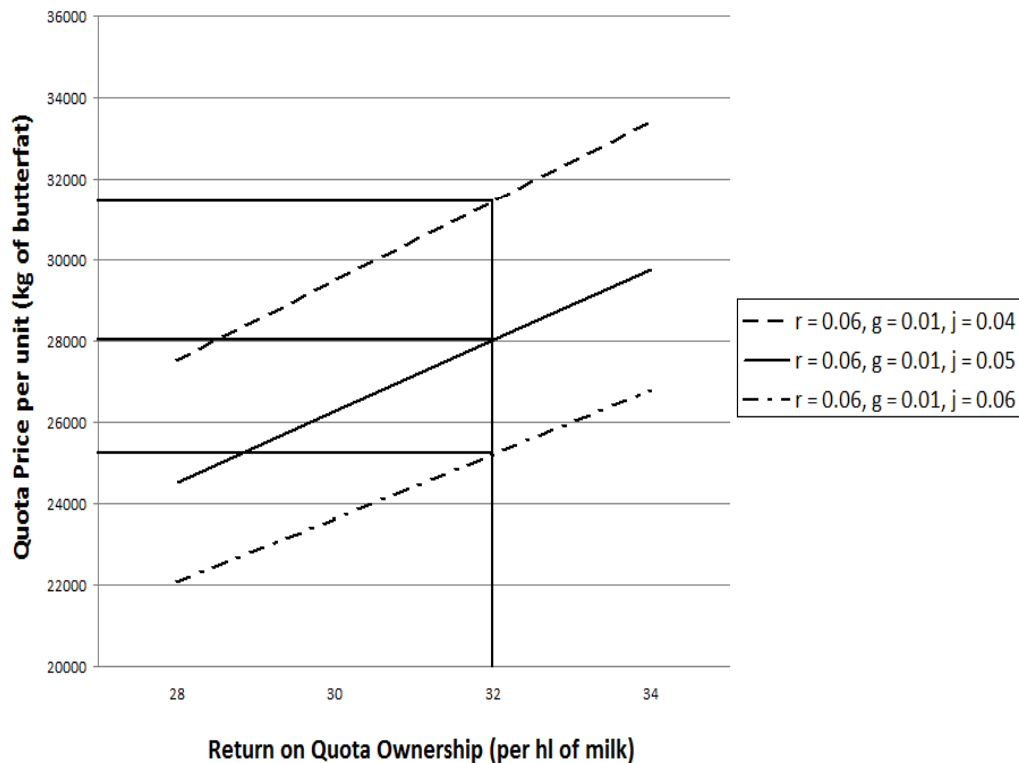
g = Annual growth rate of Returns (R)

r = discount rate (interest rate)

j = policy risk

Policy Risk

The Effects of Policy Risk on Production Quota Values (2007)



- Holding constant:
 - Interest rate at 6%
 - Quota Rent at \$32/hl
- Varying the policy risk:
 - at 4%, $CV = \$31\,461.28$
 - at 5%, $CV = \$28\,020.20$
 - at 6%, $CV = \$25\,204.78$
- Message: Policy risk influences quota prices

Factors Influencing Quota Values

1. Declining interest rates
 - On average, since 2000 the prime interest rates have declined by 0.5% each year
2. Letters of Direction
 - Act as creditor insurance (moral hazard)
3. Easier access to credit from FCC
 - Permitted the use of quota as collateral
4. Conclusion of multilateral trade negotiations
 - Minimal reduction in domestic market share (4-5%)

What was done to remedy the problem?



DFO's Reaction

- Beginning in 2006, the DFO intervened in the quota exchange to hedge the escalation of quota values
 - Progressive Transfer Assessment (November 2006)
 - Price Ceiling (July 2009)



Progressive Transfer Assessment

- November 2006 – July 2009
- Capped the price received by sellers using an in-kind variable tax:
 - Buyers: Allowed to continue to freely bid
 - Sellers: imposed an in-kind tax on the quota supplied to establish the resale value of quota at \$25 500/unit
 - The in-kind tax was then redistributed pro rata among active producers

Price Ceiling

- Instituted in July 2009 (to current)
 - Pressure from Quota Rights Group
 - Success of the policy in Quebec
- Established a bound price of \$25 000/unit on both buyers and seller
 - Initially started at \$25 500 which was then incrementally reduced to \$25 000/unit by Jan 2010.
 - Results in a shortage

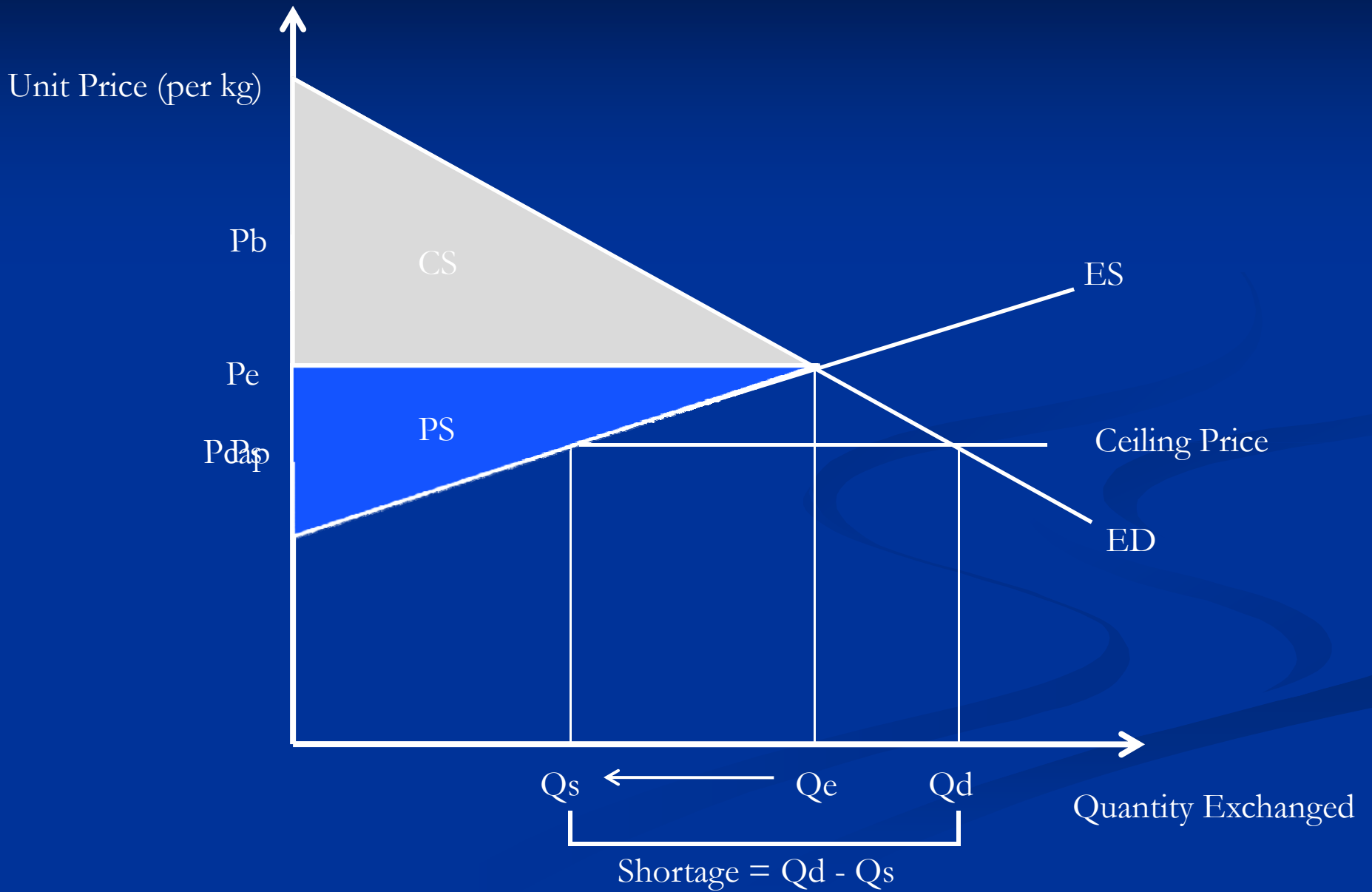


Price Ceiling

- If a shortage occurs distribution of available quota occurs in two rounds
 - The first 50% of quota supplied is distributed in 0.1 kg increments
 - The remaining quota is allocated pro rata to producers with the highest bid quantity.
 - On each exchange each producer can only bid up to 10% of their current quota holdings



Model



Model

- A linear model was developed to empirically illustrate the welfare implications
- The derived annual demand and supply curves for 2007
 - Demand and supply elasticities of $\eta = -5$ and $\epsilon = 10$
- Welfare measures calculated in equilibrium, under a price ceiling and a progressive transfer assessment
- Sensitivity Analysis

Welfare Measures

- Both the PTA and Price ceiling result in:
 - DWL equal to \$4.1 million
 - approximately 2% of dairy farm cash in Ontario (2007)
- Under the Progressive transfer assessment:
 - 7.6% of total welfare is lost due to the tax (DWL/total welfare)
 - Buyers of quota suffer 2.26 times more loss in welfare than sellers (Change in CS/Change in PS)

Welfare Measures (Cont...)

- Under a price ceiling:
 - Costs producers \$0.48 for every dollar gained by consumers (change in CS/change in PS)
 - It costs \$1.08 to transfer \$1.00 to quota purchasers (DWL/change in CS)
- The price ceiling is a highly inefficient means in transferring welfare.

Policy Implications

- Four policy “remedies” have been identified:
 1. Lower the milk price
 - reduces quota rents (which equal milk price – marginal cost), which could in turn reduce the return to quota.
 2. Institute a fixed tax rate (of around 2 – 5%) on all purchases of ongoing operations or transfers through on the exchange
 - Two-quota system

Policy Implications (Cont...)

3. Remove all intervention on the exchange
 - Rising interest rates
 - Revisions to the letter of directions
 - Stagnation of provincial quota exchange
4. IF the only two policy options are the progressive transfer assessment or a price ceiling, then the former is preferable
 - Producers with the highest willingness-to-pay acquire the available quota

Conclusions

- Increasing quota values resulted from market forces
- DFO intervention achieved its objective but a source of inefficiency
- Progressive transfer assessment is preferable since it allocates the available quota to those who value it the most



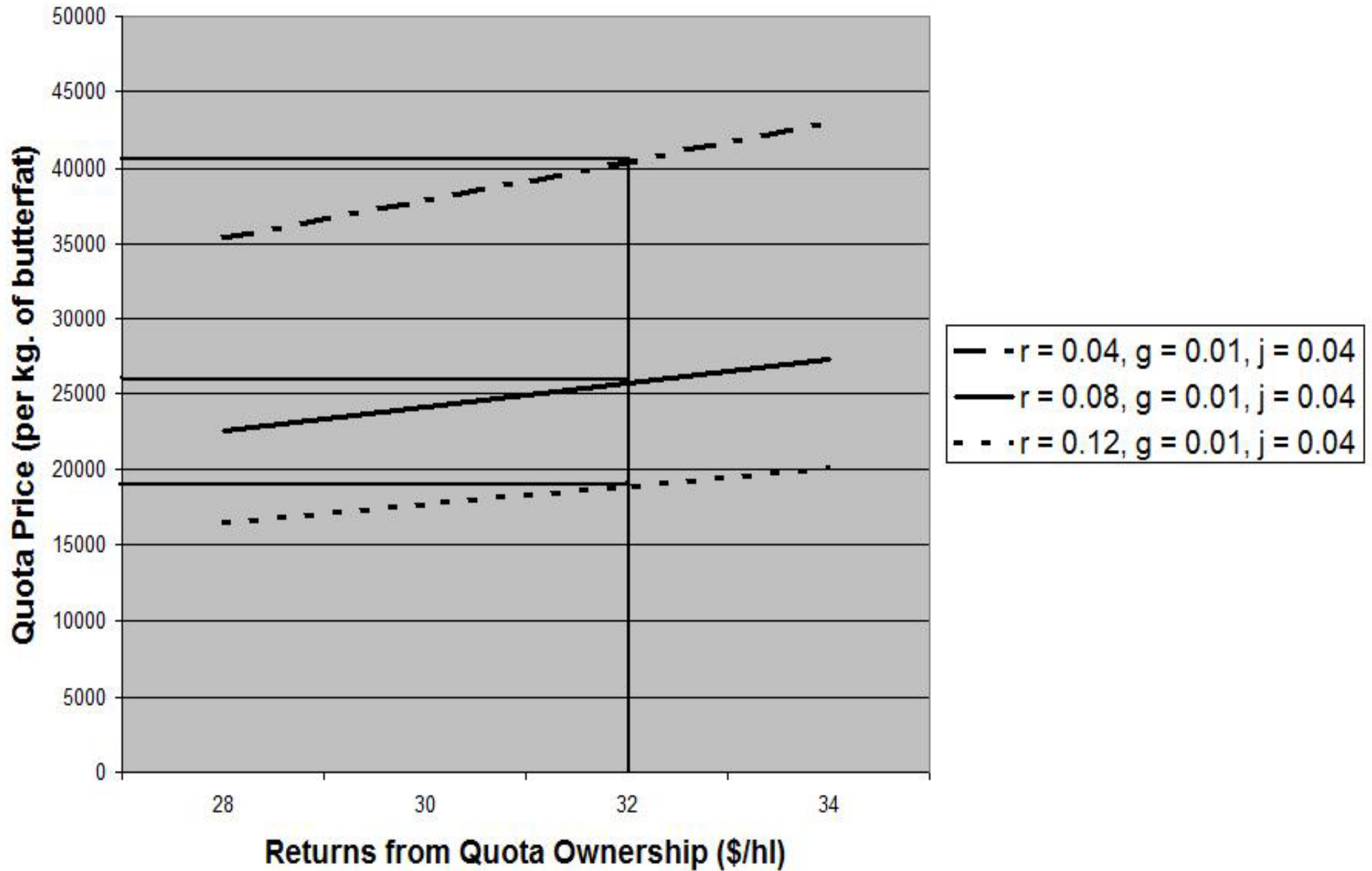
Thank you.

Any Questions?

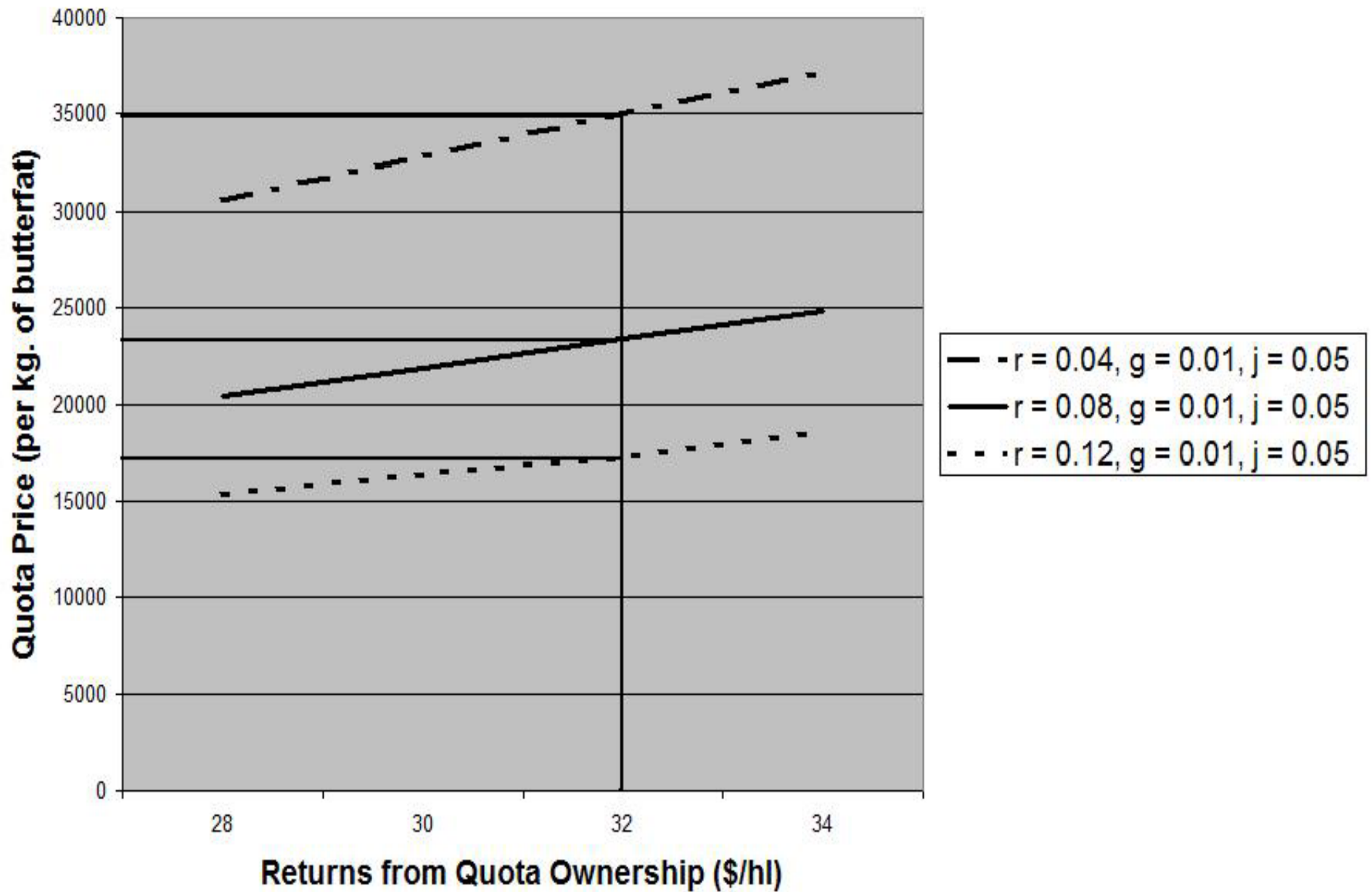


Appendix

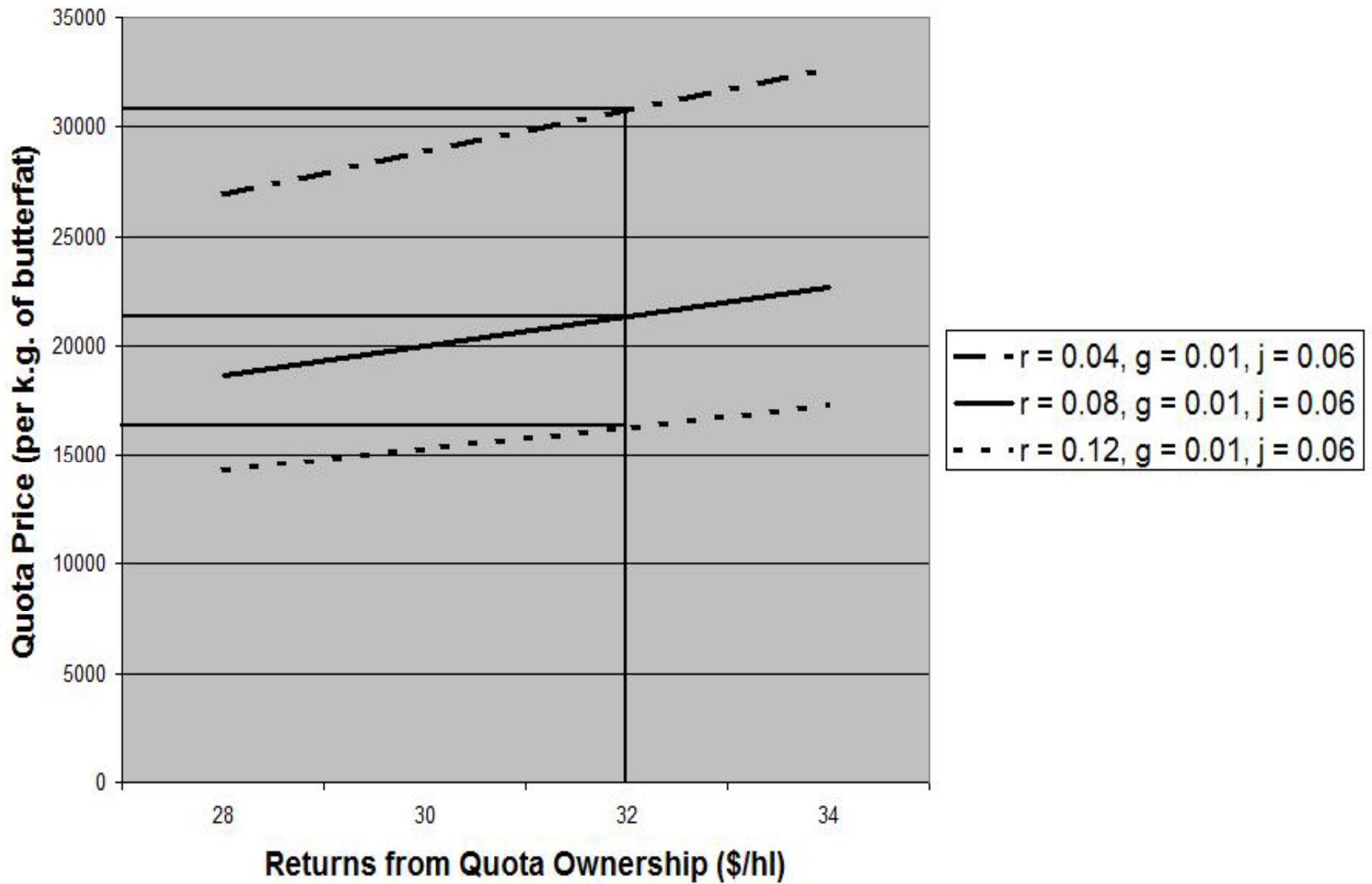
Effect of Interest Rates on Quota Values ($j = 0.04$)



Effect of Interest Rates on Quota Values (j=0.05)



Effect of Interest Rates on Quota Values (j=0.06)



Policy Risk

- Solving the formula for policy risk (j), provides:

$$j = \frac{(R - CV \times (r - g))}{(CV + R)}$$

Example: Progressive Transfer Assessment

- Assuming a bid price of \$32,000/unit and sellers supply 10 kg of quota. Then:

$$\$25\,500 \times q = \text{bid} \times q (1 - t)$$



$$t = \frac{\text{bid} - \$25\,500}{\text{bid}}$$



$$t = 0.2 \text{ or } 20\%$$

Example: Progressive Transfer Assessment

- With the in-kind tax the market then clears with:

Sellers receive = $\$25\,500 \times (10 \text{ kg.}) = \$255\,000$

Buyers pay = $\$32\,000 \times 10 \text{ kg.} \times (1-0.2)$
= $\$32\,000 \times (8 \text{ kg.}) = \$255\,000$

- Thus, 2 kg of quota will be redistributed, 8 kg will be sold on the exchange, and the sellers receive $\$25\,500$ for each of the 10 units