

Trade and Market Power in a Liberalised Commodity Market: Preliminary Results for Coffee

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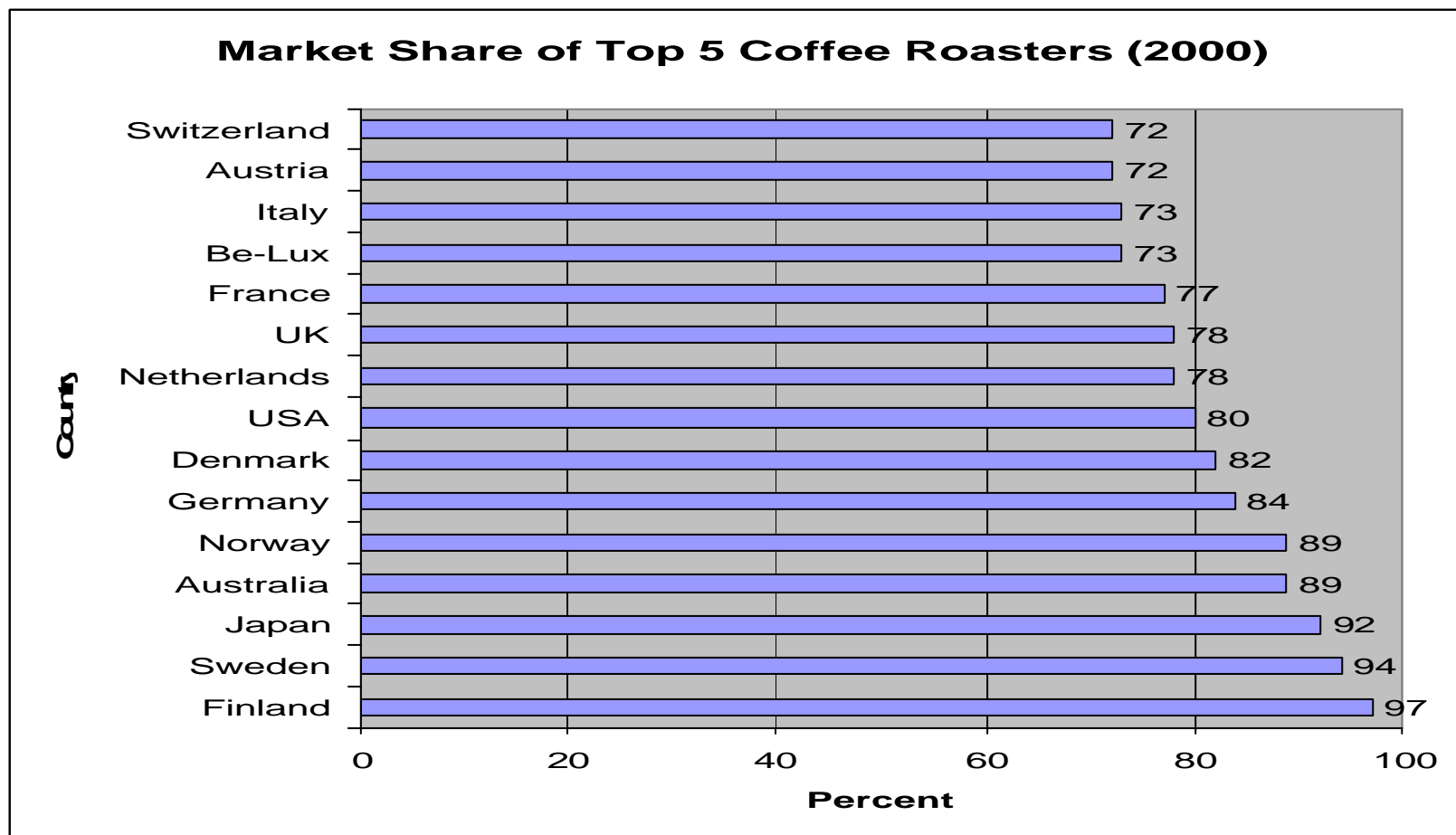
1. Introduction: liberalisation and concentration

- July 1989: breakdown of the “economic clauses” of the International Coffee Agreement (ICA).
- Broadly coincided with domestic liberalisation in producer countries
 - General withdrawal of state (but variations internationally)
 - Privatisation and competition in marketing chains
 - Market-based pricing
- Apparent short-term price effects:
 - World prices fall (stocks & what other factors?)
 - Producer prices rise *as % of world prices* (i.e., marketing margins are reduced)

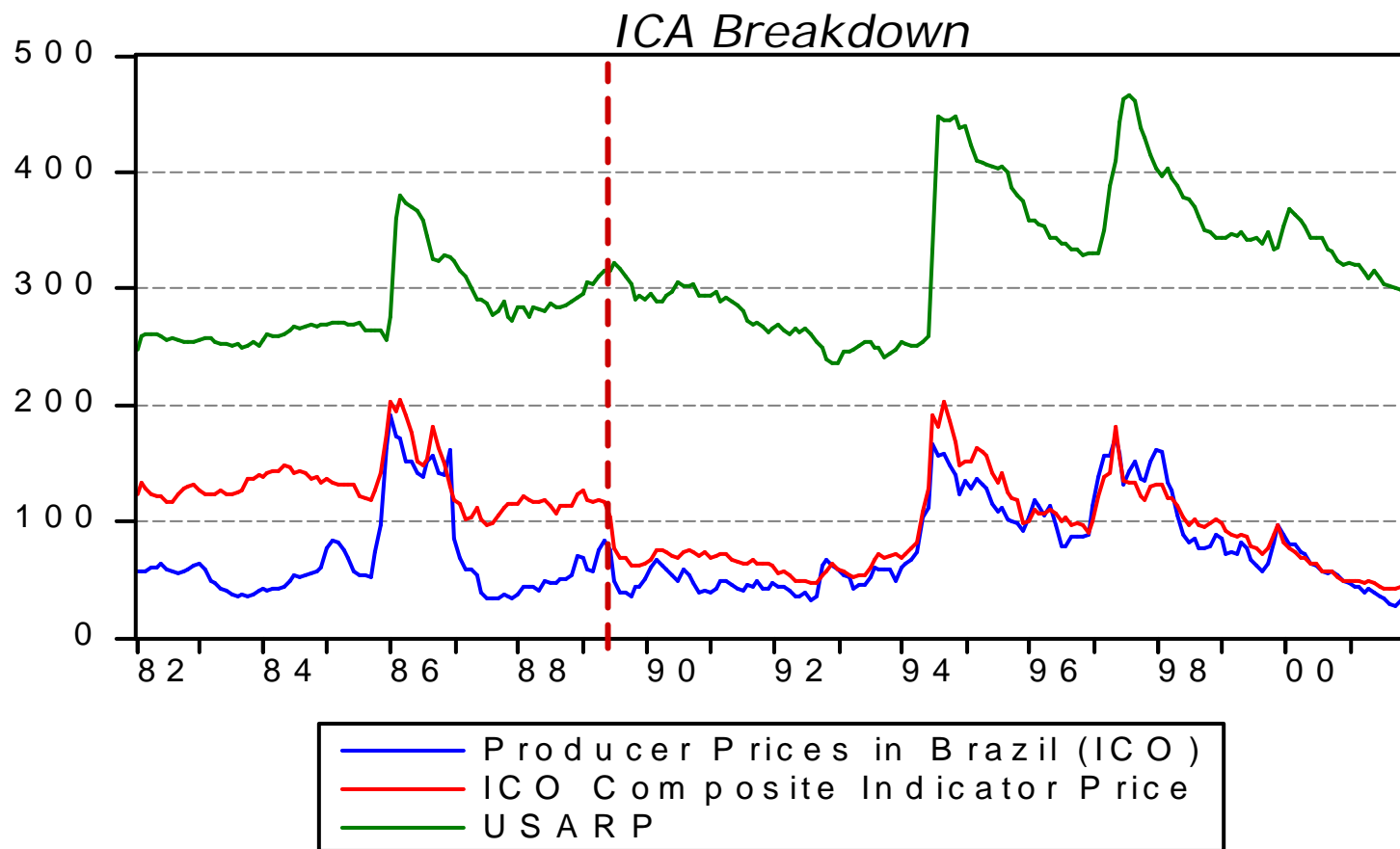
1. Introduction: liberalisation and concentration

- But how competitive are the privatised marketing chains?
 - Significant concentration amongst traders and roasters
 - $C-5^{USA} = 80\%$
 - $C-5^{GE} = 84\%$
 - Potential for “double market power”: asymmetry between few/powerful intermediaries and many/powerless producers and consumers
 - Many new entrants in developing countries dropped out soon after liberalisation
- Potential is there, but does the “profiteering roaster” literature go too far?
 - Even if intermediaries have market power, rent extraction is unlikely to be a major factor behind the current “coffee crisis”
- Focus on empirics: how far can such competition-related concerns be justified in terms of the available evidence?

1. Introduction: liberalisation and concentration



1. Introduction: liberalisation and concentration



2. Empirical Strategy

General Approach

- Draw on the market integration and vertical transmission literature
- Look at price transmission:
 - producer prices to the world market; and
 - world market to retail prices.
- Focus on impact of 1980s & 1990s liberalisation, the potential “enabling factor” for concentration and abuse of market power (at least with respect to producer countries)
- Benefits of a time series approach over more traditional, structural econometrics:
 - Flexibility of functional form
 - Complex dynamics
 - Flexibility in addressing possible non-stationarity
 - Separation of model specification and hypothesis testing
- Modelling approach:
 - Estimate & choose model
 - Check specifications
 - Test hypotheses and describe dynamics
 - Compare results across markets (producer v. consumer) and countries

2. Empirical Strategy

Data & Pre-testing

- ICO monthly prices in US\$ from 1982 to 2001
 - Multiple world prices
 - To analyse producer-world transmission, need to match according to type of coffee (more than one possible)
 - Producer prices for all ICO exporting members
 - Sample = 6 (50% of total exports)
 - Retail prices for all ICO importing members
 - Sample = 2 (45% of total imports)
- Non-stationarity is a problem:
 - Tested with ADF & KPSS (full sample and sub-samples) and Perron (full sample with breakpoints)
 - Breakpoint issue is crucial: some series are $I(0)$ pre-liberalisation and $I(1)$ afterwards
 - So method needs to be robust to presence of $I(1)$ variables or (worse) a mix of $I(0)$ and $I(1)$ in the same model

2. Empirical Strategy *Models*

- Estimate separate sub-models for pre- and post-liberalisation
- Unrestricted VARs in levels and first differences, relating two price series at a time

■ e.g.,

$$\left. \begin{aligned}
 p_t^w &= \mathbf{m}^w + \Phi_{89}^w DU^{89} + \sum_{j=1}^k \Pi_j^w p_{t-j}^w + \sum_{j=1}^k \Pi_j^p p_{t-j}^p + \mathbf{e}_t^w \\
 p_t^p &= \mathbf{m}^p + \Phi_{89}^p DU^{89} + \sum_{j=1}^k \Pi_j^w p_{t-j}^w + \sum_{j=1}^k \Pi_j^p p_{t-j}^p + \mathbf{e}_t^p
 \end{aligned} \right\}$$

$$\left. \begin{aligned}
 \Delta p_t^w &= \mathbf{m}^w + \Phi_{89}^w \Delta DU^{89} + \sum_{j=1}^k \Pi_j^w \Delta p_{t-j}^w + \sum_{j=1}^k \Pi_j^p \Delta p_{t-j}^p + \mathbf{e}_t^w \\
 \Delta p_t^p &= \mathbf{m}^p + \Phi_{89}^p \Delta DU^{89} + \sum_{j=1}^k \Pi_j^w \Delta p_{t-j}^w + \sum_{j=1}^k \Pi_j^p \Delta p_{t-j}^p + \mathbf{e}_t^p
 \end{aligned} \right\}$$

2. Empirical Strategy

Tests

- Test hypotheses regarding the *expected* price transmission effects of liberalisation:
 - Are shocks transmitted faster and more completely?
 - Are changes transmitted bilaterally (circular causation)?
 - Is transmission more symmetric?
 - Are marketing margins smaller?
- Compare test results across sub-period models
- Two approaches:
 - Interpret impulse responses (generalised)
 - Test formal hypotheses using a small-sample modified likelihood ratio test (see Sims (1980)).
- Dealing with non-stationarity:
 - ? of all variables are stationary
 - Check robustness of results across specifications in levels and first differences
 - Use lag-augmented specifications that should allow robust testing of simple hypotheses (Toda & Yamamoto (1995)).

3. Results

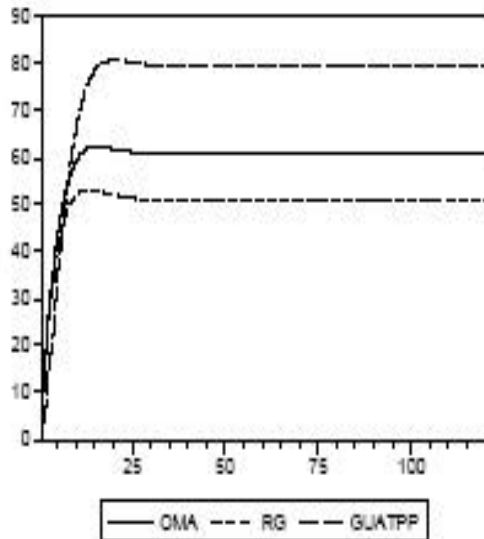
Speed & Completeness

- Surprisingly little improvement & even some deterioration
 - IRFs for producer countries peak later and decay more slowly
 - Changes in cumulative IRFs variable
 - Consumer markets appear worse *after* liberalisation than before!

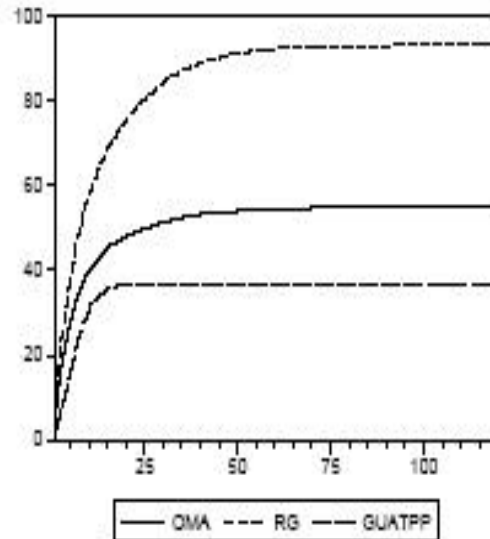
3. Results

Speed & Completeness

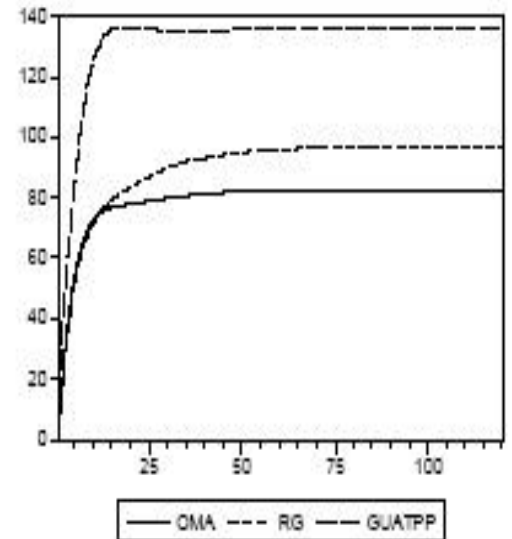
Accumulated Response of OMA to Generalized One S.D. Innovations



Accumulated Response of RG to Generalized One S.D. Innovations

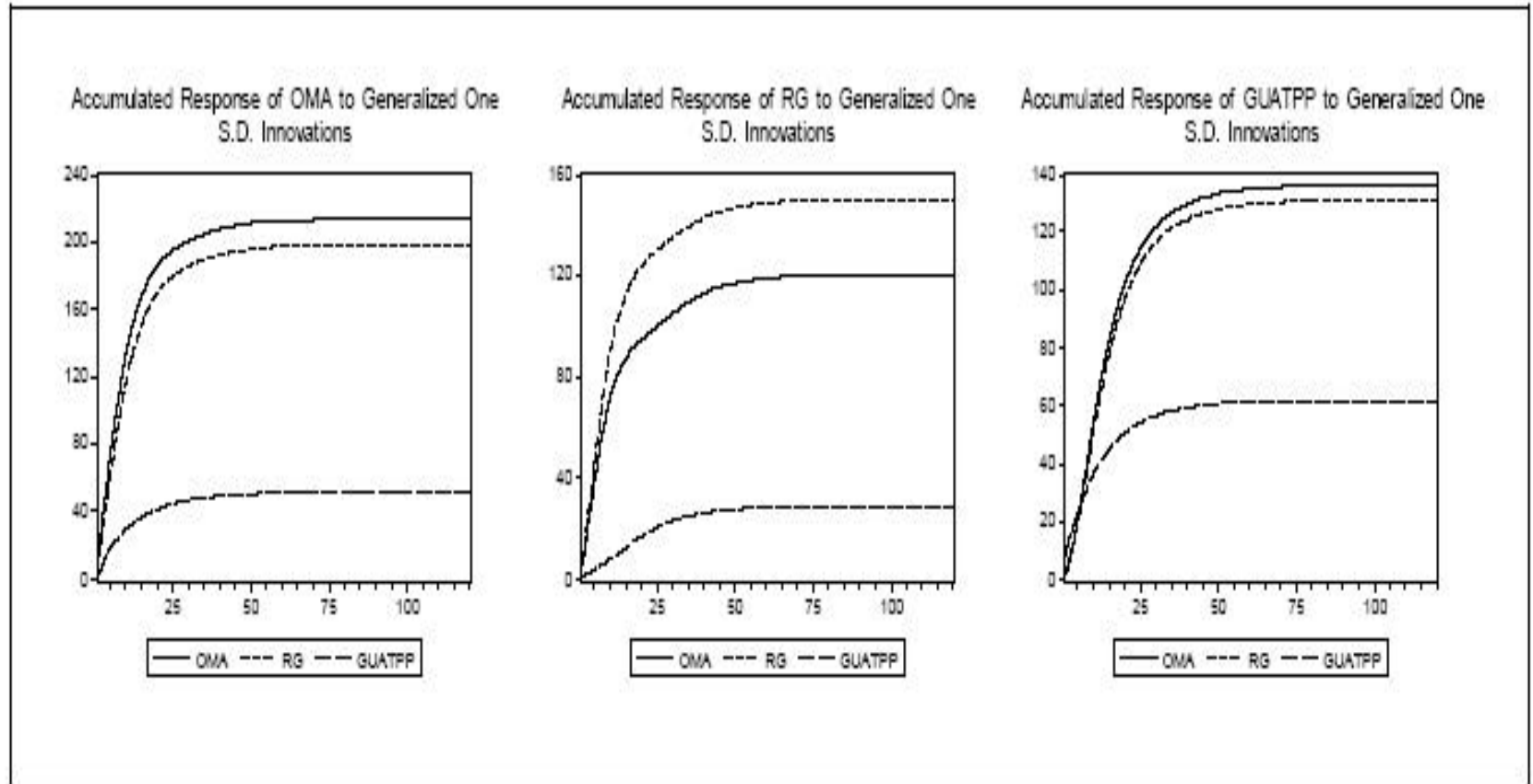


Accumulated Response of GUATPP to Generalized One S.D. Innovations



3. Results

Speed & Completeness



3. Results

Causation

- Use the modified LR test to look at Granger causality
- Reasonably robust to model specification
- Generalised shift from bottom-up to top-down pricing for producer countries
 - IE, pre-liberalisation Granger causality tends to run from producer to world prices...
 - But the opposite tends to be true post-liberalisation
- Little change for consuming countries

3. Results

Symmetry

- Tests based on an asymmetric version of the VAR in first differences:

$$\left. \begin{aligned} \Delta p_t^w &= \mathbf{m}^w + \Phi^w \Delta DU^{89} + \sum_{j=1}^k {}_w\Pi_j^w \Delta p_{t-j}^w + \sum_{j=1}^k {}_w\Pi_j^p \Delta^+ p_{t-j}^p + \sum_{j=1}^k {}_w\Pi_j^p \Delta^- p_{t-j}^p + \mathbf{e}_t^w \\ \Delta p_t^p &= \mathbf{m}^p + \Phi^p \Delta DU^{89} + \sum_{j=1}^k {}_p\Pi_j^w \Delta^+ p_{t-j}^w + \sum_{j=1}^k {}_p\Pi_j^w \Delta^- p_{t-j}^w + \sum_{j=1}^k {}_p\Pi_j^p \Delta p_{t-j}^p + \mathbf{e}_t^p \end{aligned} \right\}$$

- Asymmetric transmission is the norm in producer countries prior to liberalisation...
 - And afterwards as well!
 - Consumer countries exhibit asymmetry in BOTH sub-periods and in BOTH directions
-

3. Results

Marketing Margins

- For comparative purposes, use a model over the *full* period & test:
 - Significance and sign of liberalisation dummy
 - Equality of constant terms between the world and producer/retail price equations
- Reductions in 4/6 producer countries
 - No change in Guatemala consistent with liberal domestic market over full period
- Interplay between international and domestic level reforms
- Probable *increases* in consumer countries

4. Conclusion and Directions for Future Research

- The impact of liberalisation seems more limited than expected:
 - Marketing margins have indeed been reduced (except in consuming countries) BUT
 - Asymmetry remains (or has worsened)
 - Shift to top-down pricing
 - Limited changes in speed and completeness of transmission
- Numerous possible explanations, one of which is market structure
- Results also suggest influence of domestic institutions
- The evidence presented here does not close the question but rather opens it up for future research:
 - Comparison with more traditional empirical IO models
 - Inclusion of more producer/consumer countries & development of an integrated model
 - Volatility transmission

4. Conclusion and Directions for Future Research

- Policy implications:
 - Competition policy (at least in the North)?
 - Institutions and producer organisations in the South?
 - Second-best policies in producer countries to redistribute rents?
- But the focus at the present time should be on properly identifying the nature and extent of the problem rather than adopting “solutions” too quickly.