

# *Quota Allocation Mechanisms in Supply Managed Industries*

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**Organized Session: Prices Fixing Institutional Failures  
along Managed Supply Chains**

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# Outline

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- Context
- Review of current options
- Efficiency question
- Concluding remarks

# Context

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In Canada, production quota implied by supply management can be traded. It is generally believed that such trade allows for a better allocation of production among farmers.

Dairy has rapidly chosen to trade on provincial or regional centralized markets. The institution used is generally a k-double auction. Other supply managed productions (eggs, chicken, turkey), until recently, had no centralized market.

In the past few years, numerous changes have happened on quota markets.

# Context

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- Quota price have raised significantly (especially in dairy) for various reasons (see [Cairns and Meilke 2012](#)), creating an uncomfortable situation for farmers organization (exit of money from the industry, difficulties for new entrant, politically difficult to defend)
- Different options have been studied to limit the perceived speculative behavior such has taxes, buyers paying their bids, etc (see [Doyon et al. 2008](#))
- Quebec dairy farmers have opted for a price ceiling, followed by Ontario and others.

# Context

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- Egg farmers in Quebec have opted for a centralized quota market that uses the truncated k-double auction developed and tested by Doyon and Rondeau ([see Doyon et al 2010](#)), in 2011.
- Quebec turkey producers have adopted the truncated k-double auction for their new quota auction in 2012
- In 2012, Quebec chicken producers created a centralized market based on the k-double auction but with a price ceiling lower than the believed price of transaction at the time.

# Context

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Motivations for those new markets:

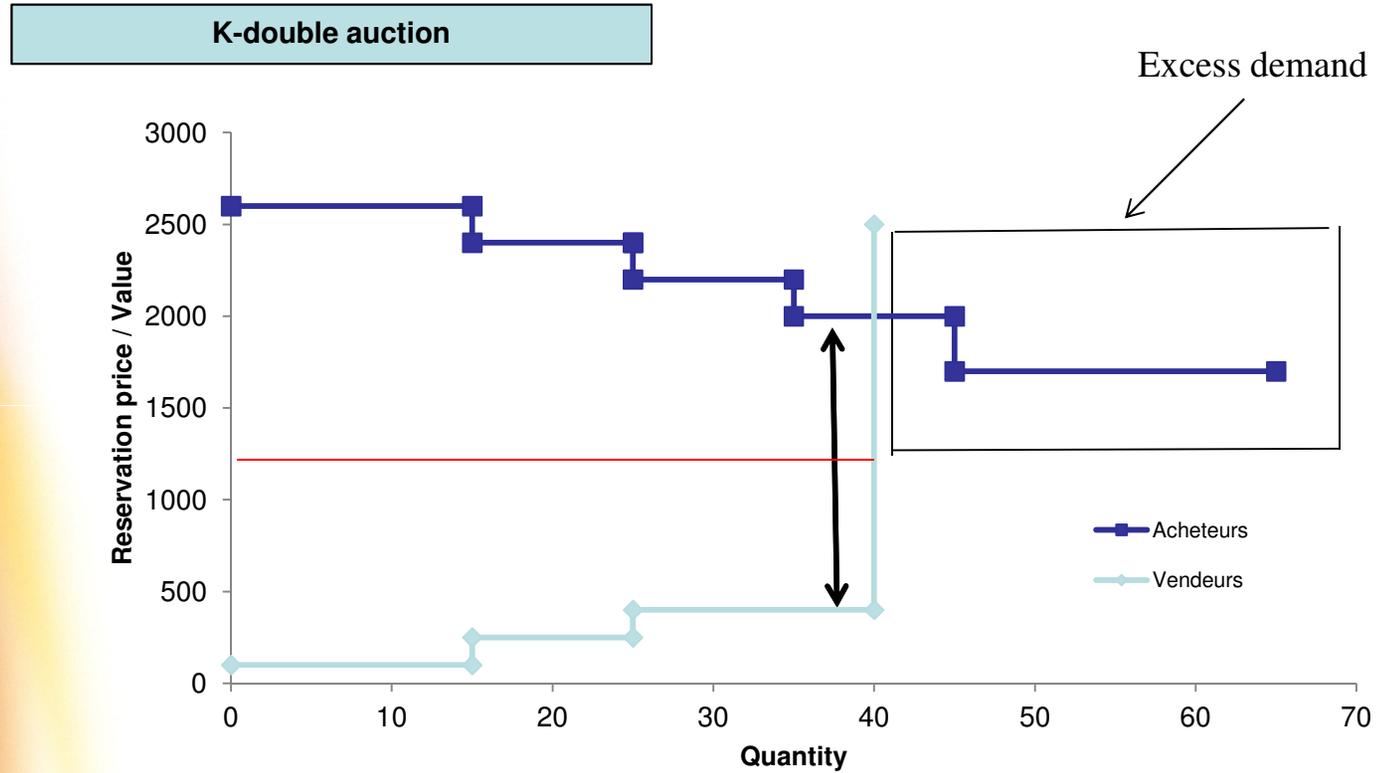
- High quota prices are a concern for those producers for two central reasons.
  - Large sums of money are capitalized into this non-productive asset (Boots et al 1997, Alvarez et al 2006).
  - Detrimental to a renewal of the industry, making it difficult for young individuals to become producers.
- No official market existed for their quota and a few input suppliers had become *de facto* quota brokers
- Input suppliers had an informational advantage and purchased much of the available quota and tied its resale to exclusive long terms input contracts

# Context

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- It is within this context that they decided to create a centralized market institution for quota trading.
- The objective was to implement a market mechanism that fosters efficient trading of a relatively low volume of units and provides the strongest possible protection against aggressive oligopoly pricing emerging from a small number of sellers when demand substantially outstrips supply.

# Review of current options



# Review of current options

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## Price ceiling:

- Not a market anymore, it is an administrative option that makes it very difficult to acquire significant amount of quota
- Cairns and Meilke (2012) discuss the welfare loss associated with a price ceiling.
- Doyon (2011) wrote «...this makes significant increases in production extremely difficult and likely restrains producers from moving along their cost curve or towards a more cost efficient technology that could improve economies of scale, potentially affecting the competitiveness of the dairy value chain.»

# Review of current options

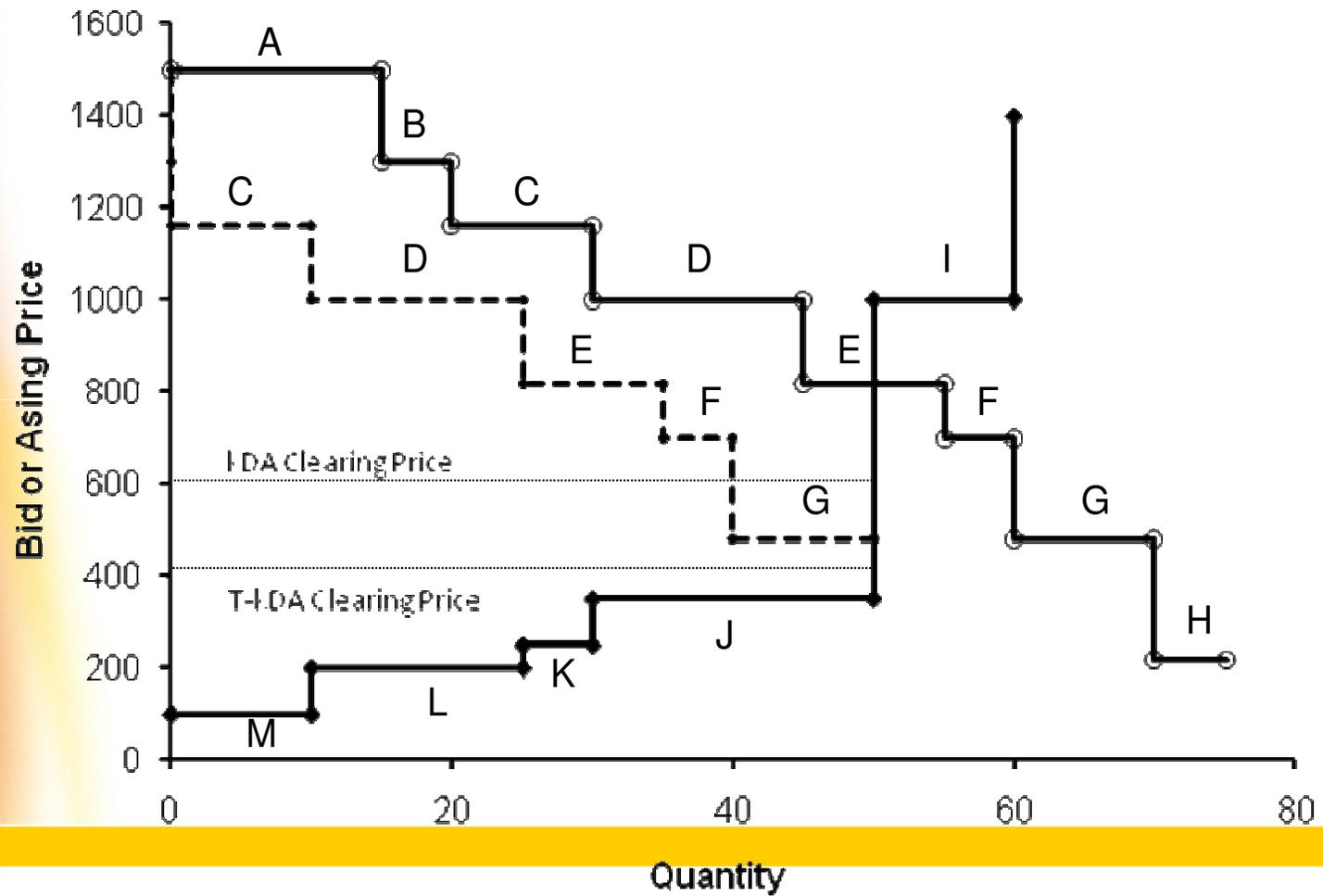
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## Truncated k-double auction

### Intuition in 3 steps

1. We need an excess demand;
2. Buyers must qualify by bidding a price higher or equal to the one asked by the last seller in play.
3. Among qualified buyers, the first to receive quota is the one that offered the lowest price. Then the second lowest, until the supply has been distributed.

# Review of current options



# Review of current options

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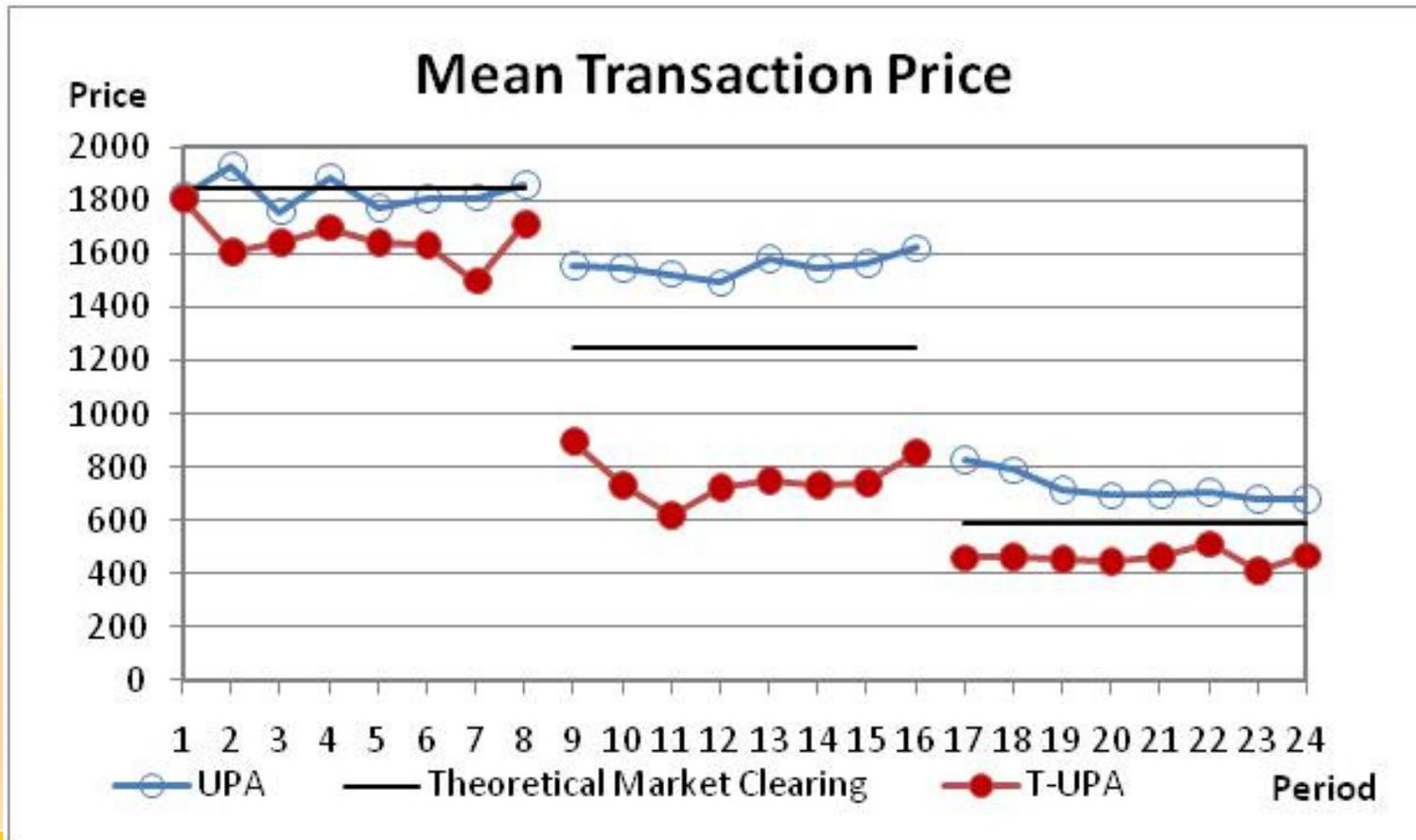
Truncated k-double auction

Two effects:

1. Mechanical (see the graph)
2. Behavioral on buyers (the most important)

# Review of current options

## Truncated k-double auction



# Review of current options

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The graph shows that in the presence of excess demand, sellers can exercise their market power. Doyon et al (2010) (2011), found that buyers would be willing to reduce their margins significantly to access quota.

The truncation rule creates an incentive for buyers to reduce their bids.

# Efficiency

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Cairns and Meilke (2012) have measure efficiency loss due to the price ceiling in terms of dead weight loss, assuming that the auction is efficient and some elasticities.

Doyon et al. (2010) have empirically measured efficiency loss in terms of changes in total surplus. They found an efficiency loss in the order of 15% in average, relative to the regular k-double auction.

# Efficiency

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- Nevertheless, these results compare advantageously with the modifications (exclusion and taxes) to the uniform price auction market tested by Doyon et al (2008). To reach a mere 5% reduction in market clearing price, 50% of the unit traded and 52 points percentage in efficiency were sacrificed.

## Closing remarks

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- Most quota market in Canada are characterized by significant excess demand. In such case, a regular k-double auction has shown its limits.
- The quota ceiling, and more importantly the administrative rules actually used to distribute quota greatly limits its access.
- The long term impact associated with the inability to access quota in sufficient quantity is likely larger than a loss in quota market efficiency.

## Closing remarks

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- To that extent, a truncated k-double auction seems more appropriate than a quota ceiling.
- Efficiency must also be put in perspectives. Is a centralized auction better than no structured market?
- Is a price ceiling better than a quota price bubble? Farmers have said yes, it is now time to think on improving on price ceiling while avoiding undue quota price inflation.
- More studies similar to Cairns and Meilke (2012) and Doyon et al (2010) are needed to explore new avenues.

# References

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**Thank you for your attention!**

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