

## **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.**



## Content

- 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

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

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

$$u_i = \ln\left(\frac{P_t}{P_{t-1}}\right), \quad P_t \text{ is the price at time } t.$$



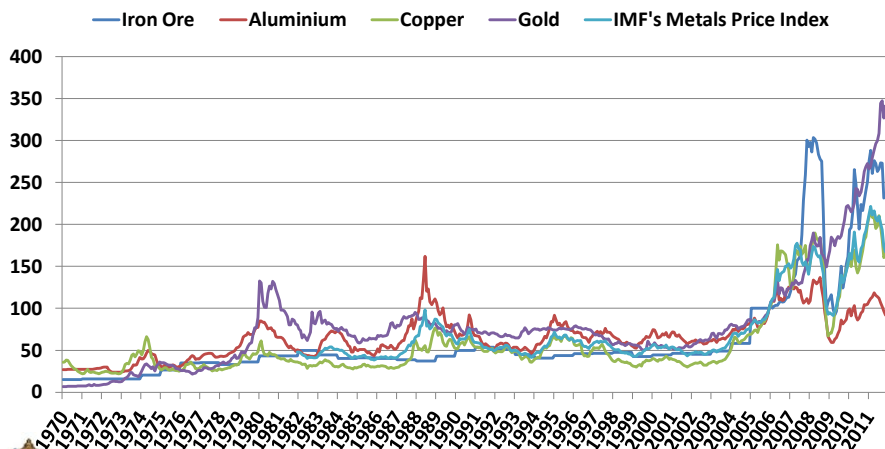
## Measurement of volatility

	Volatility	Volatility	Volatility	Volatility
	Iron ore	Aluminium	Copper	Gold
1970-1974	11,2	16,2	28,4	21,8
1975-1979	15,1	26,3	32,6	27,1
1980-1984	13,6	27,9	14,4	39,7
1985-1989	7,2	32,7	17,0	15,3
1990-1994	11,8	19,1	14,1	5,6
1995-1999	7,4	16,0	22,0	7,3
2000-2004	7,2	11,4	23,0	8,5
2005-2009	50,4	27,0	33,7	9,1
2010-2011	32,6	11,8	16,0	0,9



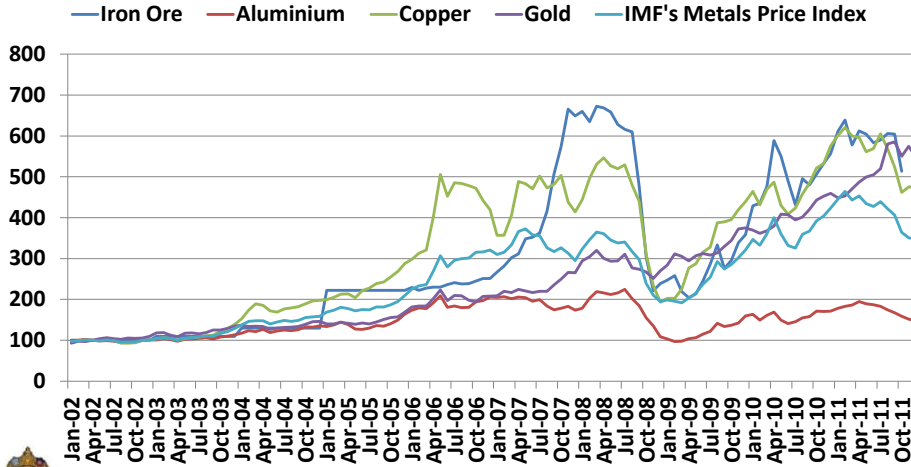
## Mineral commodity prices

Metal commodity current prices  
(2005-12=100)

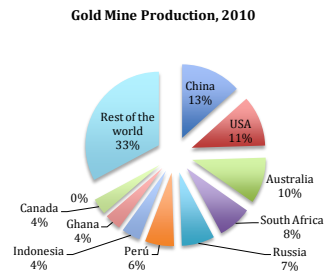
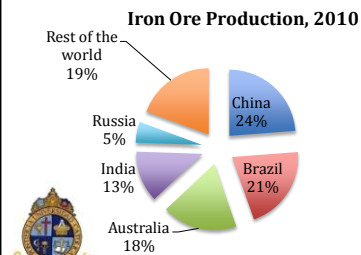
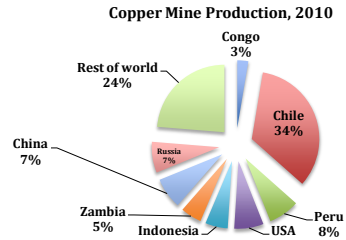
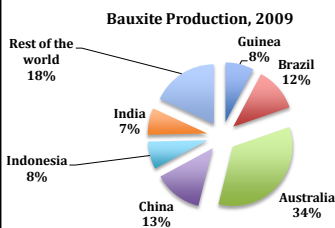


# Mineral commodity prices

Metal commodity current prices  
(2002-04=100)



# Commodity prices and national economies



## 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

Variación del Valor de Mercado (MM US\$)	2007	2008	2009	2010	2011			Desde el Inicio (1)		
					T1	T2	T3	Octubre	Noviembre	
Valor de Mercado Inicial	0,00	14.032,61	20.210,68	11.284,78	12.720,10	12.941,80	13.271,17	13.223,27	13.418,69	-
Aportes	13.100,00	5.000,00	0,00	1.362,33	0,00	0,00	0,00	0,00	0,00	19.462,33
Retiros	0,00	0,00	-9.277,71	-150,00	0,00	0,00	0,00	0,00	0,00	-9.427,71
Interés Devengado	326,15	623,95	404,27	227,63	62,58	61,78	56,18	22,40	17,12	1.802,07
Ganancias (pérdidas) de capital	606,81	556,08	-50,83	-3,51	159,37	267,91	-103,81	173,03	-170,03	1.435,00
Costos de Adm., Custodia y Otros (2)	-0,35	-1,96	-1,62	-1,13	-0,26	-0,32	-0,26	0,00	-0,06	-5,96
<b>Valor de Mercado Final</b>	<b>14.032,61</b>	<b>20.210,68</b>	<b>11.284,78</b>	<b>12.720,10</b>	<b>12.941,80</b>	<b>13.271,17</b>	<b>13.223,27</b>	<b>13.418,69</b>	<b>13.265,73</b>	<b>13.265,73</b>

(1) El FEES fue creado al refundir en un solo fondo los recursos adicionales de estabilización de los ingresos fiscales a los que se refiere el Decreto Ley N° 3.653, de 1981 y los del Fondo de Compensación para los Ingresos del Cobre, recibiendo su primer aporte el 6 de marzo de 2007.

(2) Incluye costos asociados a asesorías y otros.



## 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.

