COMPETITION AND COMMODITY PRICE VOLATILITY

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Scope/Intro

- Examine some of the causes and effects of volatility of the prices of copper, iron, aluminium, and gold, on competition and on the economies of producing countries that are dependent on the export of these commodities.
Aspects of price volatility
- Volatility for the four commodities
- Mineral commodity prices
- Mineral commodity prices and national economies
- Policies and practices for handling price volatility in developing countries.

Causes & evidence of volatility

- Two main causes
  - Market fundamentals: supply, demand.
    1. Some key differences between commodities.
  - Financial markets: speculation, hedging, commodity trade advisors, investment by pension funds
    - Financial markets anticipate the trend of fundamentals, they act more rapidly than supply and demand.
    - Short time and long time effects.
Why is volatility a problem?

- Commodities with smaller volatility experience greater rate of growth.
- Commodities traded in markets have $V$ than those traded by producer prices or other methods.
- Affects terms of trade and currency value.
- Experiences on “managing” prices.
- Changes in terms of trade and profit margins are considered drivers of innovation and productivity.

Measurement of volatility

$$Vol_t = \sqrt[2]{\frac{1}{n-1} \sum_{i=1}^{n} (u_i - \bar{u})^2}$$

where

$$\bar{u} = \frac{1}{t} \sum_{i=1}^{t} u_i$$

and

$$u_i = \ln\left(\frac{P_t}{P_{t-1}}\right)$$

$P_t$ is the price at time $t$. 
Measurement of volatility

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<tr>
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<th>Volatility</th>
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<tbody>
<tr>
<td></td>
<td>Iron ore</td>
<td>Aluminium</td>
<td>Copper</td>
<td>Gold</td>
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<tr>
<td>1970-1974</td>
<td>11,2</td>
<td>16,2</td>
<td>28,4</td>
<td>21,8</td>
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<td>1975-1979</td>
<td>15,1</td>
<td>26,3</td>
<td>32,6</td>
<td>27,1</td>
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<td>1980-1984</td>
<td>13,6</td>
<td>27,9</td>
<td>14,4</td>
<td>39,7</td>
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<td>1985-1989</td>
<td>7,2</td>
<td>32,7</td>
<td>17,0</td>
<td>15,3</td>
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<td>1990-1994</td>
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<td>19,1</td>
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<td>2000-2004</td>
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<td>11,4</td>
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<td>2005-2009</td>
<td>50,4</td>
<td>27,0</td>
<td>33,7</td>
<td>9,1</td>
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<td>2010-2011</td>
<td>32,6</td>
<td>11,8</td>
<td>16,0</td>
<td>0,9</td>
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Mineral commodity prices

Metal commodity current prices
(2005-12=100)

- Iron Ore
- Aluminium
- Copper
- Gold
- IMF's Metals Price Index
**Mineral commodity prices**

Metal commodity current prices
(2002-04=100)

- Iron Ore
- Aluminium
- Copper
- Gold
- IMF's Metals Price Index

**Commodity prices and national economies**

**Bauxite Production, 2009**
- Guinea 8%
- Brazil 12%
- India 7%
- Indonesia 8%
- Australia 34%
- Rest of the world 18%

**Copper Mine Production, 2010**
- Chile 34%
- Congo 3%
- Rest of world 24%
- China 7%
- Zambia 5%
- Indonesia 5%
- USA 7%
- Peru 8%

**Iron Ore Production, 2010**
- China 24%
- Brazil 21%
- Russia 5%
- India 13%
- Australia 18%
- Rest of the world 19%

**Gold Mine Production, 2010**
- USA 31%
- Ghana 4%
- Canada 5%
- Indonesia 4%
- Peru 6%
- Russia 7%
- South Africa 8%
- Rest of the world 33%
### Mineral exports (excluding oil and natural gas) as % of total

- China, USA, India, Russia …. < 2%
- Indonesia ……………………… 6%
- Brazil ………………………….<15%
- Zambia, Peru, Chile …………> 50%
- Ghana …………………………… 33%
- Guinea …………………………… 80%

### Policies and practices for handling price volatility

- Effect on trade balance
- Effect on currency value
- Dutch Effect
- Driving out the rest of the industries
- The case of Chile:
  - 1st SWF: 1986
  - 2nd SWF: 2006
Solutions

- Build Sovereign Wealth Funds, SWFs,
- Diversification of the economy
- Intervention of Central Banks to stabilize currency

Fondo de Estabilización Económico Social
Concluding remarks

- Financial markets may increase volatility of mineral commodities, but shorten price cycles, because they act faster than fundamental market forces.

- SWFs successful for oil producing countries, may provide macroeconomic stability in low price cycles – may also decrease overspending during high price cycle.

- Chile may be only emerging mineral economy (non oil producer) that has an SWF.