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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>
<thead>
<tr>
<th>Table 1: A Principal-Agent Taxonomy</th>
<th>Pre-market Liberalisation</th>
<th>Post-market Liberalisation</th>
<th><strong>IMPACT OF SUPPLY CHAINS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Contracts: (behaviour-based v outcome-based)</td>
<td>Satisficing behaviour; Rent seeking; Shirking.</td>
<td>Ex-post adjustments; Potential satisficing behaviour.</td>
<td>Reduced rent seeking; “Efficiency” (depends on effect of speculation). If contract is outcome based has incentive effect. Complexity high depending on supply chain.</td>
</tr>
<tr>
<td>2) Assumptions: (self-interest, bounded rationality, risk aversion)</td>
<td>Bounded rationality high; Risk aversion by Agent high.</td>
<td>May reduce risk aversion; Risk mitigation.</td>
<td>Basis risk &amp; 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.</td>
</tr>
<tr>
<td>4) Risk-sharing: (asymmetric)</td>
<td>Potential “loss aversion” approach.</td>
<td>Some potential for risk sharing.</td>
<td>With options downside risk minimised; with futures high margins needed.</td>
</tr>
<tr>
<td>5) Transaction costs:</td>
<td>High</td>
<td>Neutral</td>
<td>Reduced</td>
</tr>
<tr>
<td>6) Verification &amp; Monitoring Costs</td>
<td>High</td>
<td>High</td>
<td>Reduced</td>
</tr>
</tbody>
</table>
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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