Webinar: Tariff Rate Quotas and Agricultural Supply Chains in an Era of Reglobalization

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Background

1. What is ANZAM-BAM Collaborative Research?

- **Aim of Award**: to encourage collaboration between researchers who are based in the two hemispheres.

- **Duration:** Projects are expected to last for 9 to 18 months (18 months maximum).

2. What is the Asian Smart Cities Research and Innovation Network (ASCRIN)?

- A partnership with the Indian Institute of Technology Kanpur (IIT Kanpur) and the Birla Institute of Technology and Science, Pilani (BITS Pilani)

Outline

- Background
- Global Supply Chain
- Tariff Rate Quotas (TRQ)
- Case Study: UK/EU Imported Beef
- Results, Analysis and Conclusion
- Self Reflections
- Q&A

Background

- *Global Supply Chain* emerged from globalization and is driven by by 1) technological changes; 2) trade policies; and 3) logistics and connectivity

- Challenged by recent development of politico-economic tensions (e.g., the Brexit, trade war)

- Being revisited in the form of high-level (re)negotiations (e.g., national security concerns, free trade agreements, trade policies)

- Lack of informed treatment and disregarding the importance of supply chain factors (e.g., time, logistics, inventory) in policy making may further disintegrate the existing global value chains.

Background

- The food and agribusiness industry accounts for almost 10% of global consumer spending and has an estimated total value of USD 8 trillion.

- Governments employ a range of trade instruments (tariff and non-tariff) to balance their product deficits while protecting domestic producers (WTO is Ok with this ☺).

- Quantitative agricultural concessions are considered to be one of the most complex trade negotiation issues.

- TRQs constitute an interesting case and have become the centre of attention in the ongoing trade negotiations in the aftermath of Brexit.

Tariff Rate Quotas (TRQs)

- Developed for striking a balance between free trade and localization policies, also opening new markets to exporters

- TRQ comprise a two-tiered tariff system for imports by applying a low tariff for imports up to a certain quota limit, and levies a high tariff for imports above the quota

- Widely used by WTO (1,425 TRQs) in agricultural international SCs; Aims to limit the flow of imported

- Because of their unique features (i.e., information, time and quantity constraints, FCFS), TRQs create a fierce competition among exporters and importers

TRQ: Types and Administration Schemes

- EU Tariff-Rate Quotas (TRQ) are applied strictly on different types of meat

- **Common types of tariffs:** Country-specific; Erga Omnes (open to all)

- **Administration**: TRQs can be implemented in various ways such as licencing, First-Come-First-Served, Auctions, Historical trade data.

Scope, Method

- Using secondary data, expert opinion and non-cooperative game theory we investigate the operational aspects of a common trade mechanisms (***Tariff Rate Quota***) in global agricultural SCs.

- Design aspects of TRQ and its impacts on the behaviour of key players, system performance and distribution of revenues among key operators are modelled and studied.
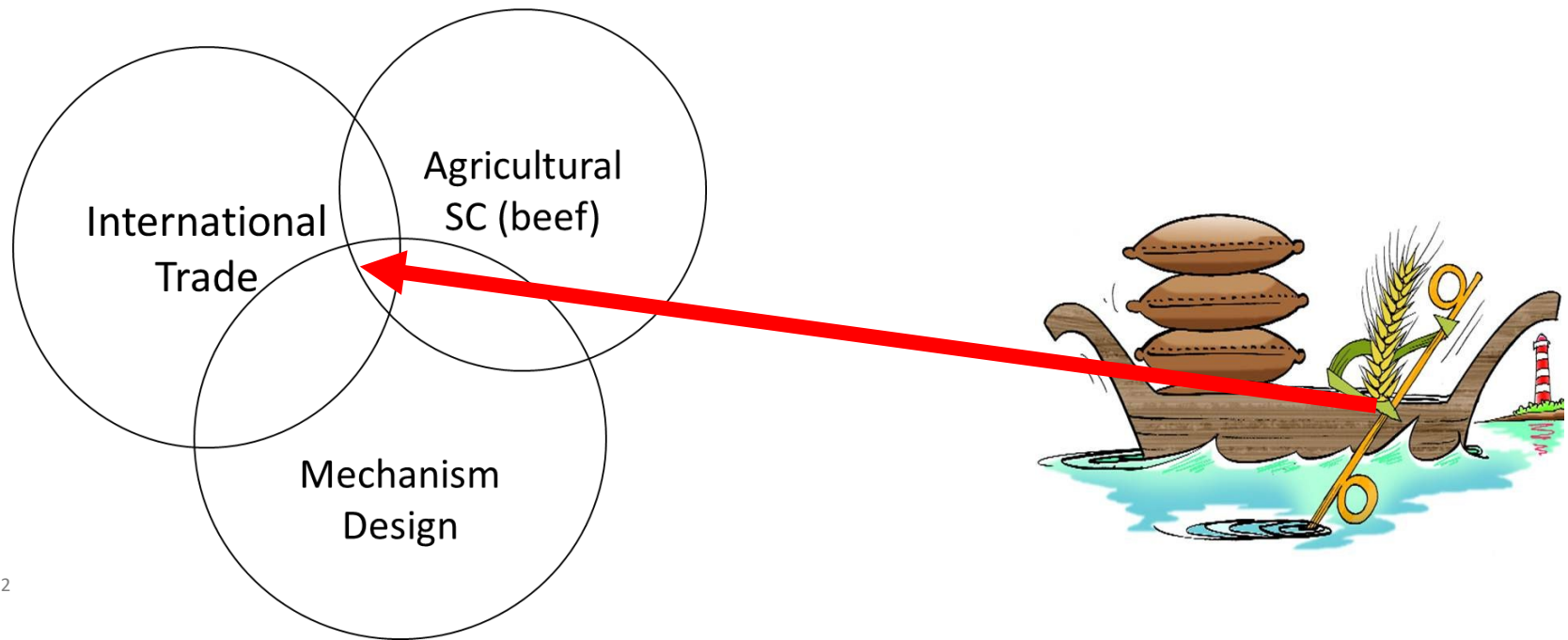
Research Gaps and Key Questions

- TRQs have been widely investigated through the lens of economics. The joint impacts of economical and logistical factors on the success of TRQs are unexplored.

- Focusing on Erga Omnes TRQs with FCFS implementations

  ✓ How can re-calibration of TRQs enhance global agribusiness trade?

  ✓ Can market manager achieve quota-balance and equilibrium among multiple importers/exporters noncooperatively competing under a FCFS TRQs system? How?

  ✓ How changes in TRQ administration influence the global SC competition and exporters/importers' decisions under TRQs?

AUSTRALIA – UNITED KINGDOM FREE TRADE AGREEMENT

Case Study: UK/EU Imported Beef Market

- The EU supplies over 90% of imports to UK, with no single non-EU country supplying more than three per cent of the total.

- Imports from the EU accounted for about 86% of the total (2013–2017). Ireland is the dominant supplier.

- In 2018, volume of AU red meat export to the EU was only 2% of its total export volume, with almost 50% of which was exported to the UK.

- While known as one of the largest red meat exporters, Australia's red meat exports to the EU is limited (Why?)

- Brexit provided countries (including UK/AU) an opportunity to revisit regulations regarding trade.
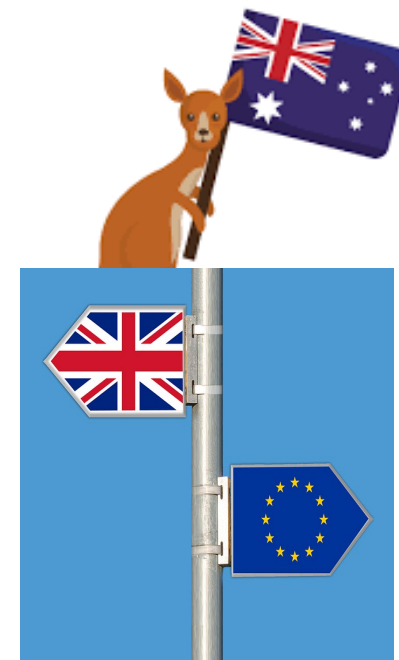
TRQs in UK/EU Imported Beef Market
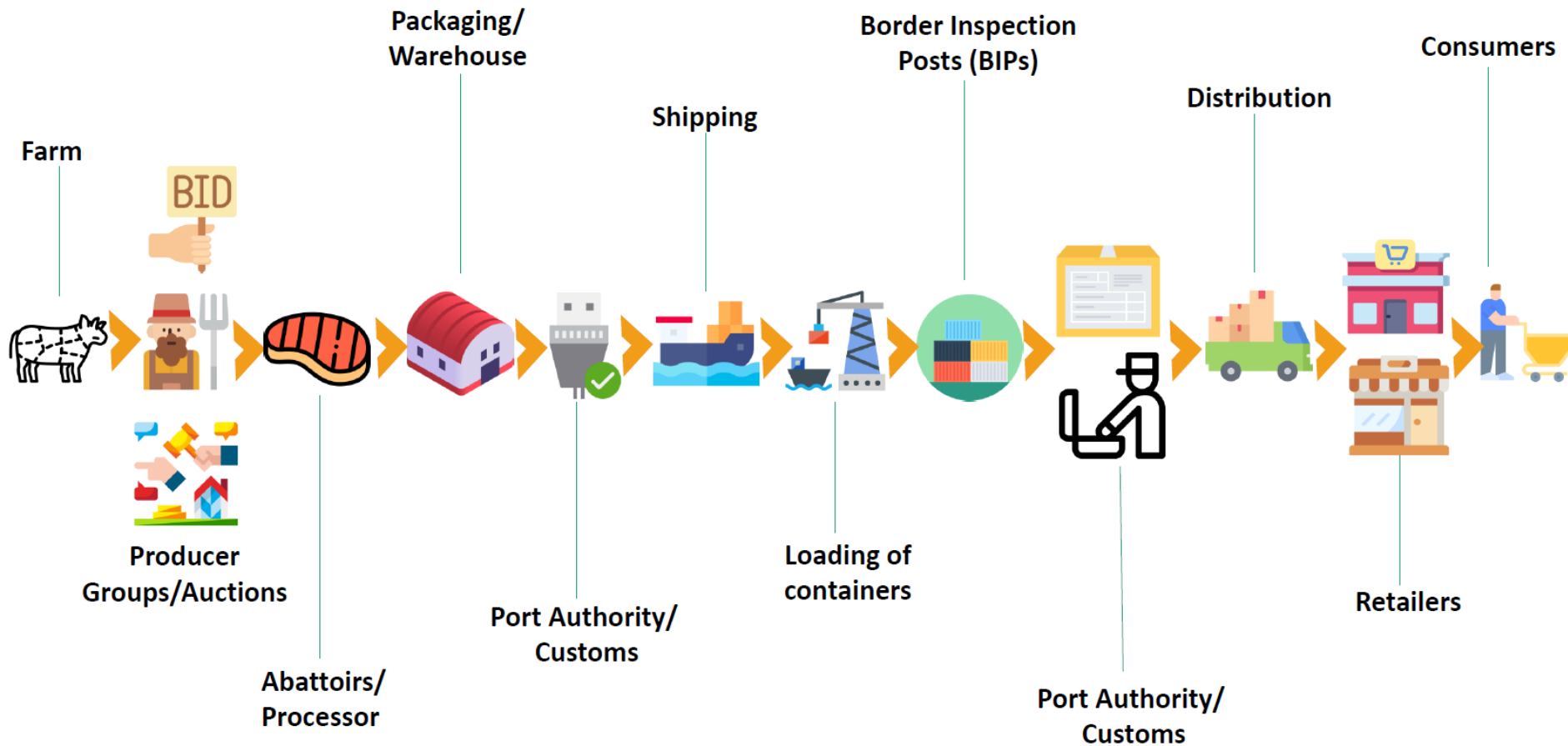
Grain-Fed Erga omnes TRQ
- 45,000 tonnes (up to 2019)
- Managed by FCFS rule open to Australia, Uruguay, Argentina, New Zealand, and up to 2019 US.
- In-quota tariff is zero and out-of-quota tariff is 12.8% plus circa €2,000 per tonne.
- This quota is consistently filled to 100%

HQ Beef (Hilton) TRQ
- 58,100 tonnes
- Managed via licensing
- Imports are subject to 20% tariff
- Hilton TRQ is usually filled up to 70%.

Beef Supply Chain

Farm

Producer Groups/Auctions

Abattoirs/ Processor

Packaging/ Warehouse

Port Authority/ Customs

Shipping

Loading of containers

Border Inspection Posts (BIPs)

Port Authority/ Customs

Distribution

Retailers

Consumers

UK/EU Imported Beef Supply Chain

- **Transportation**: Sea freight lead-time from AU is 4-6 weeks
- **Product shelf-life**: About 20 weeks
- **Logistics Channel choice:** There are multiple options for transportation at different speeds and costs (e.g., with/without transhipment)
- **Stock-Keeping option:** Out-of-quota products can use bonded warehouses

Weekly Import of Fresh/Chilled Beef to UK/EU
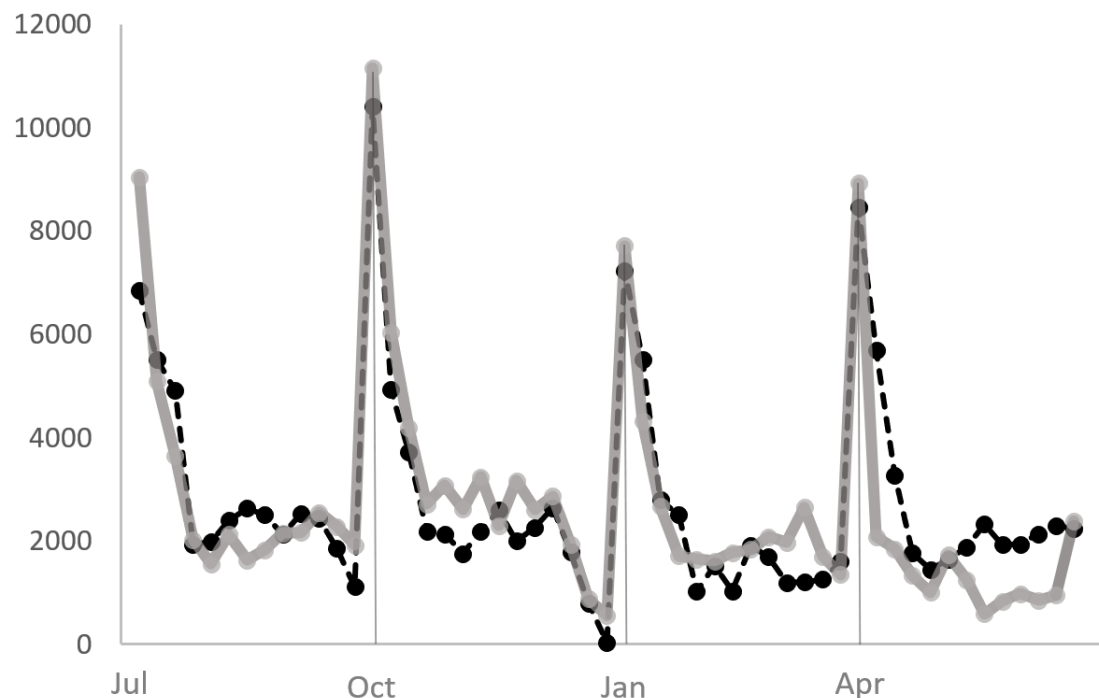
Weekly imports of fresh/chilled beef (tonnes) to EU; solid light line: July 2019-June 2020; dotted dark line: July 2018-June 2019
Source: https://agridata.ec.europa.eu/

- **Jump Phenomenon:** Most of the products are *imported* at the beginning of quota periods
- **Erga Omnes TRQ Performance:** More than twice of the quota limit has been imported

Global Beef Supply Chain under a FCFS TRQ
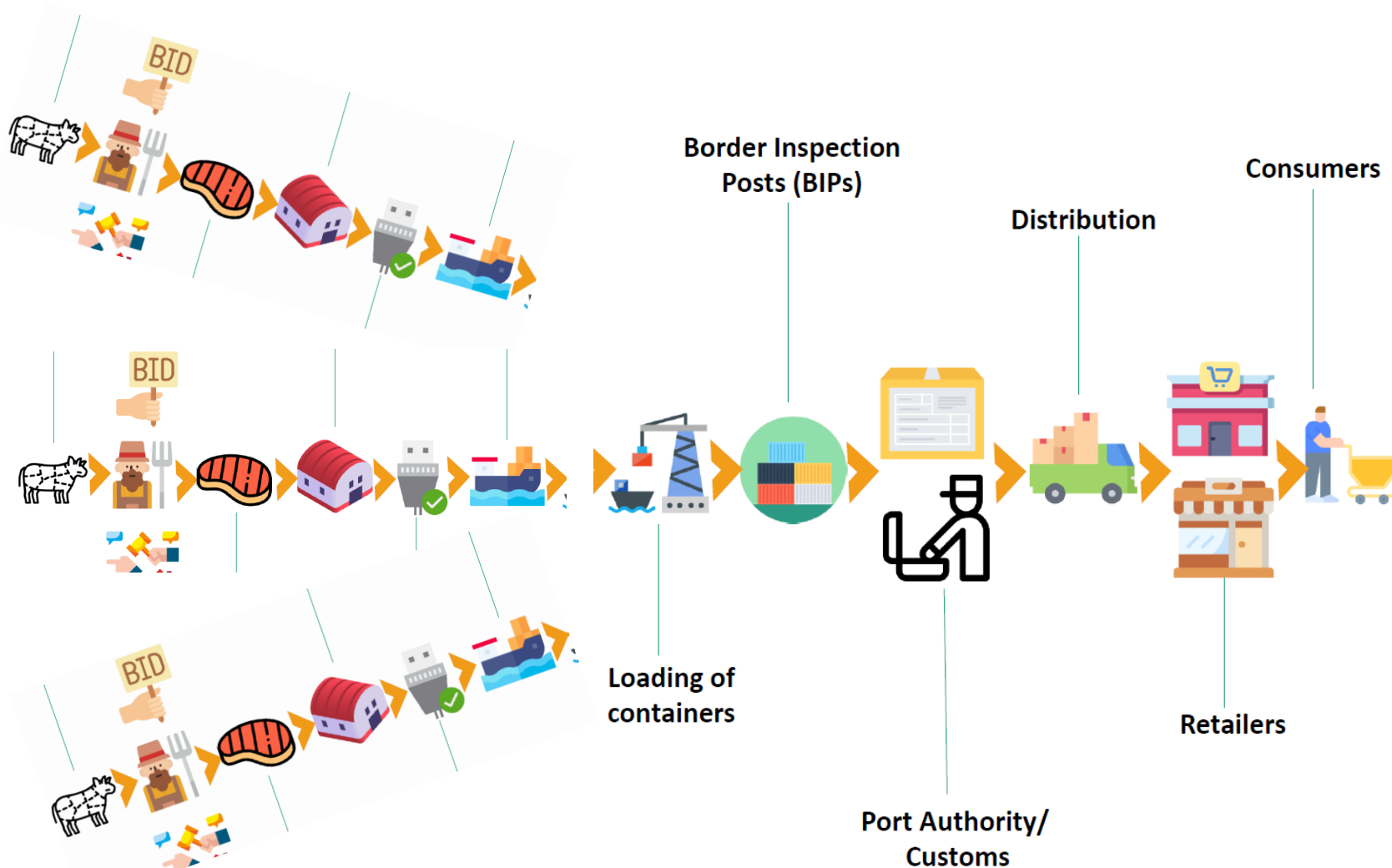
Dynamics of Erga Omnes FCFS TRQ

➢ **Import lead-time:** Due to the import lead-time, there is no knowledge about the quota fill status and the import volume in the pipeline *at the time of decision making*.

➢ **Choice of logistical channel:** When faced with limited quota and the higher likelihood of being within quota when arriving early, the players may be incentivized to <u>expedite</u> their arrival and shorten their lead-times.

➢ **Warehousing option:** Importer/exporters can differ the entrance of their cargo into the market, by keeping the goods in a customs bonded warehouse with duties suspended until the beginning of the next quota period.
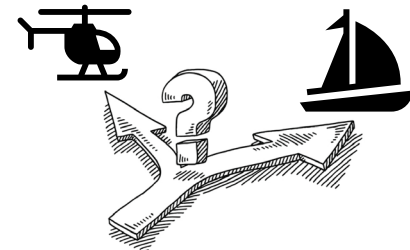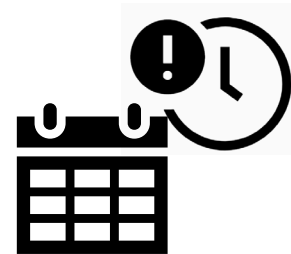
Nash Equilibrium Strategies

➢ Three FCFS TRQ scenarios (games) have been considered:
- **Simple TRQ :** Competition on lower-tariff quota
- **TRQ with Channel Selection:** Competition on arrival and lower-tariff quota
- **TRQ with the Stock-Keeping Option:** Competition on arrival and lower-tariff quota, considering inventory and stocking

➢ Analysis indicates three types of player:
- **Early birds:** These players will arrive as early as possible.
- **Stock keepers:** These players arrive later in the quota period in order to stock their products in a warehouse for clearance at the beginning of the next quota period.
- **Quitters:** These players do not participate in the game due to the fact that they will lose.

Possible cases under a stock keeping option

Over-Quota Penalty

Bonded Warehouse Costs
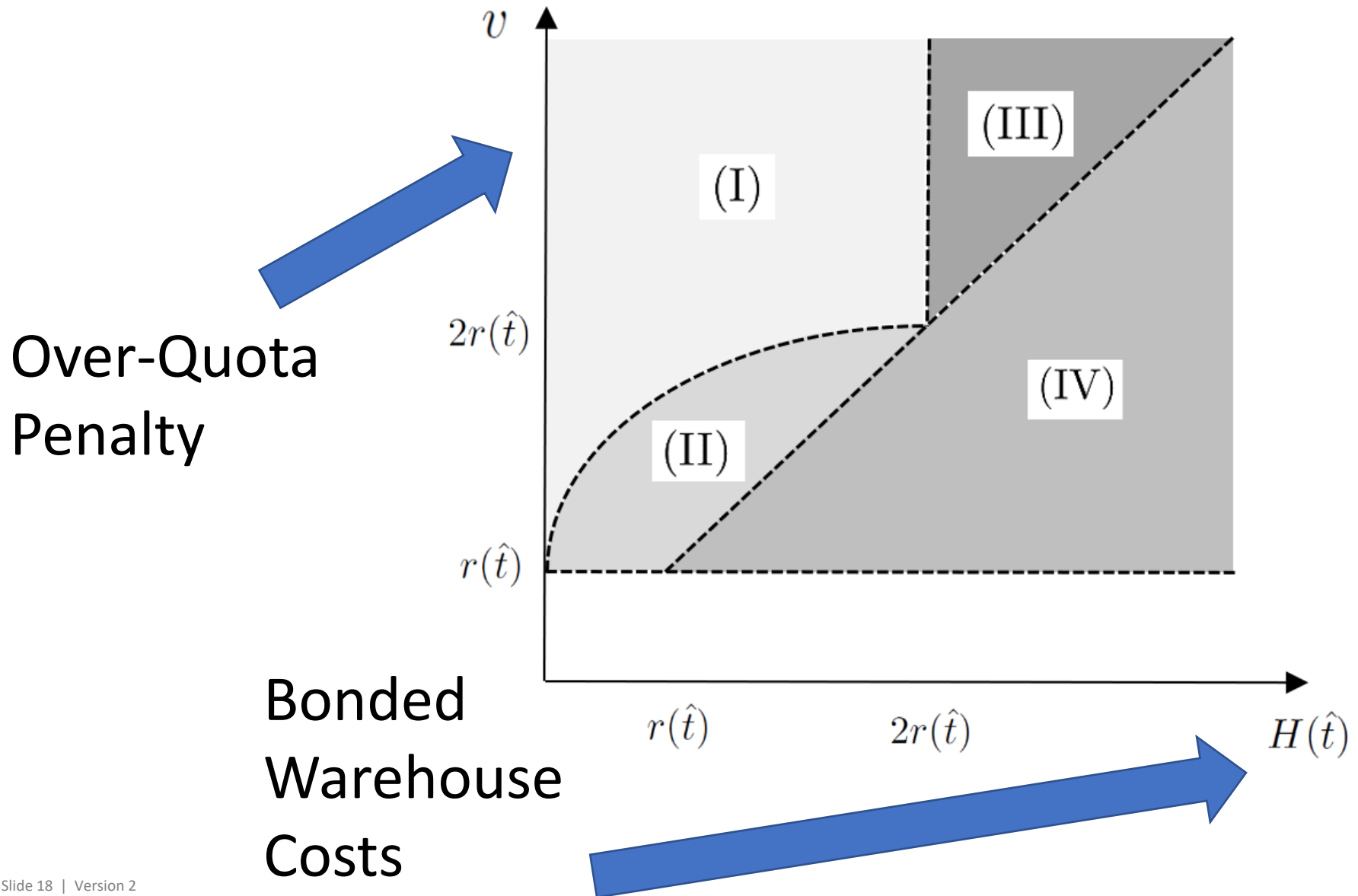
Some Results

- In situations (I) and (II), arrivals happen in one wave.
- All over-quota imports in situation (I) will be stored in a warehouse for the next period.
- In situation (II), due to low over-quota tariff, the number of arrivals is large enough to result in such a large over-quota in the second period that some players will be persuaded to clear their goods in the first stage and the remaining players will keep their products in a bonded warehouse.
- In case (III), there will be two waves of arrivals, with all excess products stored in a bonded warehouse.
- In case (IV), the over-quota tariff is relatively lower than the holding cost. Thus, the excess products arriving in the first wave will be cleared immediately. Subsequently, we will have a second wave of arrivals, all of which would be held in a warehouse.

Some Results From AU/UK Case
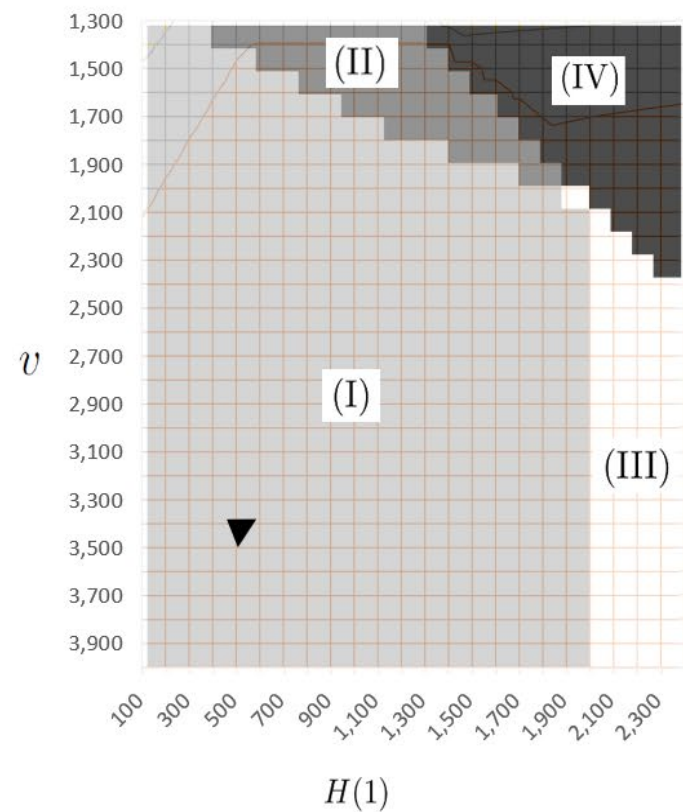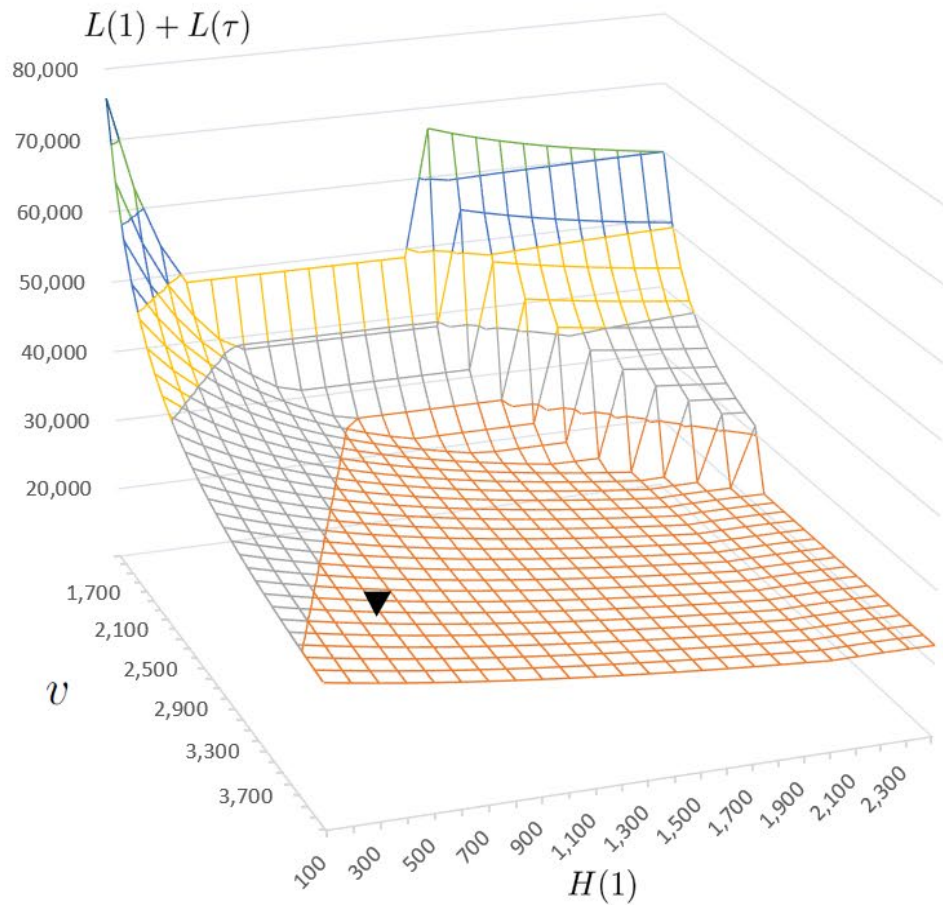
Some Insights

- Inefficient TRQ systems dramatically **reduce** the expected profit of the importers/exporters.
- Longer import lead-time **worsens** TRQ quota imbalance
- In general, the **higher** the penalty, the **better** the performance.
- There are situations where over-quota is **inevitable** in equilibrium.
- Having the option to store products in bonded warehouses **creates two waves of imports** within a quota period mainly due to: **1)** fierce competition to arrive at the beginning of the first period; **2)** stock up to enter the market at the beginning of the next period.
- **Players margins are near zero! Who are the real winners?**
- Logistics service providers (e.g., stocking, demurrage, in-land transportation, warehousing, custom clearance services) might be the real profit-makers in a TRQ system!

Conclusion

- We model the competition among importers/exporters using non-cooperative game theory and characterize the behaviour of key players (exporters/importers).

- Our models can predict the performance of TRQ systems and highlights the possible hurdles the market managers encounter to flatten the fluctuating waves of arriving imports and congestion of logistical channels.

- Provides timely and actionable insights to policy makers when revisiting their TRQ systems and shed light on the tariff and non-tariff barriers associated with such system.

Some personal reflections

- Engaging in research projects dealing with policy making is really fun! Be prepared (and excited) to get toasted.

- You can tell if you are taken seriously when industry/government bodies promptly reply to emails and/or write you 4 pages critique (some could be damn harsh!).

- Do not feel bad if frequently told "you are scratching the surface". Half a loaf is better than no bread!

- Different parties may have different desires. Do not let stakeholder(s) push you to echo their voice (concerns/preferences). Instead, broadcast your observed opposing views/paradox to policy makers. This is also what most top journals like.

Thank you

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