# DOES THE COMMODITY SUPER CYCLE MATTER?

## DISCUSSION

**Roberto Chang**
**Rutgers University and NBER**

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# THE BIG QUESTIONS

- This paper attempts to **characterize** and evaluate the **impact** of **long term cycles** in **world commodity prices**
- A central question in the debate on **business cycles in emerging economies**:

1. **Home** vs **Foreign** Shocks (Calvo, Leiderman, Reinhart 1993)
2. **Transitory** vs **Permanent** (Aguiar and Gopinath 2007)
3. **Financial** versus **Real** (Chang and Fernandez 2013, Fernandez, Schmitt-Grohe, and Uribe 2017)

# THE BIG QUESTIONS

- In developing economies, also, the long term behavior of commodity prices is central because of its close connection to the **Prebisch-Singer** hypothesis of a **secular deterioration of the terms of trade**

1. Prebisch's ideas "gave rise to heterodox notions about asymmetries in the global economic system, unequal exchange between the center and the periphery, dependencia theories, and economic structuralism" (Irwin 2020)
2. Enourmous policy impact: **import substitution**

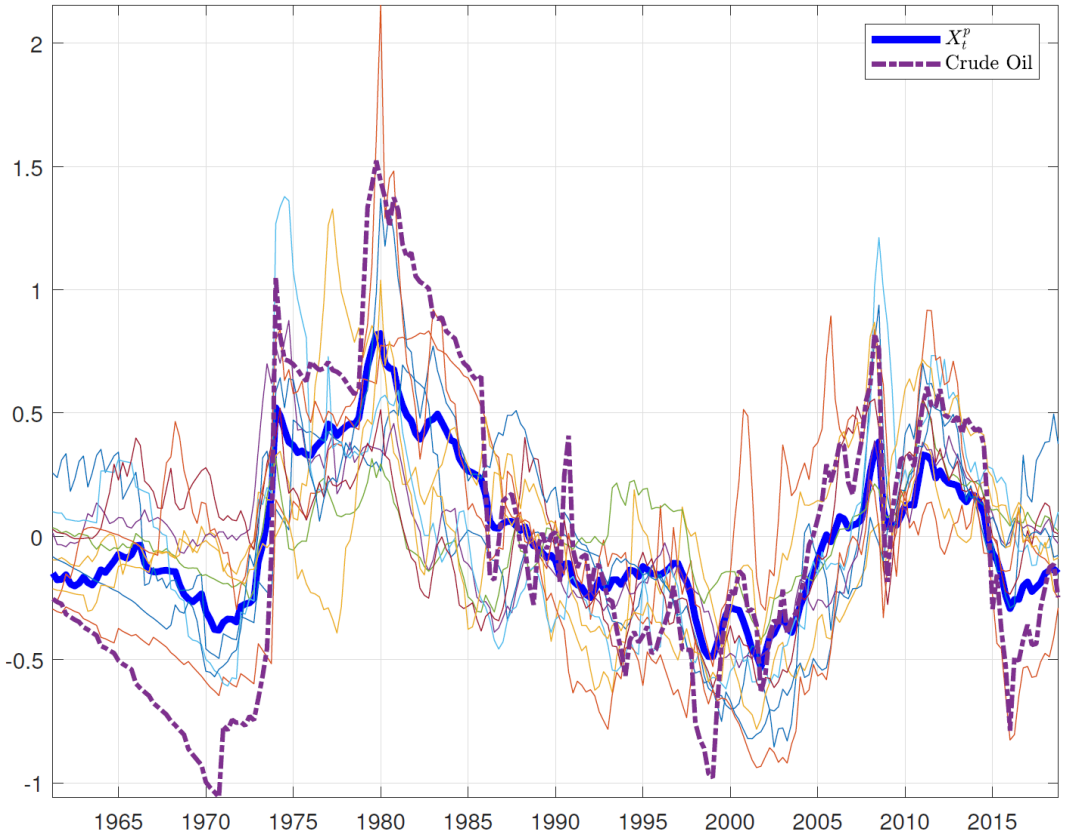
# DEFINING THE COMMODITY SUPER CYCLE

- Price of a commodity:

$$p_t^i = \hat{p}_t^i + X_t^p$$

- $X_t^p$ a **common "stochastic trend"**, stationary in differences (i.e. $\Delta X_t^p = X_t^p - X_{t-1}^p$ stationary)
- $\hat{p}_t^i$ stationary, function of own lags, the **trend component** $\Delta X_t^p$, and stationary shocks $z_t^p$
- (Plus a constant, which adds a drift that is a function of time...
- ...one can argue that it is that drift which corresponds to the Prebisch-Singer hypothesis)

# WHAT THE SUPERCYCLE LOOKS LIKE




Notes. The permanent component of the eleven real commodity prices, $X_t^p$ is computed by Kalman smoothing using the posterior mean of the parameter estimates. The thin solid lines are the eleven observed real commodity prices (beverages, food, agricultural raw materials, fertilizers, metal and minerals, gold, platinum, silver, coal, crude oil, and natural gas). All time series are constructed as cumulated demeaned growth rates.

Table 2: Percent of Variance of the Growth Rate of Real Commodity Prices Explained by $\Delta X_t^p$

| Price of | Mean | Std. Dev. |
|---|---|---|
| Coal | 26 | 3 |
| Crude Oil | 60 | 2 |
| Natural Gas | 20 | 3 |
| Beverages | 11 | 1 |
| Food | 21 | 2 |
| Agr. Raw Materials | 20 | 3 |
| Fertilizers | 33 | 2 |
| Metal and Minerals | 30 | 2 |
| Gold | 30 | 2 |
| Silver | 28 | 2 |
| Platinum | 19 | 1 |
| Mean across prices | 27 | 2 |
| Median of prices | 26 | 2 |
| Real Rate | 15 | 8 |

# WHAT DRIVES THE SUPERCYCLE?

Not the main objective of the paper, but it may be worth thinking about. "Obvious" candidates:

1. Oil
2. Big financial regime changes (collapse of Bretton Woods; the Global Financial Crisis)

# IMPACT OF SUPERCYCLE

- For each country, GDP is decomposed into a trend and a stationary component:

$$y_t^i = (X_t^i + \alpha_i X_t^p) + \hat{y}_t^i$$

- The stationary component given by

$$\hat{y}_t = \sum_{i=1}^{4} B_{yp}^i \hat{p}_{t-i} + \sum_{i=1}^{4} B_{yy}^i \hat{y}_{t-i} + C_{yX^p} \Delta X_t^p + C_{yz^p} z_t^p + C_{yX} \Delta X_t + z_t,$$

# MAIN FINDINGS

1. World vs Home shocks: **World** wins

2. Transitory vs Permanent: **Transitory** wins

Table 3: Variance Decomposition of Output Growth

| | Shock | | | |
|---|---|---|---|---|
| Country | $\Delta X_t^p$ | $z_t^p$ | $\Delta X_t^i$ | $z_t^i$ |
| Australia | 7 | 61 | 1 | 32 |
| Austria | 10 | 67 | 1 | 22 |
| Belgium | 8 | 84 | 7 | 1 |
| Canada | 10 | 71 | 1 | 19 |
| Denmark | 7 | 65 | 0 | 28 |
| Finland | 6 | 68 | 17 | 8 |
| France | 8 | 60 | 1 | 31 |
| Greece | 7 | 63 | 30 | 0 |
| Iceland | 5 | 47 | 45 | 2 |
| Ireland | 6 | 42 | 51 | 2 |
| Italy | 10 | 74 | 0 | 17 |
| Korea, Rep. | 11 | 60 | 10 | 20 |
| Luxembourg | 10 | 50 | 23 | 18 |
| Mexico | 7 | 71 | 0 | 22 |
| Netherlands | 8 | 58 | 33 | 1 |
| New Zealand | 5 | 51 | 36 | 8 |
| Norway | 4 | 55 | 19 | 22 |
| Portugal | 13 | 63 | 0 | 24 |
| South Africa | 9 | 61 | 0 | 29 |
| Spain | 12 | 69 | 0 | 19 |
| Sweden | 8 | 54 | 0 | 37 |
| Switzerland | 6 | 62 | 0 | 31 |
| Turkey | 4 | 51 | 0 | 44 |
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- **World** shocks account for **70 percent** of output variance

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- **World** shocks account for **70 percent** of output variance
- **Permanent** shocks account for (only) **20 percent** of output variance, or less

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- **World** shocks account for **70 percent** of output variance
- **Permanent** shocks account for (only) **20 percent** of output variance, or less
- Some interesting outliers (Iceland, New Zealand, Ireland)

# INCLUDING DEVELOPING COUNTRIES

- To include developing countries, the empirical analysis must move to annual frequency...

- ...and also aggregate 11 commodity prices into three indices (energy, non energy, metals)

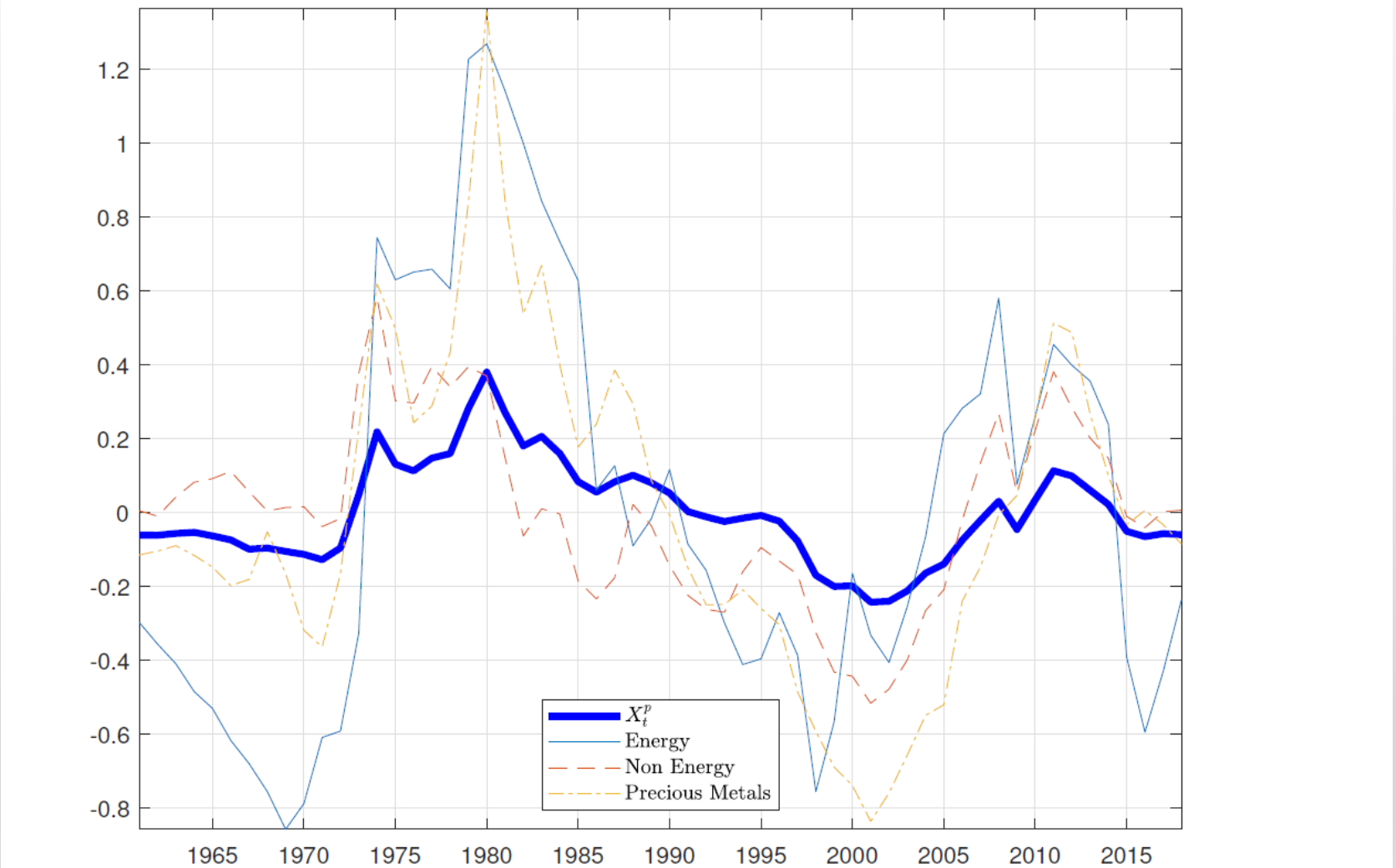
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
$X_t^p$
Energy
Non Energy
Precious Metals

Table 5: Percent of Variance of the Growth Rate of Annual World Prices Explained by $\Delta X_t^p$

| Price of | Mean | Std. Dev. |
|---|---|---|
| Energy Commodities | 98 | 1 |
| Non Energy Commodities | 94 | 2 |
| Precious Metals | 94 | 1 |
| Mean | 95 | 1 |
| Median | 94 | 1 |
| Real Rate | 25 | 18 |

Table 6: Variance Decomposition of Output Growth — Annual Data

| | Shock | | | |
|---|---|---|---|---|
| Country | $\Delta X_t^p$ | $z_t^p$ | $\Delta X_t^i$ | $z_t^i$ |
| Mean Emerging | 18 | 32 | 24 | 25 |
| Mean Developed | 19 | 48 | 13 | 20 |

Table 6: Variance Decomposition of Output Growth — Annual Data

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- World shocks still beat home shocks (but by less)
- Transitory still beats permanent (also by less, and tie for EMEs)
- These patterns seem **less** pronounced for emerging countries

# ADDITIONAL DETAILS

- Measures of uncertainty in estimation?

- Implications of drift: balanced growth, Prebisch-Singer

# FINAL REMARKS

- Excellent contribution, lots of food for thought
- Paper very well written, technical details clearly explained
- On the whole, reinforces primary role of foreign, stationary shocks for small economies business cycles
- Might want to compare commodity cycles against Rey's global financial cycles
- Discuss drift component and implications for the secular terms of trade hypothesis

MUCHAS GRACIAS Y SALUDOS!!