



# "Monetary Rules for Commodity Traders"

Luis Catão and Roberto Chang

Discussion  
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The International Monetary Fund and  
The Central Bank of the Republic of Turkey Conference:  
Policy Responses to Commodity Price Movements  
Istanbul, Turkey, April 6, 2012

The views, analysis, and conclusions presented here  
are my own and not necessarily those of members  
of the Riksbank's executive board or staff.



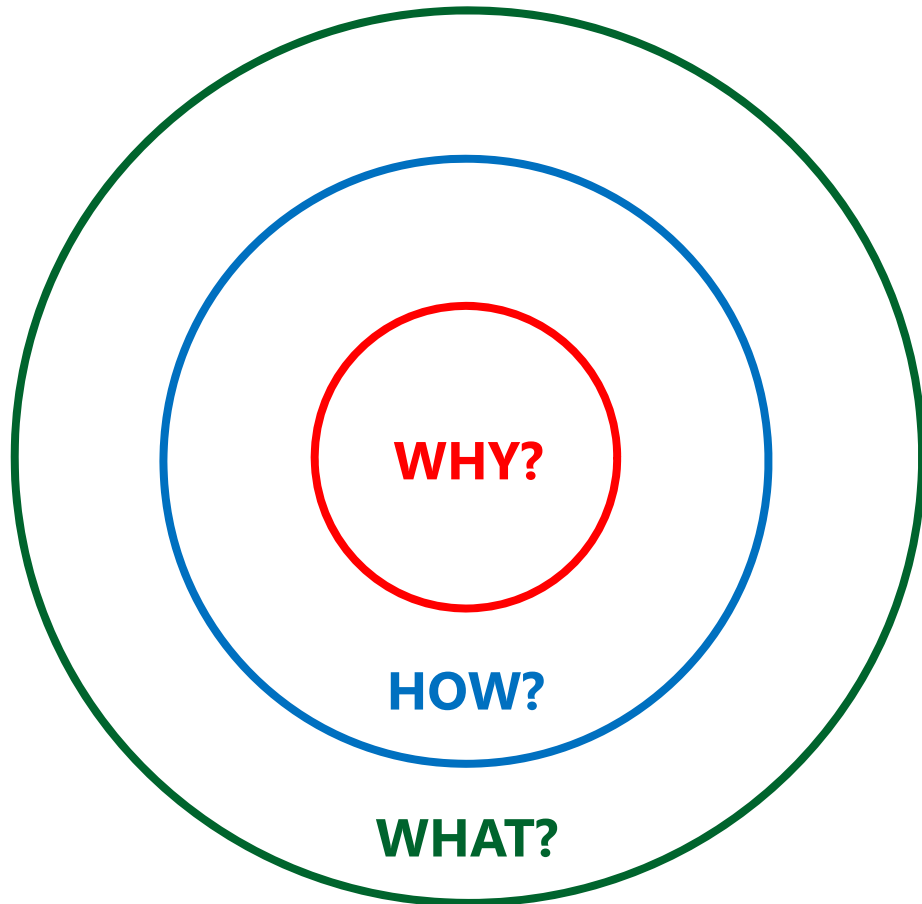
## First...

It is a pleasure to be invited to discuss this rich and interesting paper by Luis Catão and Roberto Chang.

The topic of is certainly important and timely.



# Roadmap



# Roadmap





## Why / Motivation

- Large swings in commodity prices over the past few years (and the global financial crisis) has reinvigorated the debate about the appropriate objectives for monetary policy.
- What measure of inflation should the central bank target?
- Many papers have studied this question...
  - “Conventional wisdom\*”:
    - Aoki (2001): CB should stabilize index of **sticky** prices (*closed* economy).
    - Commodity prices are flexible(?), so Aoki would likely suggest ignoring “first round” effects of commodity shocks on headline inflation and only reacting to “second round” effects on core inflation?
    - Targeting aggregate “average” indices such as the Consumer Price Index (CPI) is suboptimal.

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\* See e.g. also Mankiw and Reis (2003).

## Why / Motivation

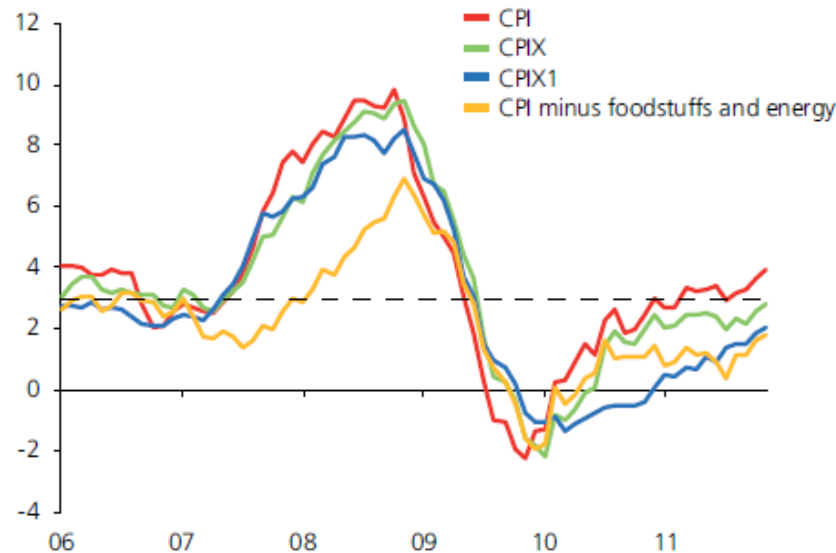
- This paper is useful in that it examines how the choice of inflation target (in simple rules) depends on importance of structural aspects of Commodity Trading (CT) countries:
    1. Countries where commodity items, such as food and oil, account for a sizeable share of consumption baskets.
    2. Open economy aspects for commodity traders
      - Export-import structure
      - Imported inputs in production.
    3. Role of financial integration
  - These aspects are addressed in the paper by Catão and Chang (CC).
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# Why? -> Aspects of CT countries

## Measures of CPI/Core inflation

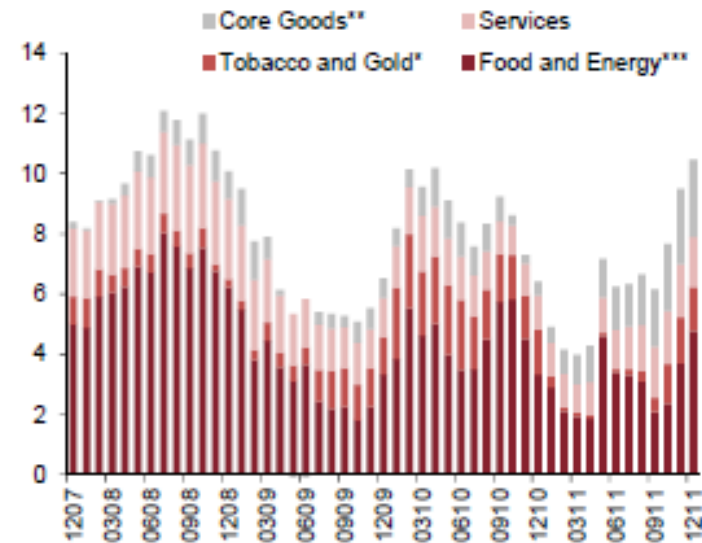
### Chile

CPI, CPIX, CPIX1 infl. And CPI minus foodstuff and energy (annual change, percent)



### Turkey

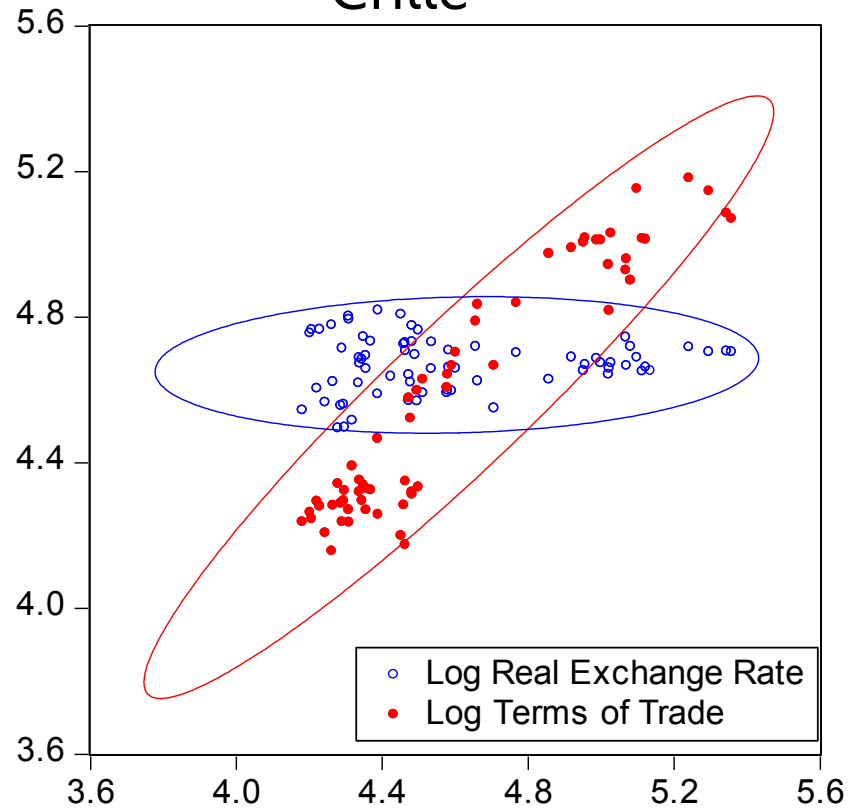
Contribution to Annual CPI Inflation



# Why? -> Aspects of CT countries

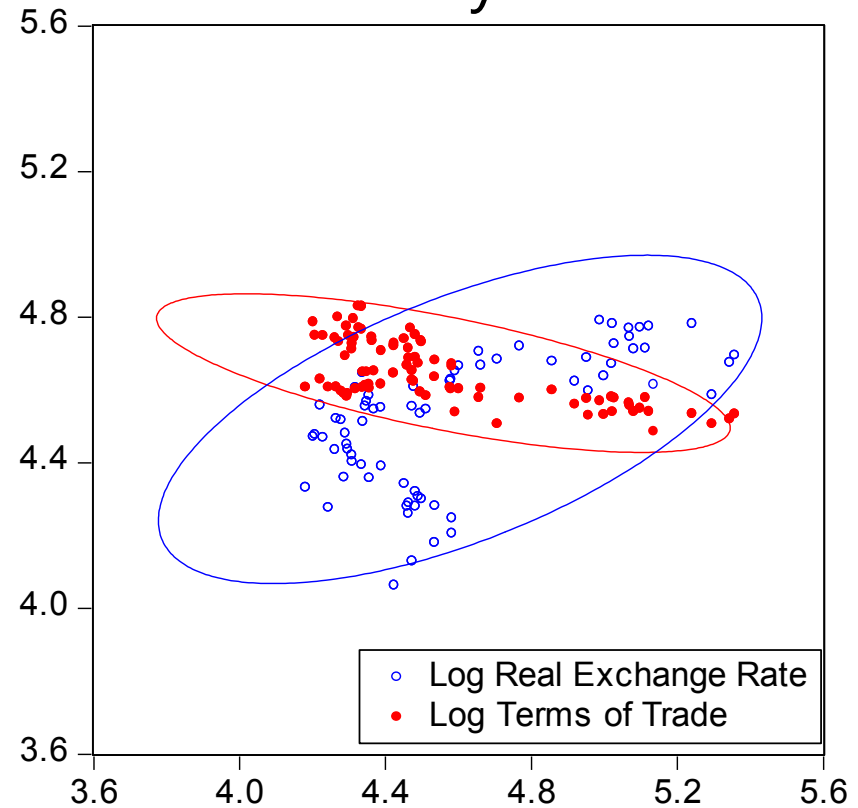
ReR/ToT/C-price

Chile



Log IMF Primary Commodity Prices Data - All Index

Turkey



Log IMF Primary Commodity Prices Data - All Index



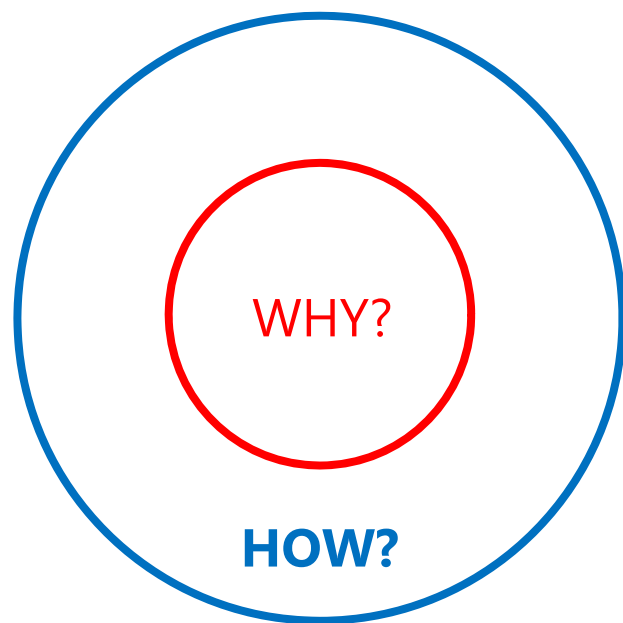


## Why? - Summary

- The topic is certainly important and timely
- The aspects of openness and financial market access which CC study in the paper are highly relevant features of CT countries.
  - The question is how they affect the choice of inflation target?



# Roadmap

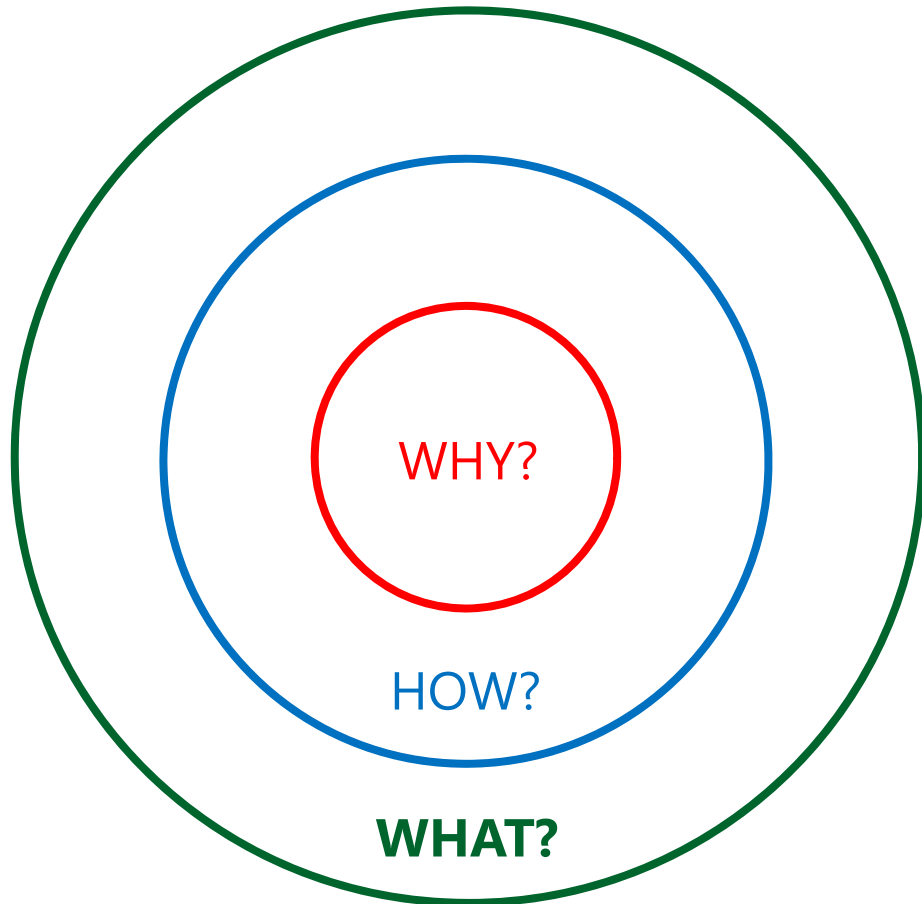




# How? - The Catão-Chang model

- Augment the SOE model of Gali and Monacelli (2005) / Catão and Chang (2010) with structural features of CT countries such as:
    1. SOE imports commodities
      1. Consumed by households (low substitutability)
      2. Used as input in production
    2. SOE exports (PCP):
      1. Domestically produced goods
      2. Commodities
    3. Household access to financial markets may be imperfect
    4. Welfare evaluation of alternative monetary policy rules
      1. PPI inflation
      2. CPI inflation
      3. CPI forecast
      4. Peg the export price
-

# Roadmap





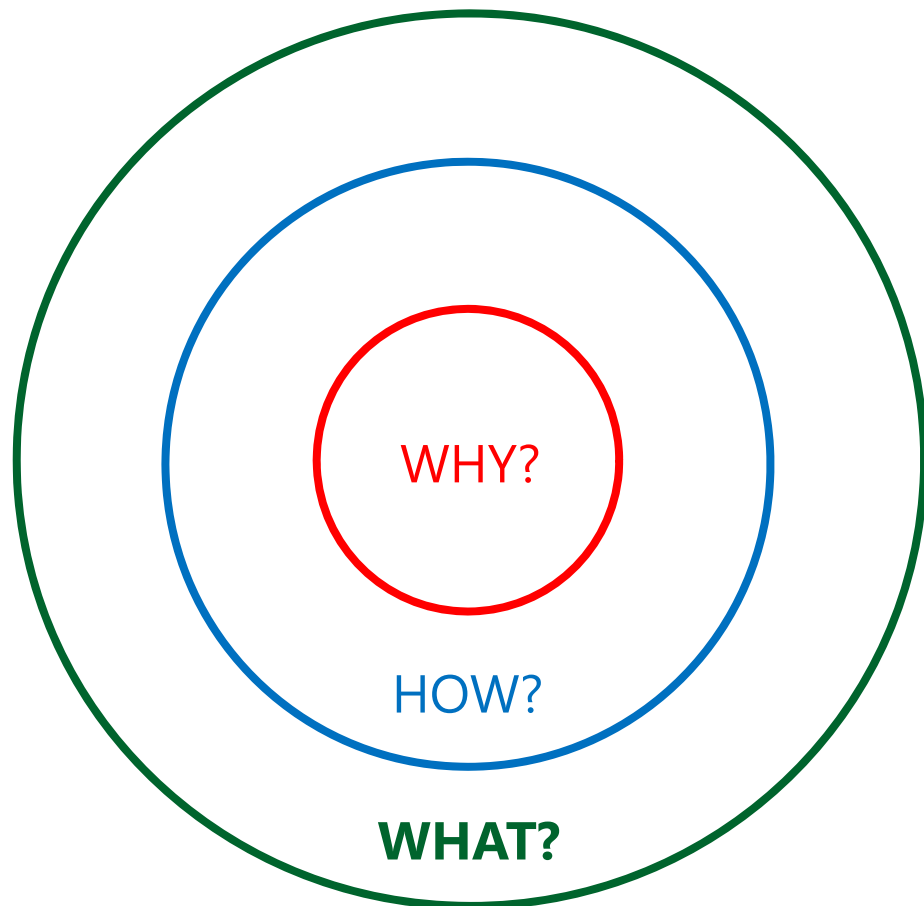
# What are the main findings?

- Good monetary policy stabilizes PPI: because price stickiness is in domestic goods prices, while there is perfect pass-through in import prices.
- CPI targeting is bad because it tries to stabilize import prices while ToT needs to fall, which implies a big fall in domestic prices.\*
  - Because domestic goods prices are sticky, this implies a fall in output.
- A fixed exchange rate rule is similarly bad: to stabilize nominal exchange rate while the real exchange rate is depreciating, requires a contractionary rise in the interest rate.
- Results hold for different types of CT country characteristics!

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\* See the extra slides.

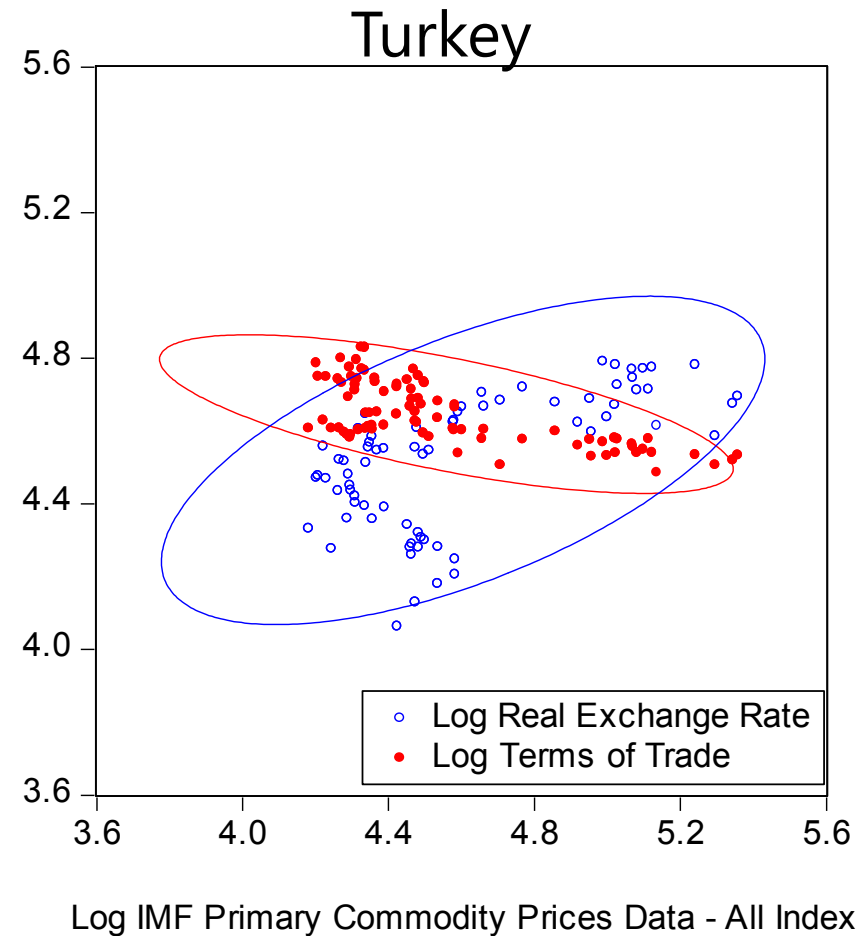
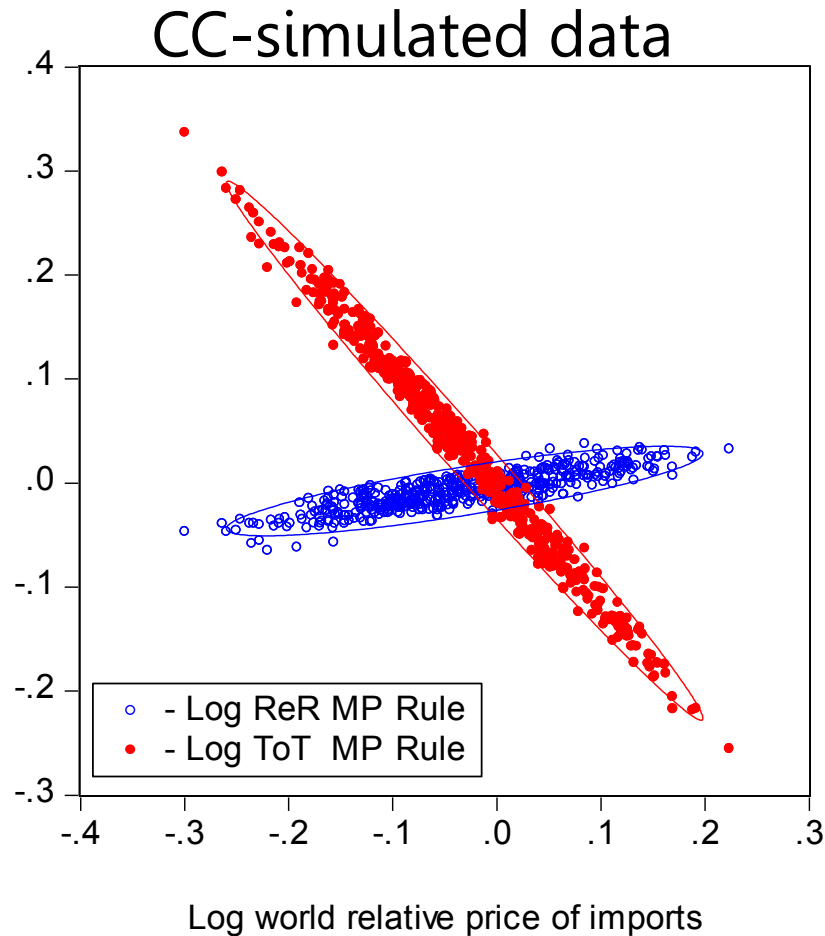
# Roadmap



- Discussion:
  1. **What** type of CT economy is CC studying?
  2. **What** trade-offs do the central bank face?
  3. Alternative policy responses to commodity price shocks?



# What type of CT economy is CC studying? ReR/ToT/C-price



The scatterplot (left panel) is constructed by simulating the CC-model for 500 periods with all four shocks active.

# What trade-offs do the central bank face?

- Analyze the trade-off between CPI/PPI inflation and output gap stabilization
  1. Impulse response functions from the CC model (ex ante)
  2. The original Taylor curve (ex post)
    - a. Assume that the central bank instead of following a simple rule minimizes a loss function under discretion
    - b. 
$$L_t = (\pi_t^{CPI/PPI})^2 + \lambda(y_t - y_{n,t})^2$$
    - c. Compare the standard deviation of CPI inflation and PPI inflation against the standard deviation of the output gap for different weights ( $\lambda$ -values).
      - i. Trade-off if this relationship is negative
      - ii. Otherwise "divine coincidence"
  
- Bottom line: When does an interest rate path "look good"?
  1. Ex ante: Impulse responses (forecasts) or "forecast Taylor curves"\*
  2. Ex post: The original Taylor curve

\* See section 3.4 in Svensson (2010). "Inflation Targeting," in Friedman, Benjamin M., and Michael Woodford, eds., Handbook of Monetary Economics, Volume b, chapter 22, Elsevier.



# What trade-offs do the central bank face?

Ex ante: Impulse-response functions from the paper

Figure 1: Shock to Import Prices, Perfect Capital Markets

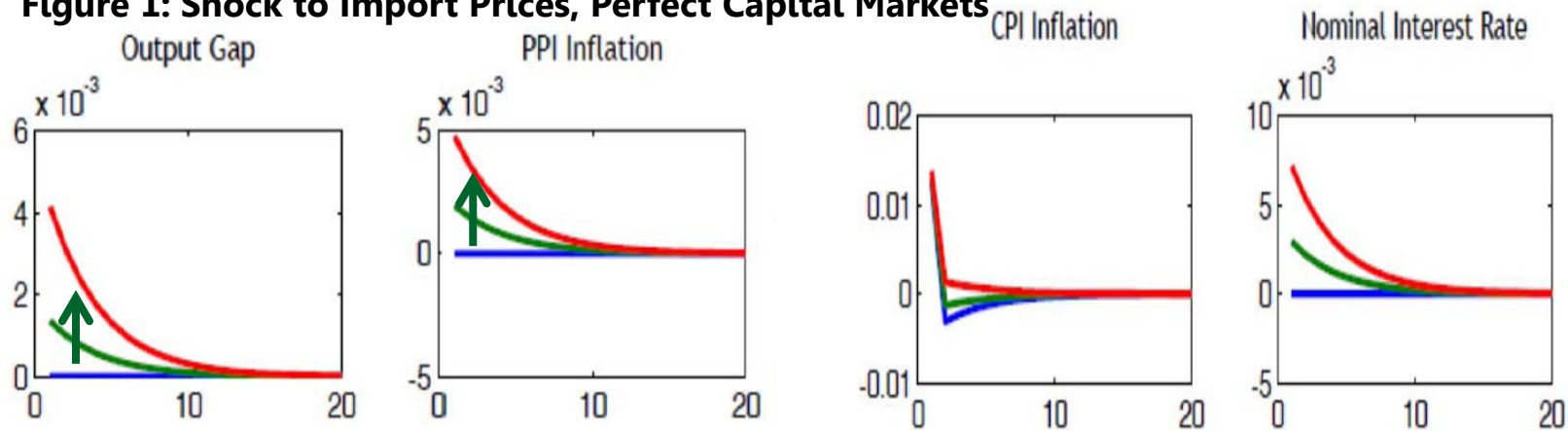
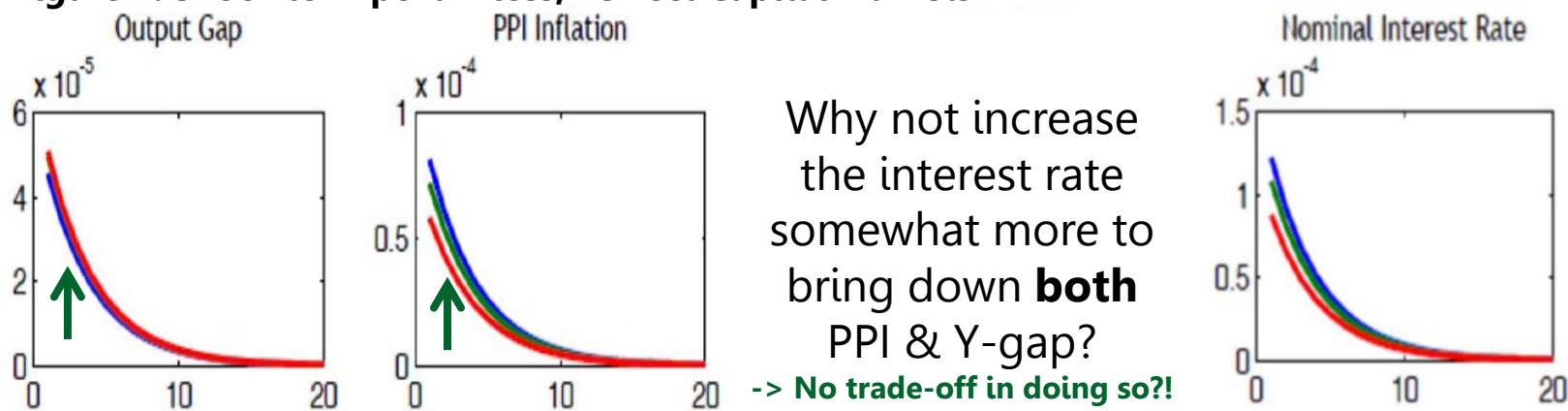


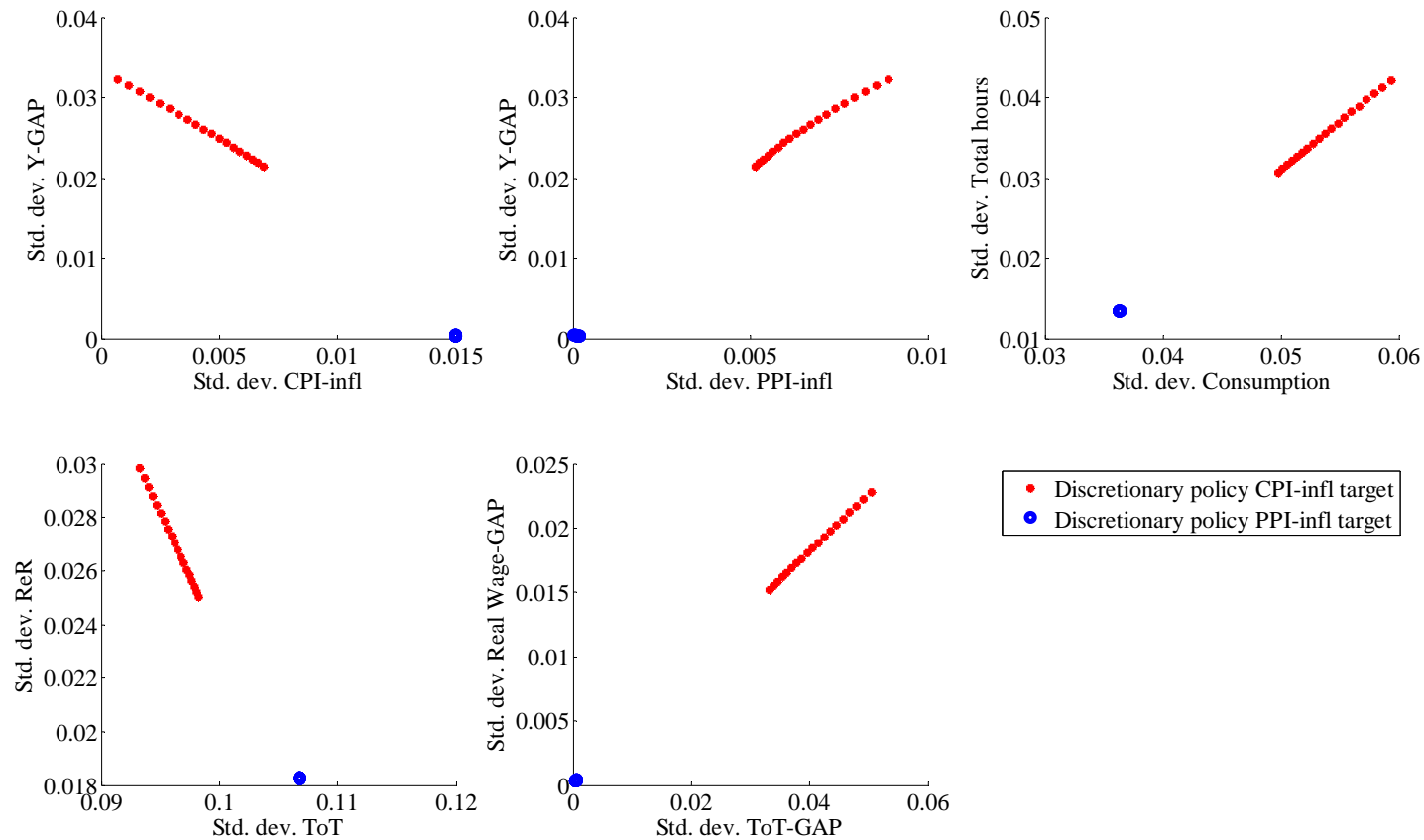
Figure 2: Shock to Export Prices, Perfect Capital Markets



Why not increase the interest rate somewhat more to bring down **both** PPI & Y-gap?  
 -> **No trade-off in doing so!?**

# What trade-offs do the central bank face?

## Ex post: The original Taylor curve



The figure shows the trade-offs between different variables in the CC-model that result for varying the weight on output stabilization ( $\lambda$ ) under discretion.



# What trade-offs do the central bank face?

## Summary

- PPI inflation targeting:
    - Low consumption/hours volatility  $\approx$  high welfare (panel 1,3)
    - Small trade-off between stabilizing ReR and ToT (panel 2,1)
    - Small trade-off between stabilizing Real Wage Gap and the ToT Gap (panel 2,2)
    - Close to divine coincidence in the paper?
  - PPI inflation targeting seems to be superior to CPI inflation targeting... a result which is also found in the paper
    - ⇒ The question regarding the best measure of inflation is closely related to the question regarding the divine coincidence. Both are related to the issue of how we model supply shocks.
-



# Some comments and suggestions

1. Important to get the relative size of the shocks right?
    - a. What if import price shocks dominate?
    - b. What if export price shocks dominate?
    - c. Look at variance decompositions to find out?
    - d. What is really the relation between the export and import price shocks? Correlated?
  
  2. Trade-off for the central bank - Divine coincidence?
    - a. Real wage rigidity / limited transferability of labor skills across sectors: one among many possible mechanisms for generating endogenously-varying markups
    - b. Technical issue: Steady-state distortions and cobb-douglas production functions. Natural output = Efficient output? (Natal 2012 JM CB)
    - c. Import price pass-through?
      - a. See e.g. Monacelli (2003) - persistent deviations from the law of one price breaks the divine coincidence
  
  3. Role of international risk sharing?
    - a. Compelling evidence that a substantial fraction of the population (especially in CT countries?) are unable to smooth their consumption
    - b. ⇒ Introduce credit constrained consumers into the model – stabilize wages becomes more important for the welfare of these agents..
    - c. ⇒ Introduce trade, or working capital, frictions?
    - d. Habit persistence / households consume minimum amounts (e.g. food is a necessity)
  
  4. High/perfect Target Credibility
    - a. Wages might be indexed (or at least more related) to CPI inflation rather than to PPI inflation: High CPI inflation → Wage price spirals if CB does not put weight on CPI inflation?
    - b. How is credibility formed and kept high (Infl. close to target.. Alich et. al. 2009 & IMF 2011)?
-



# Alternative policy responses to commodity price shocks

- PEP – peg the export price
- Forecast based rule
- Why not also try:
  - Yearly inflation instead of quarterly?
  - Average Inflation Targeting?
  - Ramsey optimal policy?
  
- How did CT central banks and governments respond to the 2007/2008 commodity price boom\*?
  - Directly affect the price
  - Increase the supply of agricultural commodities to limit the rise in food prices
  - Reduce or remove tariffs on specific commodities
  - Increase export taxes or reduce export price incentives
  - Restriction on exports
  - -> Objectives: food security or stabilisation of farm revenues
  - Buying or selling reserves

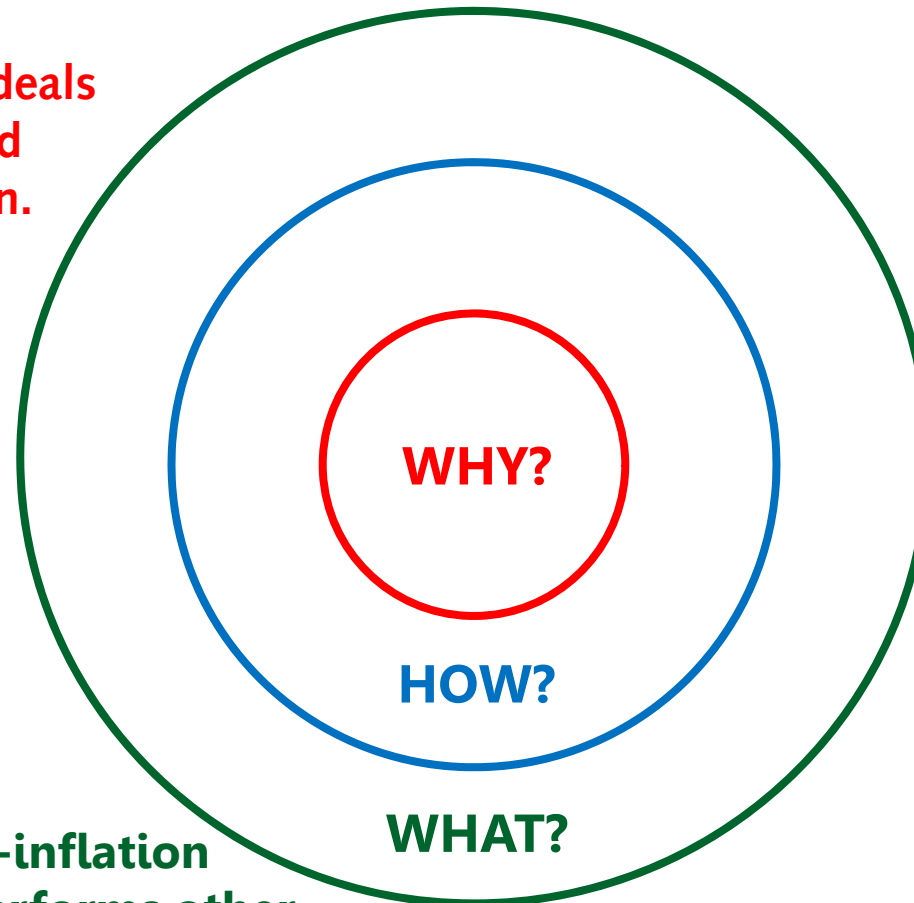
\* Jones, D. and A. Kwiecinski (2010), "Policy Responses in Emerging Economies to International Agricultural Commodity Price Surges", OECD Food, Agriculture and Fisheries Working Papers, No. 34, OECD Publishing. <http://dx.doi.org/10.1787/5km6c61fv40w-en>

# Concluding remarks

**This very nice paper deals with an important and timely policy question.**

**CC modifies the Gali and Monacelli model with realistic and important aspects of commodity trading countries.**

**They find that a PPI-inflation targeting rule outperforms other commonly studied monetary policy rules such as a CPI-inflation targeting rule.**



**My remarks pertain to:**

- 1. How important are the different shocks – important for welfare**
  - a. The authors might want to clarify what type of CT economy their model is applicable to?
- 2. CB trade-off:**
  - a. The structure of the labor market in the model
  - b. The way imported inputs are treated and the steady state distortions
  - c. Pass through of commodity prices
- 3. The financial structure**
- 4. Target credibility?**
- 5. Alternative policy instruments?**

# Finally...



Interesting, relevant and timely exercise  
with a clear policy perspective.





Extra slides

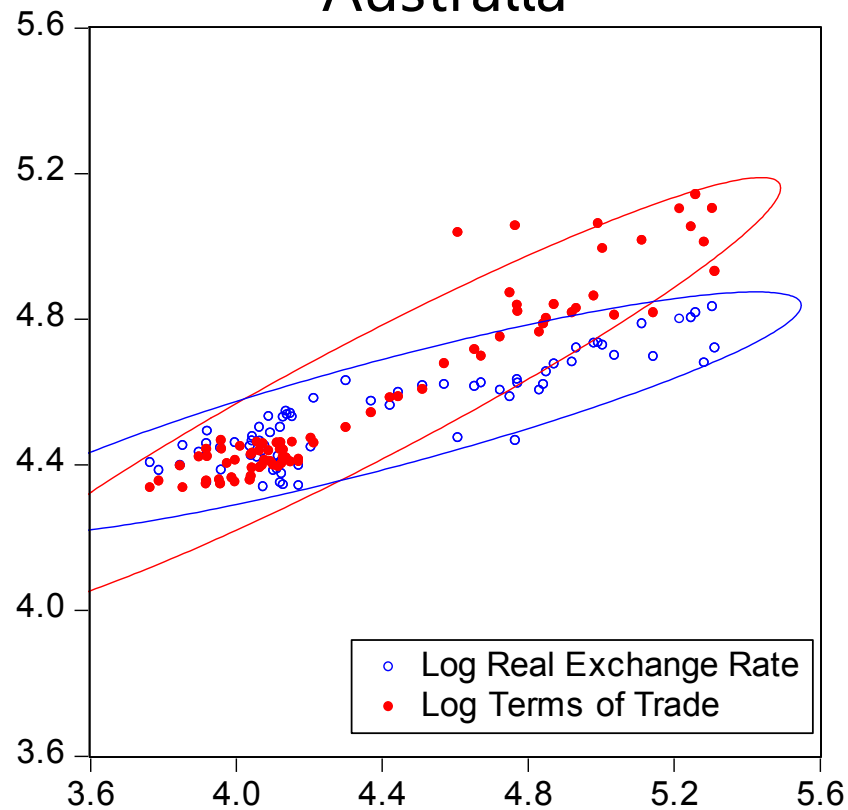




# Why? -> Aspects of CT countries

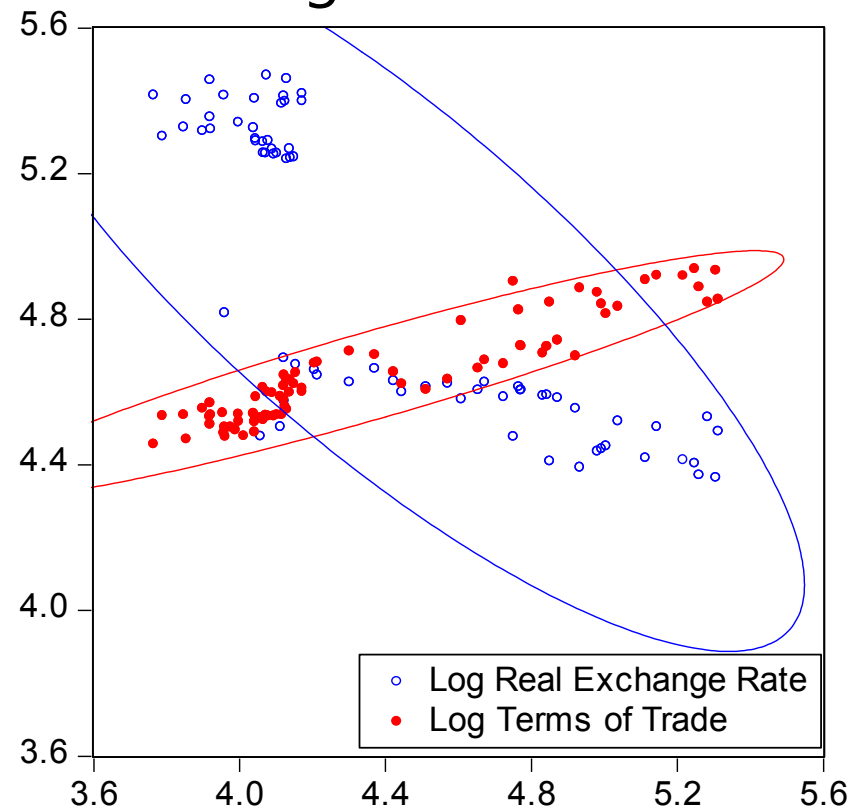
ReR/ToT/C-price

Australia



Log IMF Primary Commodity Prices Data - All Index

Argentina

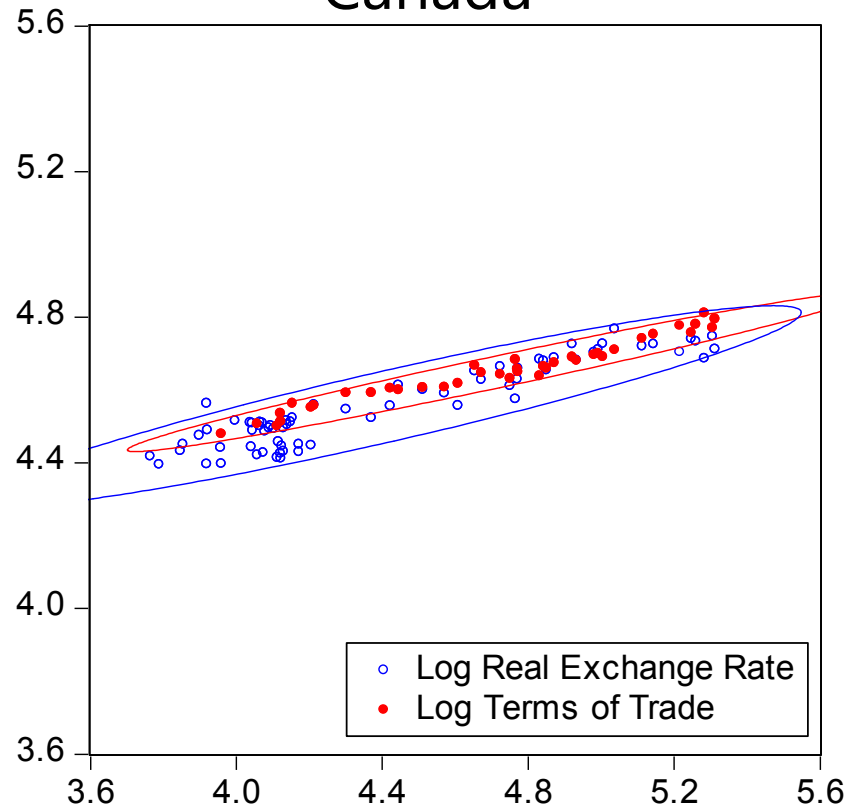


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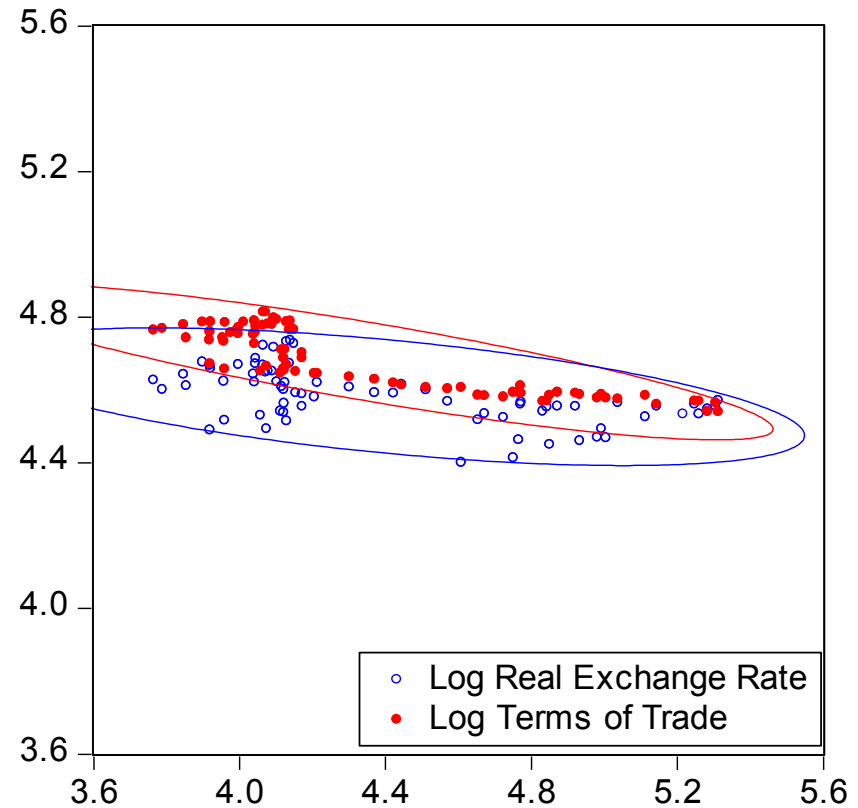
ReR/ToT/C-price

Canada



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Sweden

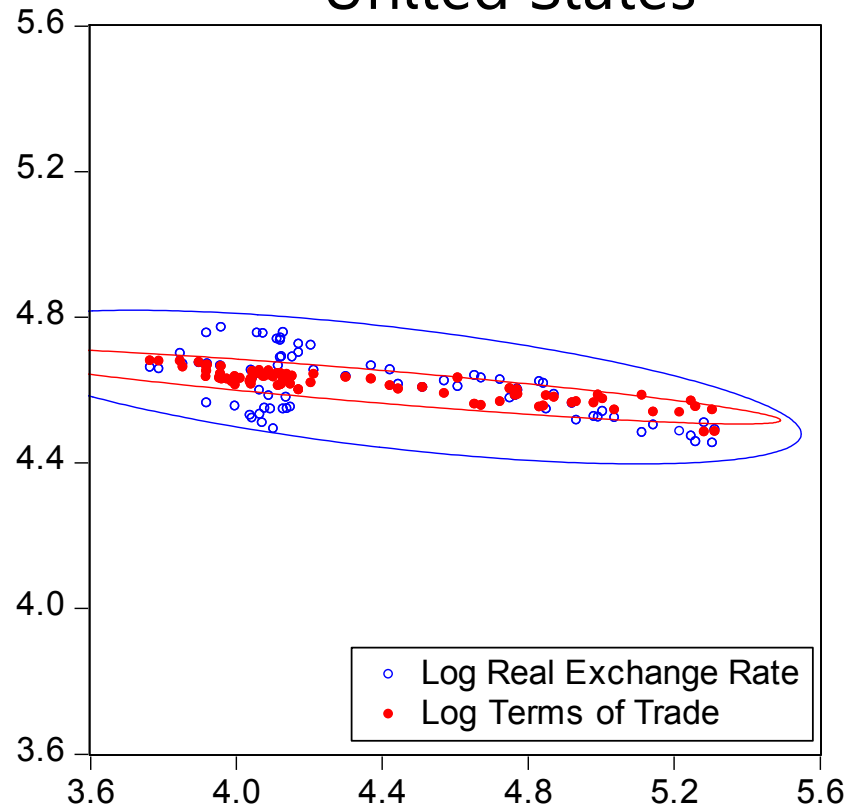


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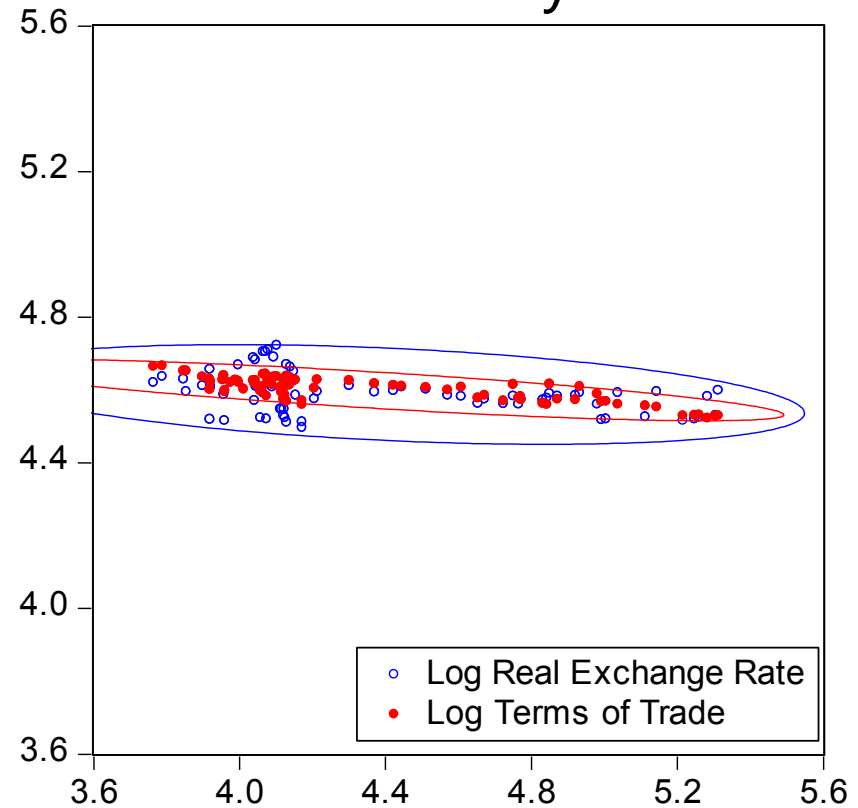
ReR/ToT/C-price

United States



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Germany

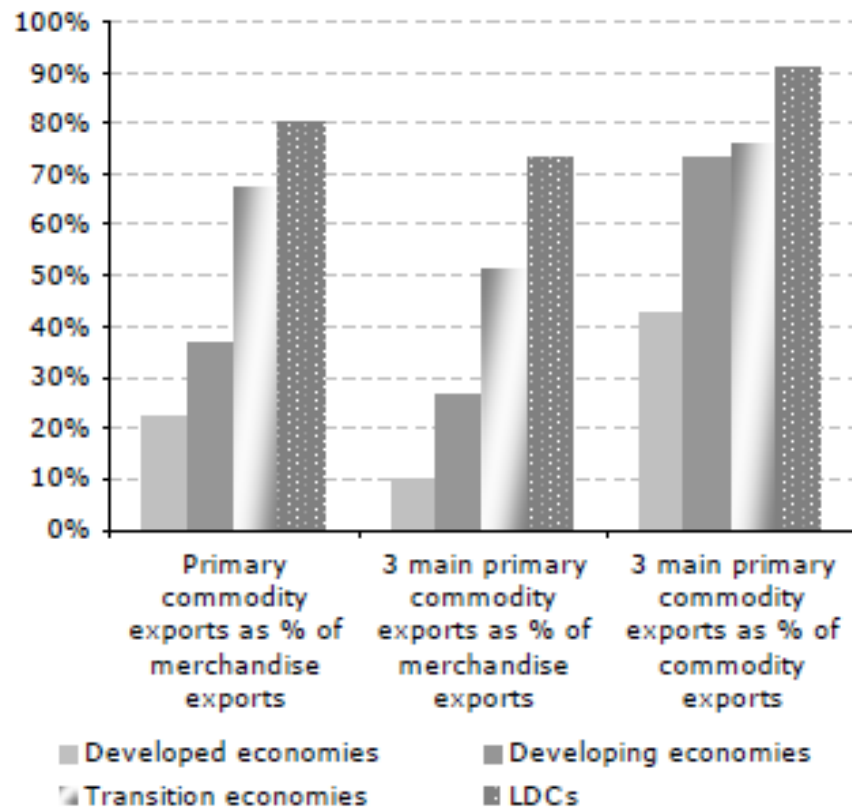


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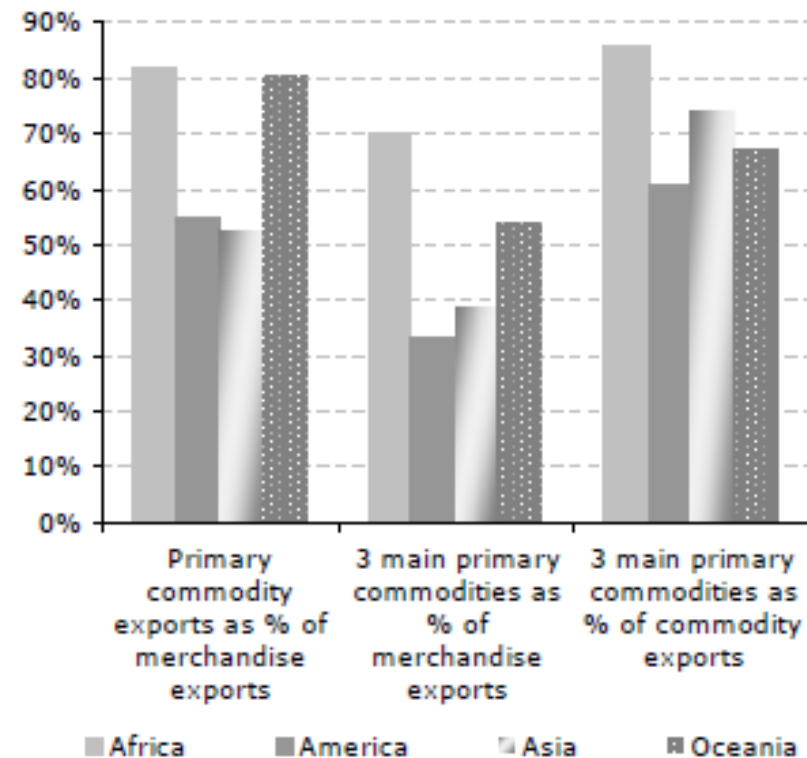
# Why? -> Aspects of CT countries

## Commodity dependence

Primary commodity dependence throughout the world  
(2008-2009 average)

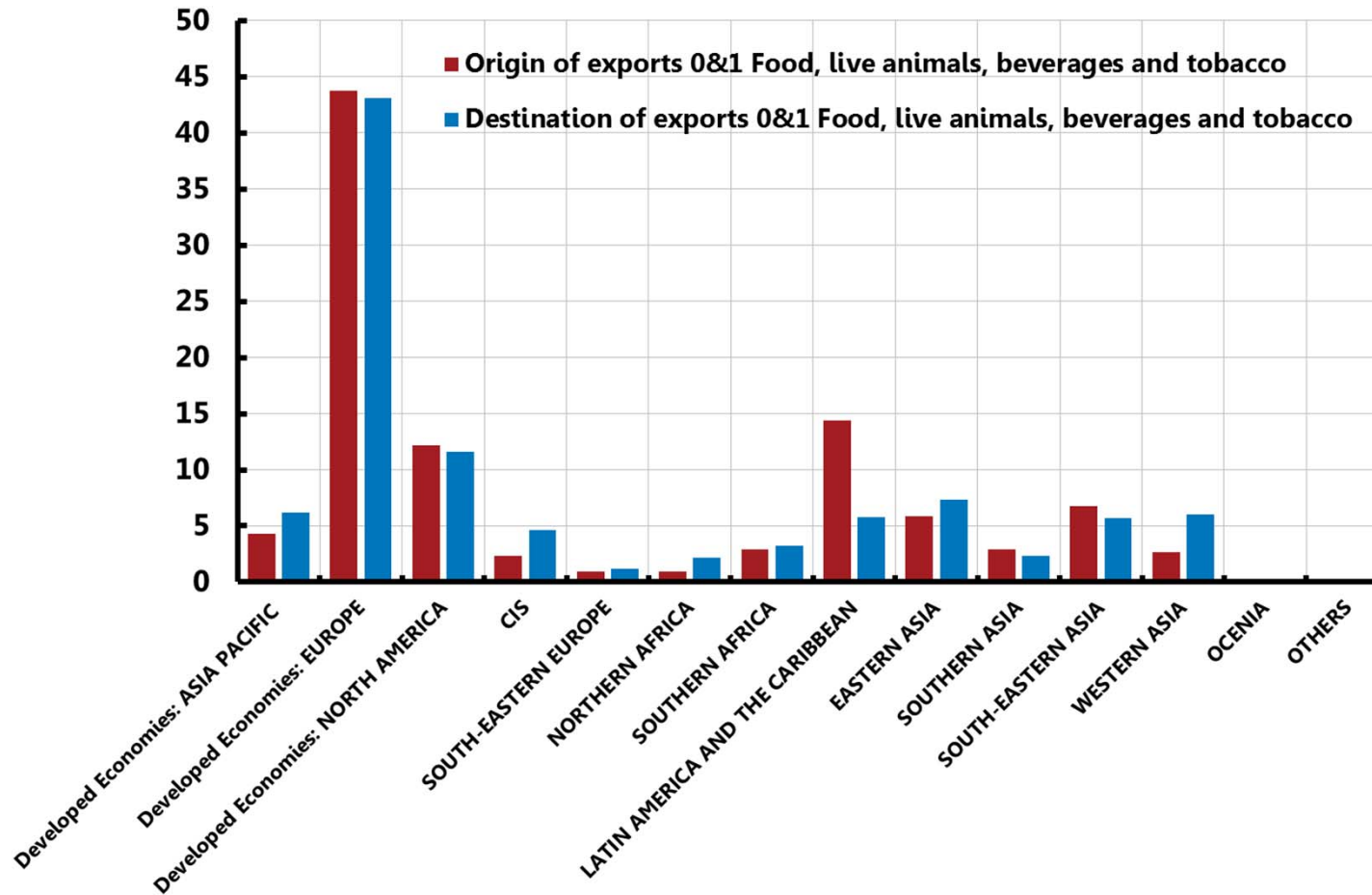


Comparison of Primary commodity dependence in developing countries  
(breakdown by continent, 2008-2009 average)



# Why? -> Aspects of CT countries

World exports by provenance and destination  
 Food, live animals, beverages and tobacco (SITC 0&1 )

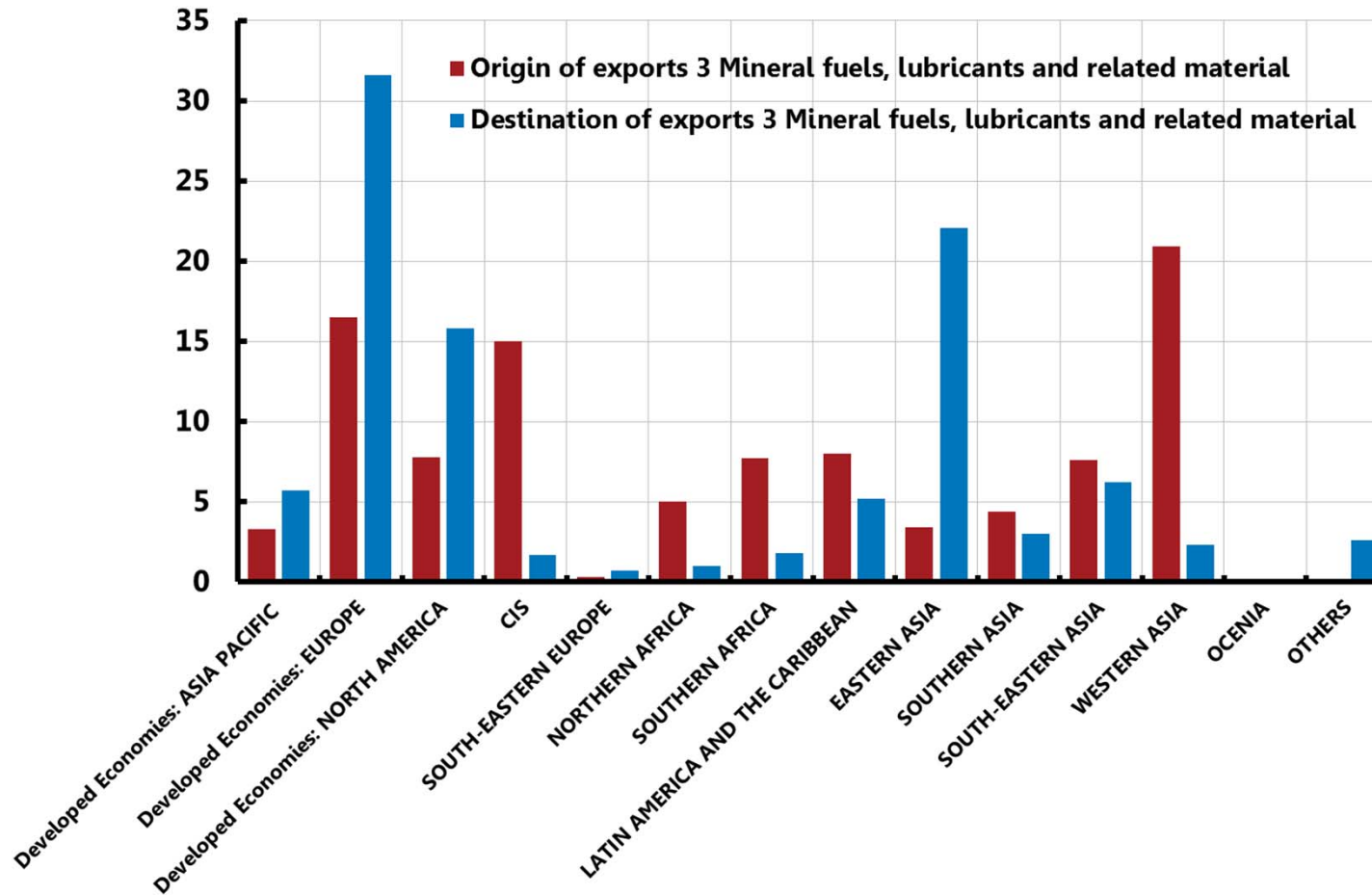


The bars sum to 100. 43.8% of total world export of food originated in Europe whereas Europe was the destination of 43.1% of world food export. Source: <http://comtrade.un.org/pb/WorldTables.aspx?y=2010>

# Why? -> Aspects of CT countries

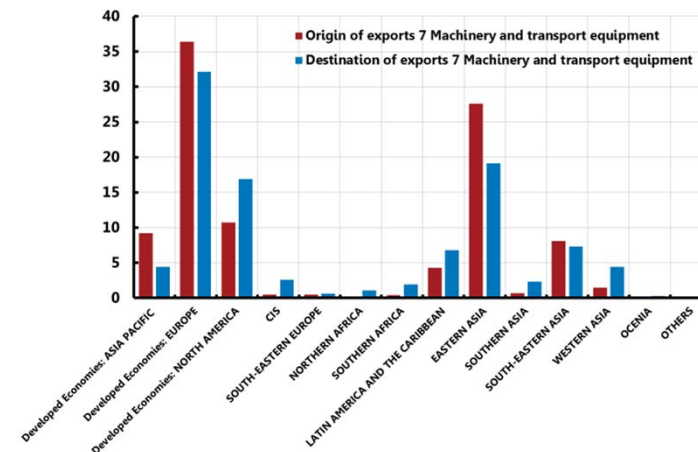
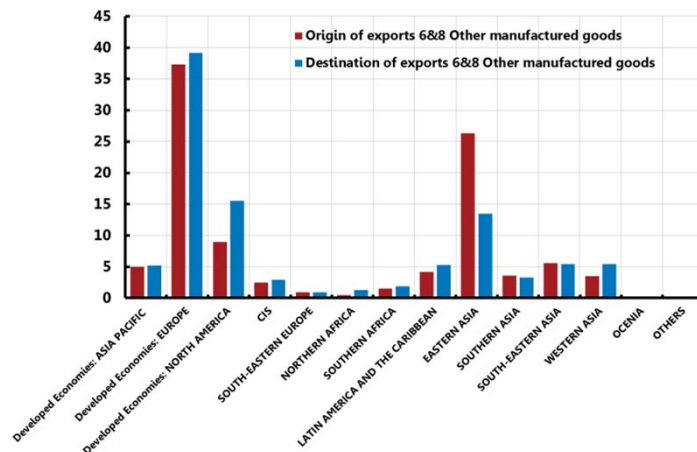
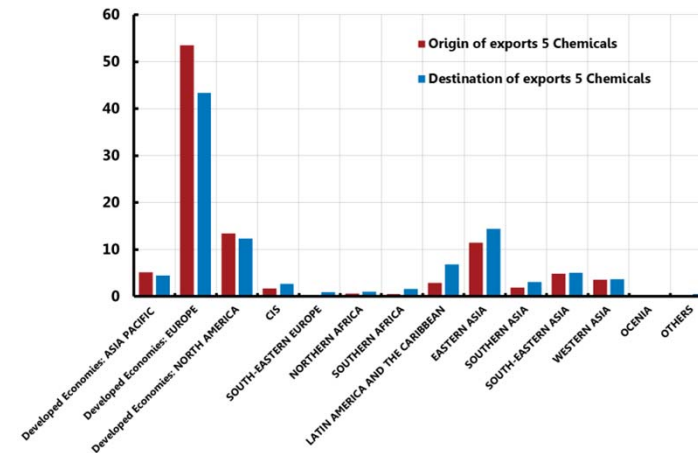
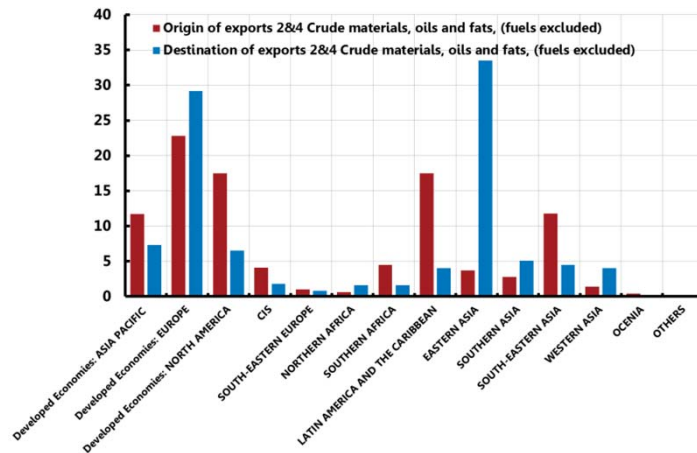
World exports by provenance and destination

Mineral fuels, lubricants and related material (SITC 3 )



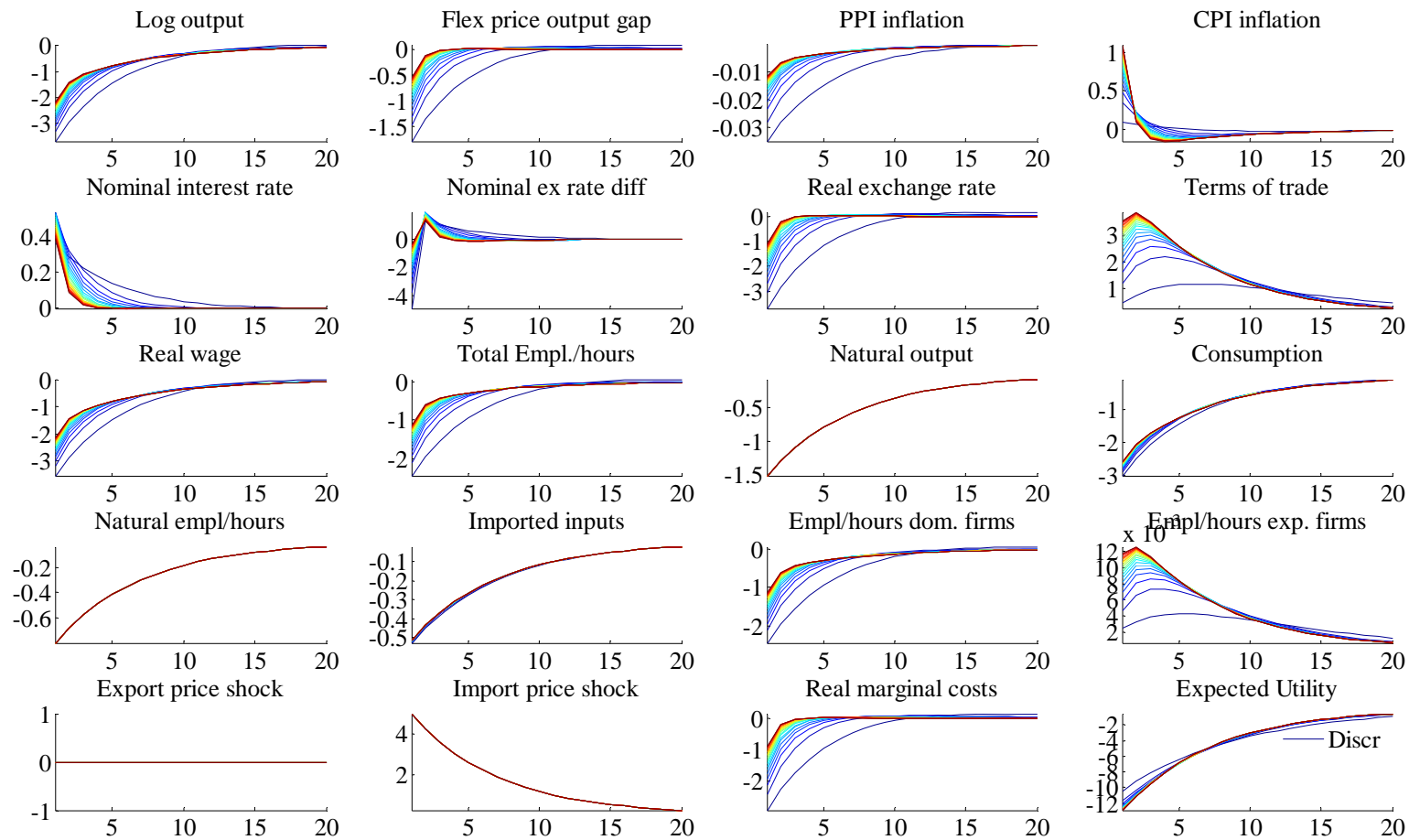
# Why? -> Aspects of CT countries

## World exports by provenance and destination



# Impulse-response functions under discretionary policy

## CPI Inflation - varying weights in the loss function

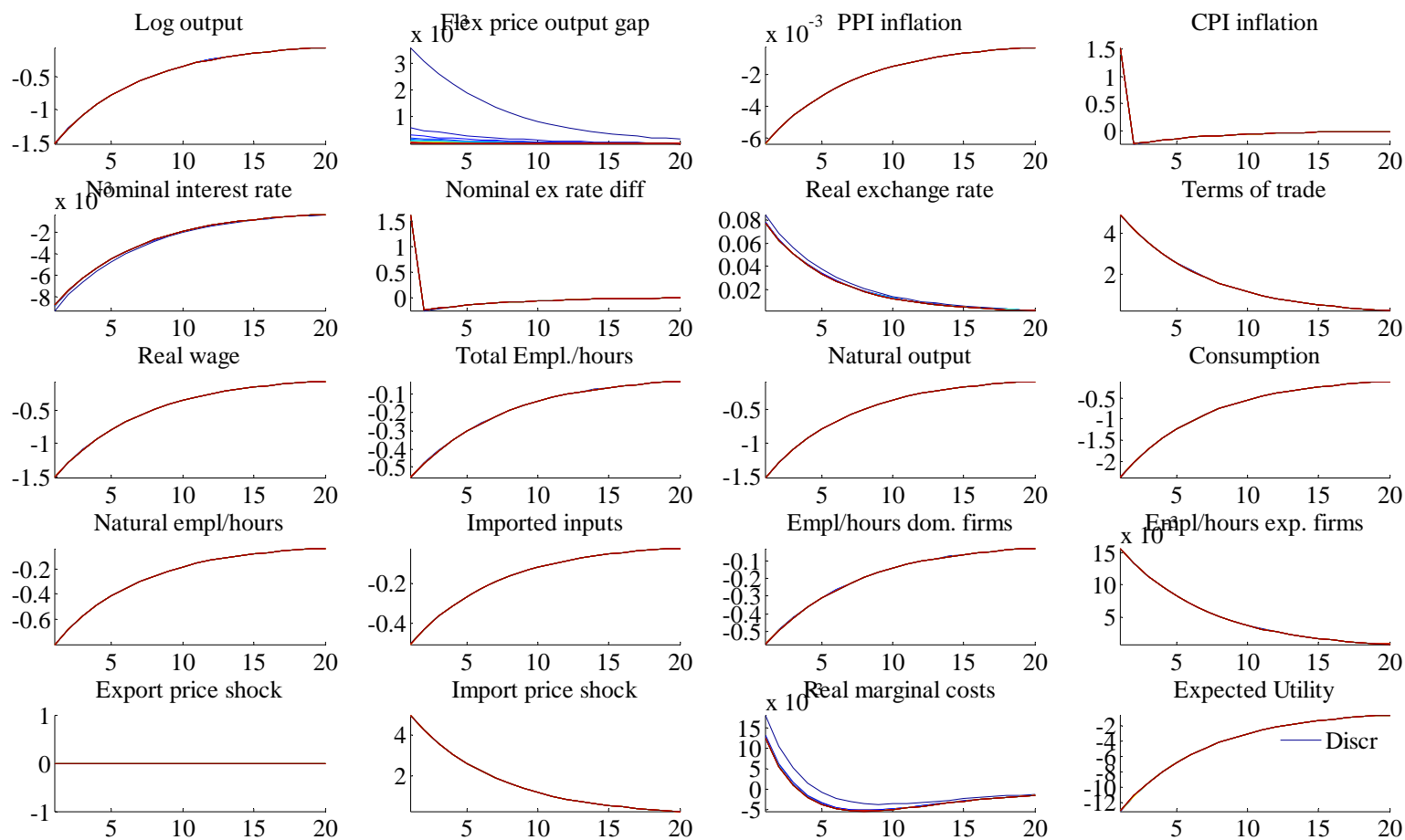


epz



# Impulse-response functions under discretionary policy

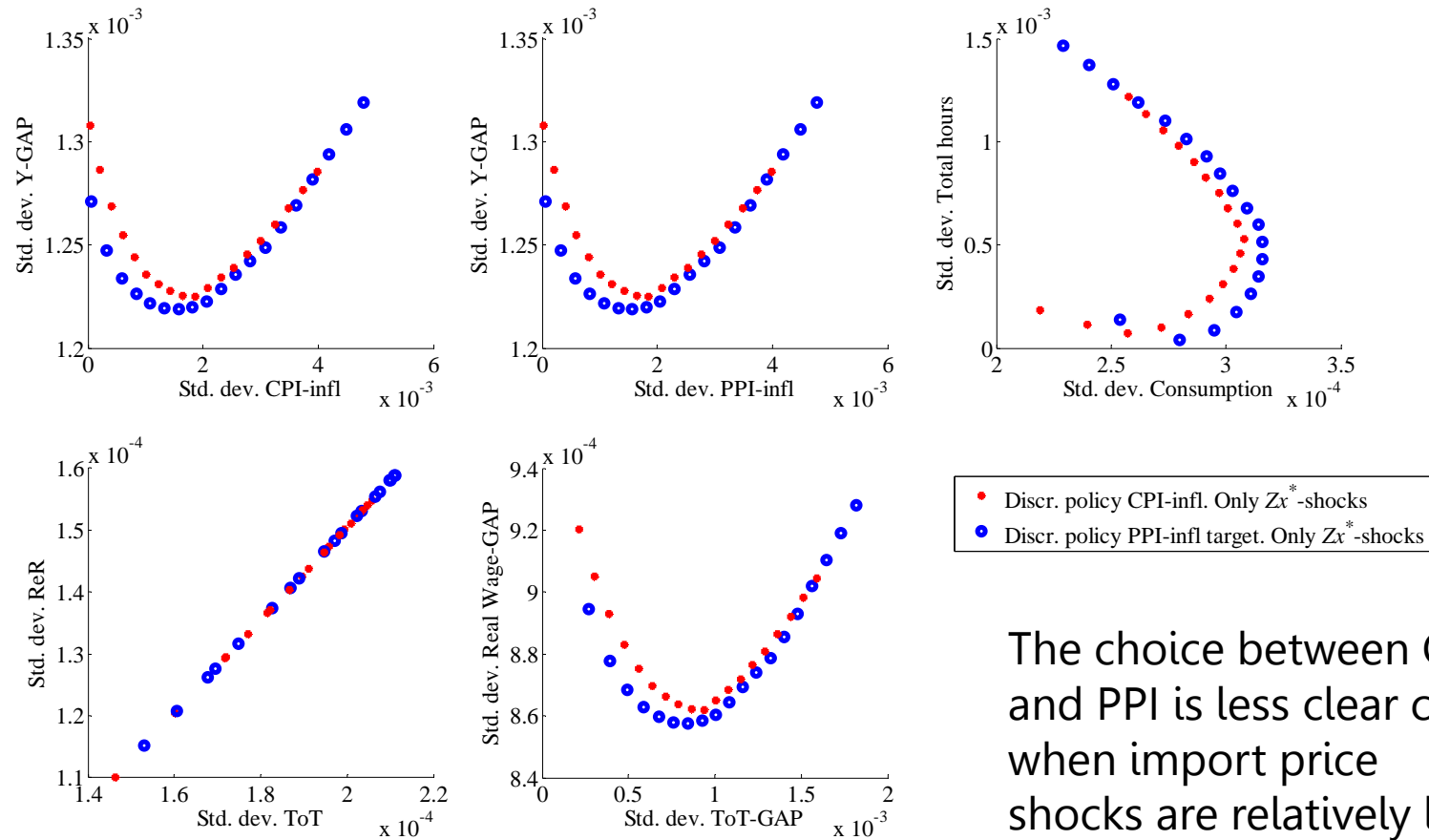
## PPI Inflation - varying weights in the loss function



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# 1. What trade-offs do the central bank face?

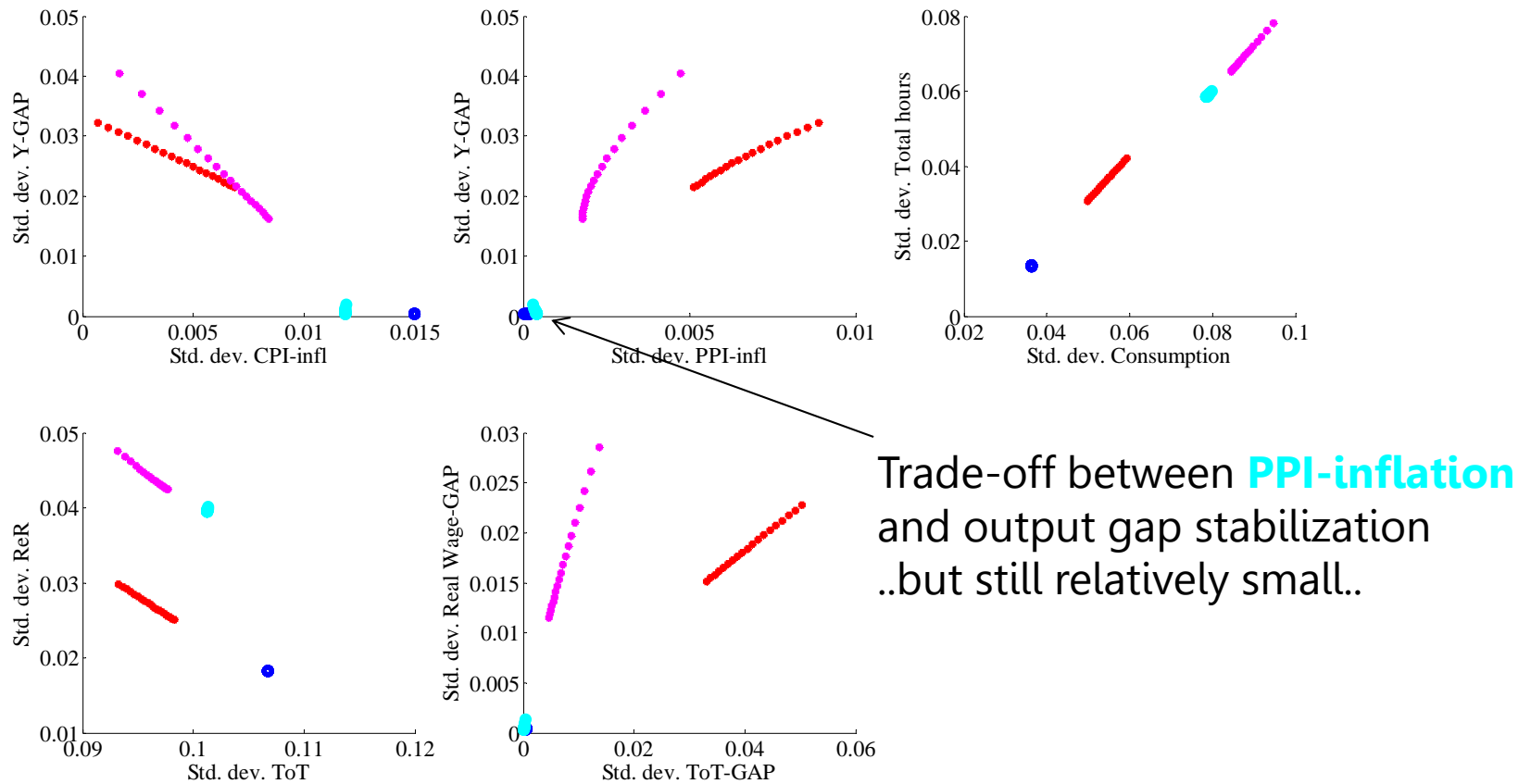
1 b: Set all shocks except the world relative price of export  $Z_{xt}^*$  to zero



The choice between CPI and PPI is less clear cut when import price shocks are relatively less important.

# 2. What trade-offs do the central bank face?

## 2 a: Volatility ranges - With and without real wage rigidity

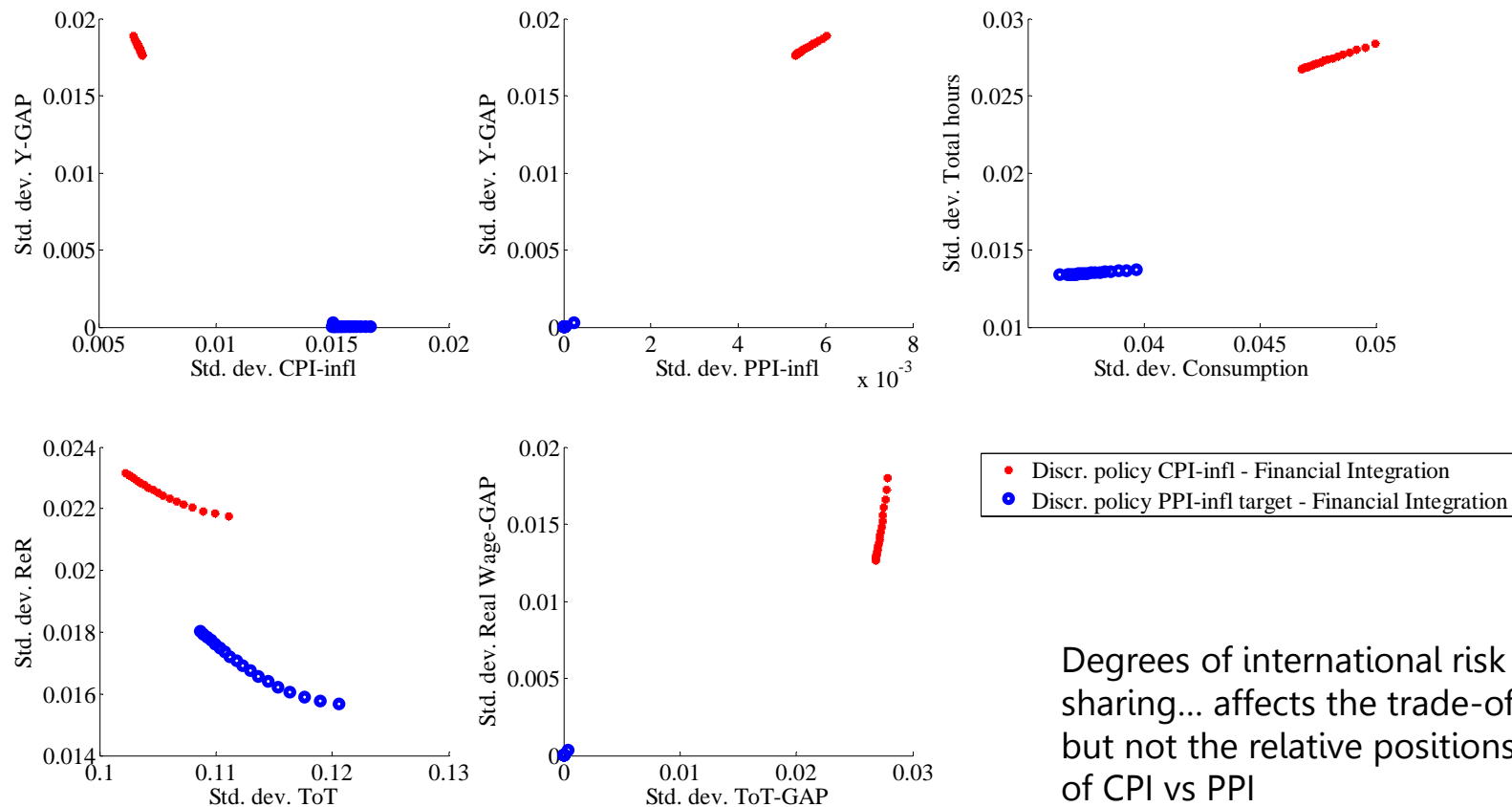


Cyan color: PPI infl target and  $\gamma = 0.9$

Magenta color: CPI infl target and  $\gamma = 0.9$

### 3. What trade-offs do the central bank face?

Volatility ranges - Degrees of international risk sharing



The figure is created by varying  $\Psi$  for a given weight in the loss function ( $\lambda=0.1$ )