The Information Content of Commodity Futures Markets

Rómulo Alves | Marta Szymanowska | American Finance Association Annual Meeting 2020

**Motivation**
- Many countries are highly exposed to commodity trade.
- 85% of least developed countries are severely commodity dependent: over 60% of export revenues tied to primary commodity trade.
- 30% of GDP for developed countries such as Australia and Canada.
- Commodity markets are globalized and demand and supply information that is spread around the globe is aggregated in prices.
- Yet we know little about the relation between commodity and stock markets around the world.

**Finding #1: Predictability from Commodities is Global**

- Monthly commodity market futures returns carry information for future stock market returns in 59 countries, both developed and emerging.
- Average $R^2$ 5.6% (similar to international stock market predictability e.g. Ferson and Harvey (1993)).
- Robust to controlling for known stock market predictors, exchange rate and inflation.

**Finding #2: All Sectors Matter (It is not all about oil)**

- Explore 70 countries, 6 commodity sectors, 28 commodities; 37 years (1979 until 2016).
- 59 stock markets (both emerging and developing) are predicted by different commodity sectors.
- All sectors matter: is not all about oil.
- All countries matter: it is not all about large economies.
- Study channels of information transmission and find that:
  - Countries’ dependence on commodity trade plays a limited role.
  - Commodity aggregate dispersed information about macroeconomic fundamentals (inflation).

**Finding #3: Channels of Information Transmission**

- **Channel 1: Trade Dependence**
  - Ability to predict is a function of how much a country trades a commodity.
  - Direct Trade Dependence Effects: terms of trade shocks for commodity dependent countries (Chen, Rogoff and Rossi, 2010).
  - Indirect Trade Dependence Effects: Countries have trade and financial links which lead to business cycle synchronization across countries (e.g. Frankel and Rose (1998), Kalemli-Ozcan et al. (2013)).
  - We find that only direct trade dependence matters.

- **Channel 2: Global Economy Channel**
  - Commodities aggregate information about the state of the global economy in a complex manner (eg. Sockin and Xiong, 2015).
  - Ability to predict depends on the extent to which commodities have information about a country’s macroeconomic fundamentals:
    - Inflation (Garner (1989), Erb and Harvey (2006), Cologni and Manera (2008))
    - Real Industrial Production Growth (Kilian (2009), Sockin and Xiong (2015))

- **Key Findings**

- **Share of global commodity shock attributed to each sector**
  - Energy (20.3%) Livestock & Meats (15.6%)
  - Agriculture I (11.4%) Agriculture II (14%)
  - Industrial Metals (27.5%) Precious Metals (11.2%)

- **SFE**

- **Energy**
  - $\gamma_{0,s}$
  - Energy $E_{i}$
  - $\theta_{i}$
  - Inflation
  - Production
  - $TD_{i,s}$

- **Pooled**
  - $R^2$
  - pF

- **Table**

<table>
<thead>
<tr>
<th>Energy</th>
<th>Industrial Metals</th>
<th>Agriculture I</th>
<th>Agriculture II</th>
<th>Livestock &amp; Meats</th>
<th>Precious Metals</th>
<th>Pooled SFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma_{0,s}$</td>
<td>0.00</td>
<td>0.10</td>
<td>0.02</td>
<td>-0.14</td>
<td>0.16</td>
<td>-0.01</td>
</tr>
<tr>
<td>$E_{i}$</td>
<td>0.02</td>
<td>0.03</td>
<td>0.00</td>
<td>0.03</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>$\theta_{i}$</td>
<td>0.00</td>
<td>-0.07</td>
<td>0.01</td>
<td>0.13</td>
<td>-0.11</td>
<td>0.05</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.34</td>
<td>1.34</td>
<td>1.05</td>
<td>1.02</td>
<td>1.43</td>
<td>0.32</td>
</tr>
<tr>
<td>Production</td>
<td>0.23</td>
<td>0.33</td>
<td>0.06</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>$TD_{i,s}$</td>
<td>0.09</td>
<td>-0.16</td>
<td>1.97</td>
<td>1.11</td>
<td>-2.40</td>
<td>-0.08</td>
</tr>
</tbody>
</table>

- **R²**
  - 38.28% 26.99% 21.63% 50.52% 34.95% 2.88% 26.48%

- **pF**
  - 0.00 0.00 0.00 0.00 0.00 0.89 0.00

- **No. Obs.**

- **Graph**

- **Number of Countries predicted by a given number of commodity sectors**

- **Number of Sectors**

- **Number of Countries**

- **Share of global commodity shock attributed to each sector**

- **Diagram**

- **Table**

- **SFE**

- **R²**

- **pF**

- **No. Obs.**