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Commodity price volatility pre and post market liberalisation: an evolving Principal-Agent problem

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Introduction and Background

- In 1980's and 1990's commodity markets witnessed extensive liberalisation.
- Led to scrapping of most of the ICA's.
- Greater role for market mechanisms and of risk-management tools (futures and options).
- More recently, increased financialisation of commodity markets (well documented by UNCTAD and others); and
- Development of locally based commodity exchanges(Ethiopia, Malawi, India etc).
- Empirical evidence suggests that liberalisation contributed to more price volatility for many products (see Gemech and Struthers (2007) on coffee in Ethiopia).
- *QUESTION: Can we evaluate efficacy of different interventions within commodity markets using a Principal-Agent (P-A) framework?*
- Develop a *taxonomy* to analyse costs and benefits of alternative interventions. Presentation is summary of longer Review Article by authors (British Academy Research Grant).
- May yield useful policy implication for organisations such as UNCTAD, FAO.

Stakeholders and Principal-Agent Theory in commodity markets

- Varangis and Larson (1996) in a seminal article set out a Stakeholder approach to commodity analysis.
- 4 key "entities" or stakeholders in commodities*: Institutions; Governments; Markets* and *Individuals.*
- Interactions between these are central to commodity analysis.
- Leads on to a P-A framework.

Principal-Agent Theory

- *Jensen and Meckling* (1976): The P-A problem is ubiquitous in all contracts.
- Applies to all contracts in which one party (the Principal) delegates work to another party (the Agent).
- Principals and Agents suffer from *goals conflict (or incentives misalignment).*
- The Principal cannot (or it is too costly to) verify at all times what the Agent is doing- the *Verification* or *Monitoring problem*.
- Actions of Principal and Agent may also stem from different risk preferences- relates to *Moral Hazard, Adverse Selection.*

Principal-Agent Theory Overview

Main concept:	*P-A relations need to internalise an efficient organisation of information and risk bearing costs*
Unit of analysis:	*Contract between P and A*
Assumptions:	*Self-interest, bounded rationality, risk aversion, goal conflict, information asymmetry between P and A, information can be purchased*
Contracting issues:	*Moral hazard and Adverse Selection, Risk sharing*
Examples:	*Measuring performance, regulation,* transfer pricing

Predictions of Principal-Agent Theory

- Information Asymmetry leads to *opportunistic behaviour by Agents* - greater when contract is *behaviour-oriented* (based on salaries, hierarchical governance)- rather than *outcome-oriented* contract (commissions not salaries, stock options, market governance).
- Outcome-oriented contracts more effective in limiting *goal conflict-if not then* Principal requires *information systems* to verify Agent's behaviour.
- *Outcome-based contracts reduce Agent's level of risk aversion and task measurability easier when contract is outcome-based.*
- *Goal conflict lower when Principal-Agent relationships are long term, not short term-and is lower if market discipline* exists.
- *Decentralisation in decision making leads to cost-based contracts not market (outcome-based) contracts-this is a Supply Chain and also a Transactions* Cost issue.

Application to Commodities

- Risk sharing is optimal between P and A when latter is risk averse.
- Commodities can be a multi-layered P-A problem.
- Difficult to identify who is the P and who is the A: can change according to institutional/regulatory context.
- Pre-market liberalisation: in producing countries when Marketing Boards were active, they were the Principal and producers /farmers the Agent; but in consuming countries the ICA's were the Principal and the Marketing Board the Agent.
- Post- market liberalisation: who is the Principal and who is the Agent?
- Is the Exporter the Principal or the International Trader/Buyer?

Application to Commodities

- And what role do the commodity brokers play in a P-A context?
- Depends: Are they Informed/Uninformed/or Noise Traders?
- Also, if Producers/Farmers Associations exist they are Principal to the producers/farmers, but Agent to local commodity exchanges ; whilst the latter will be Agent to International Traders/Buyers (the Principal).
- At the consuming country level there are more P-A relationships ;eg wholesalers v retailers; different final consumers (FairTrade v non-FairTrade etc).
- Our key conclusion is that local commodity exchanges may resolve some of these P-A problems(see Fig 1 (a) and (b) and Table 1: a Taxonomy)

Fig 1(a): Principle-Agent Relationships (Before Market Liberalisation)

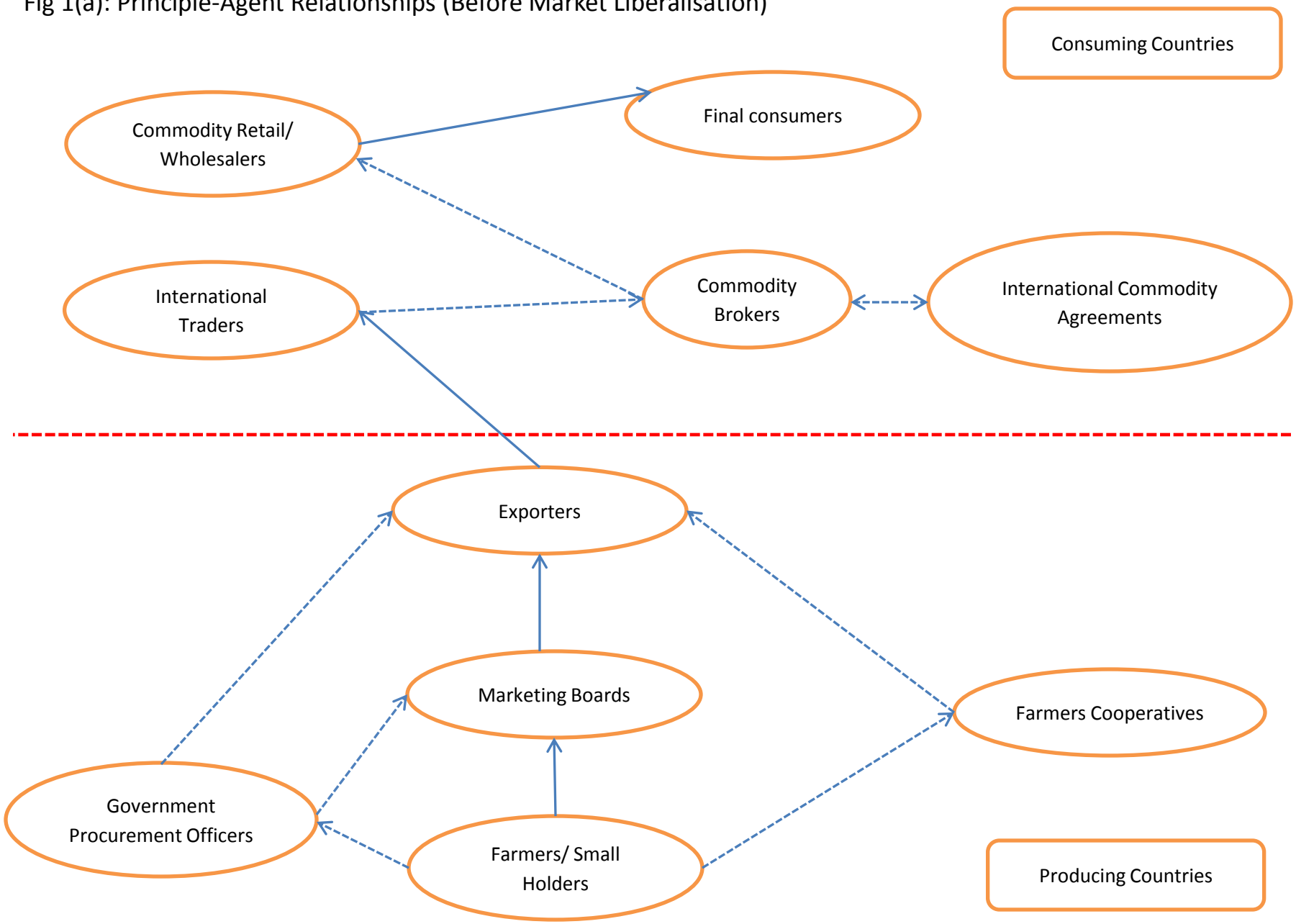

Fig 1 (b): Principle-Agent Relationships (After Market Liberalisation)

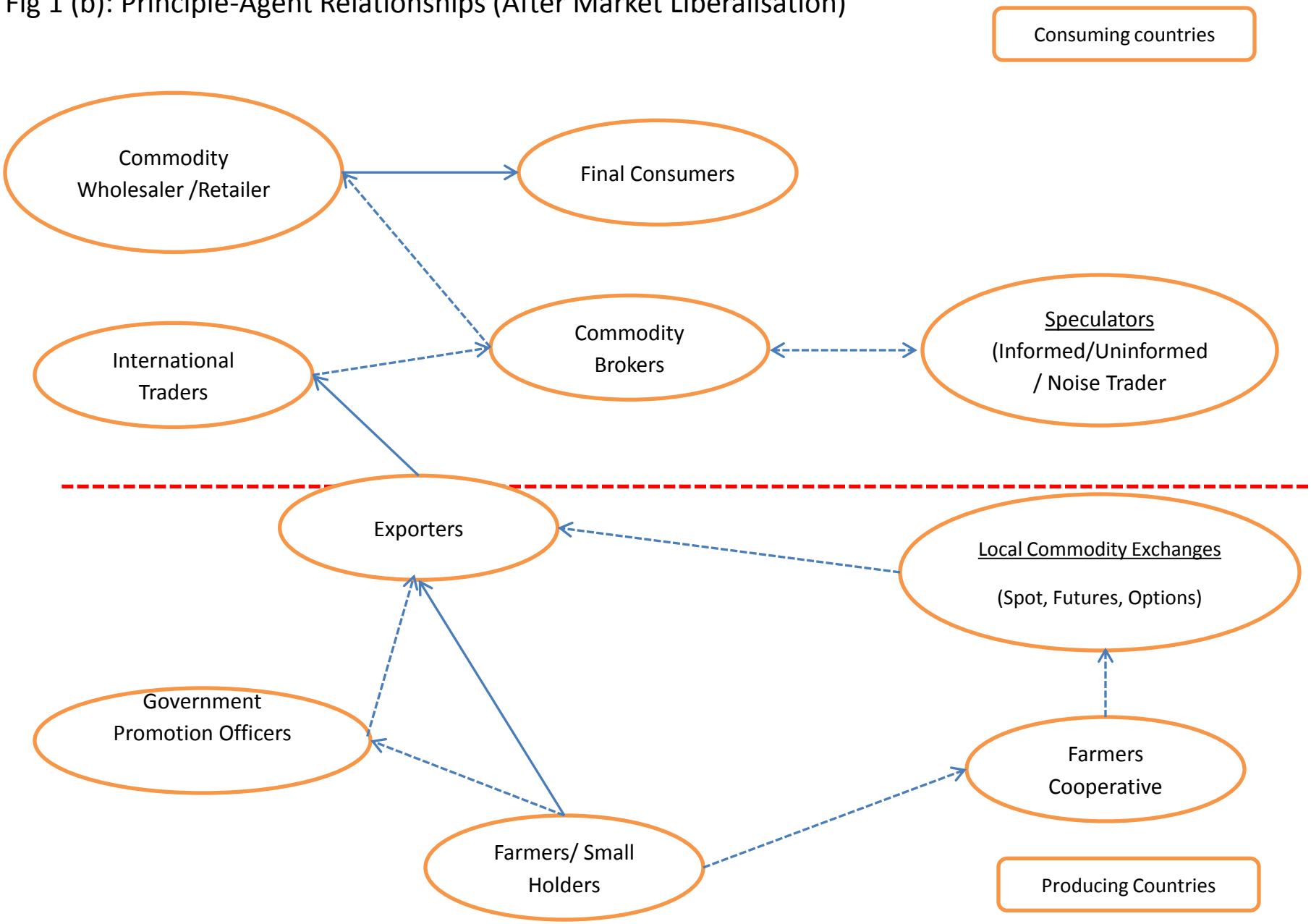

Table 1: A Principal-Agent Taxonomy	Pre-market Liberalisation		Post-market Liberalisation		
**PRINCIPAL-AGENT INDICATORS*	*ICA'S & MARKETING BOARDS*	*COMMODITY STABILISATION FUNDS (eg IMF CCFF)*	*DERIVATIVES FUTURES, OPTIONS ,ETF's*	*LOCAL COMMODITY EXCHANGES*	***IMPACT OF SUPPLY CHAINS*
1)*Contracts:* (behaviour-based v outcome-based)	Satisficing behaviour; Rent seeking; Shirking.	Ex-post adjustments; Potential satisficing behaviour.	Reduced rent seeking; "Efficiency" (depends on effect of speculation).	If contract is outcome based has incentive effect.	Complexity high depending on supply chain.
2)*Assumptions:* (self-interest, bounded rationality, risk aversion)	Bounded rationality high; Risk aversion by Agent high.	May reduce risk aversion; Risk mitigation.	Basis risk & counterparty risk still exist; futures/ options prices still volatile.	Low liquidity; Thin markets; Consuming countries (buyers) may have more power.	Complexity high depending on supply chain; bounded rationality and risk aversion high.
3)Goal conflict: Asymmetric info Moral hazard, Adverse Selection	Moral hazard & adverse selection high.	Moral hazard &adverse selection high.	Neutral	Long term relationship may reduce goal conflict.	Goal conflict will be high if supply chain is complex.
4)*Risk-sharing:* (asymmetric)	Potential "loss aversion" approach.	Some potential for risk sharing.	With options downside risk minimised; with futures high margins needed.	Reduced. Exchanges play a strong price discovery role.	Other risks (eg weather; idiosyncratic). Long & complex supply chains give more power to buyers.
5)Transaction costs:	High	Neutral	Reduced	Reduced	High costs; depends on supply chain; number of intermediaries.
6) *Verification & Monitoring Costs*	High	High	Reduced	Reduced. Government cost	High costs

Implications and Conclusions

- Need to map costs and benefits of different interventions in terms of the P-A framework- a *Balanced Scorecard* approach.
- P-A framework is complementary to that of the "Efficiency" debate in commodities research.
- Potential P-A conflicts always exist in markets (*gaming*).
- Need to minimise their negative effects (see 6 indicators in Table 1).
- Complexity of Supply Chain complicates P-A effects (Fitter and Kaplinsky,2001).
- Supply chain different for different commodities (South Centre (2008) on "Rebalancing The Supply Chain" ; Ponte (2002) on Coffee Supply Chains.
- Perhaps need to group similar *commodities* together to use *taxonomy* approach.
- Also need to balance aim of more "efficient" commodity markets against ultimate aim to encourage diversification in CDDC's.

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