The Natural Resource Curse

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Commodity Price Volatility and Inclusive Growth in Low-Income Countries

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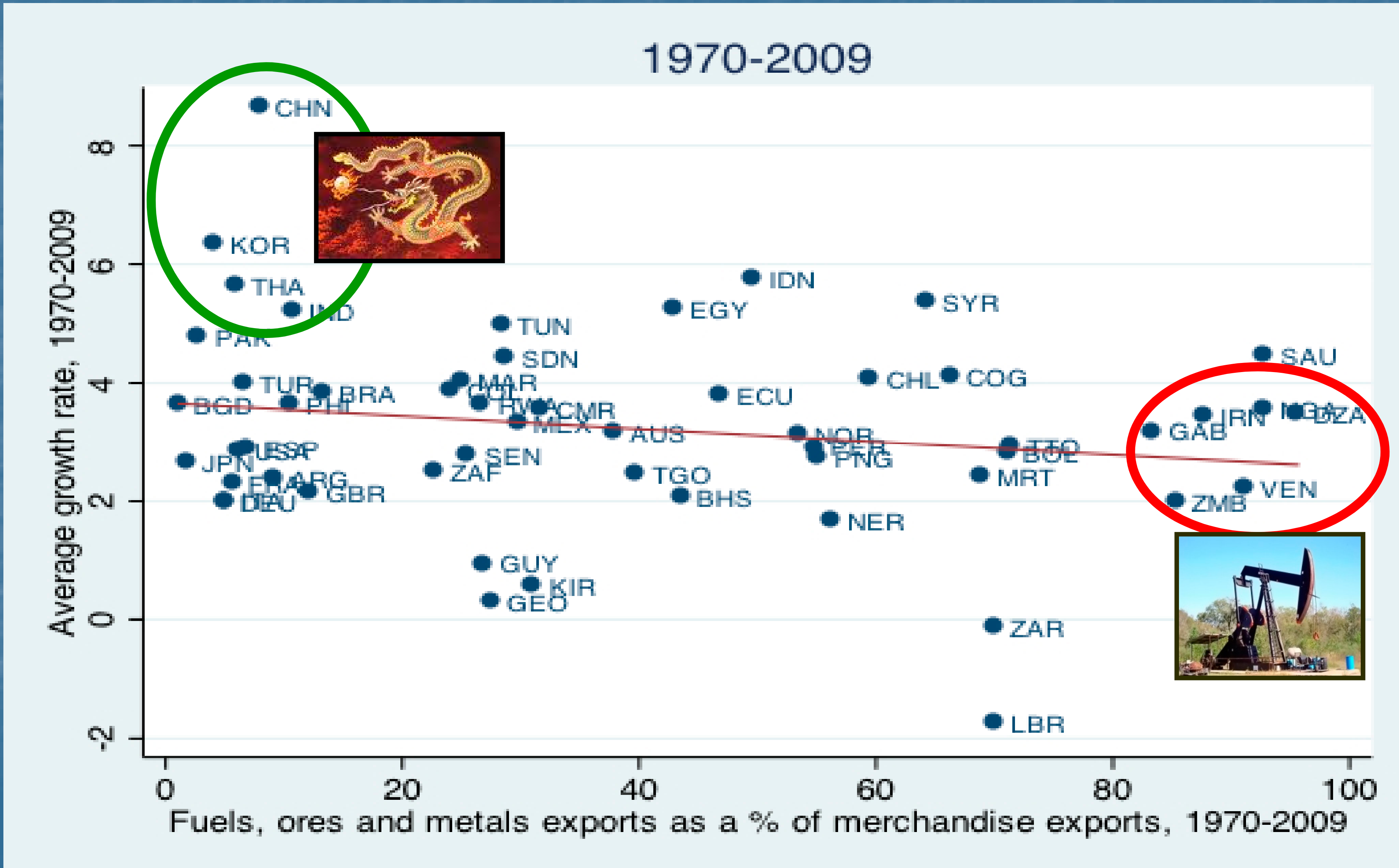
- Many countries that are richly endowed with oil, minerals or fertile land have failed
  to grow more rapidly than those without.

- Examples:
- Some oil producers in Africa & the Middle East have relatively little to show for their resources.
- Meanwhile, East Asian economies achieved western-level standards of living despite being rocky islands (or peninsulas) with virtually no exportable natural resources:
  - Japan, Singapore, Hong Kong Korea & Taiwan;
  - followed by China.

The Natural Resource Curse

- Some seminal references:
  - Auty (1990, 2001, 2007)
  - Sachs & Warner (1995, 2001)
- By now there is a large body of research,
  - reviewed in: Frankel,
    "The Natural Resource Curse:
    A Survey of the Literature."

Growth falls with fuel & mineral exports



Are natural resources *necessarily* bad? No, of course not.

- Commodity wealth need not necessarily lead to inferior economic or political development.
- Rather, it is a double-edged sword, with both benefits and dangers.
  - It can be used for ill as easily as for good.
- The priority should be on identifying ways to sidestep the pitfalls that have afflicted other commodity producers in the past, to find the path of success.

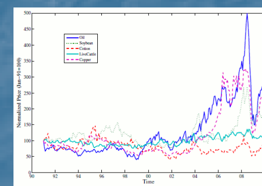
- Some developing countries have avoided the pitfalls of commodity wealth.
  - E.g., Chile (copper)
  - Botswana (diamonds)

- They have done some things worth emulating.
- The last section of my paper explores policies & institutional innovations that might help avoid the natural resource curse and achieve natural resource blessings instead.

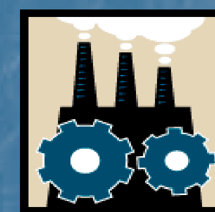
- How could abundance of commodity wealth be a curse?
- What is the mechanism for this counter-intuitive relationship?
- At least 5 categories of explanations.

5 Possible Natural Resource Curse Channels

1. **Volatility**



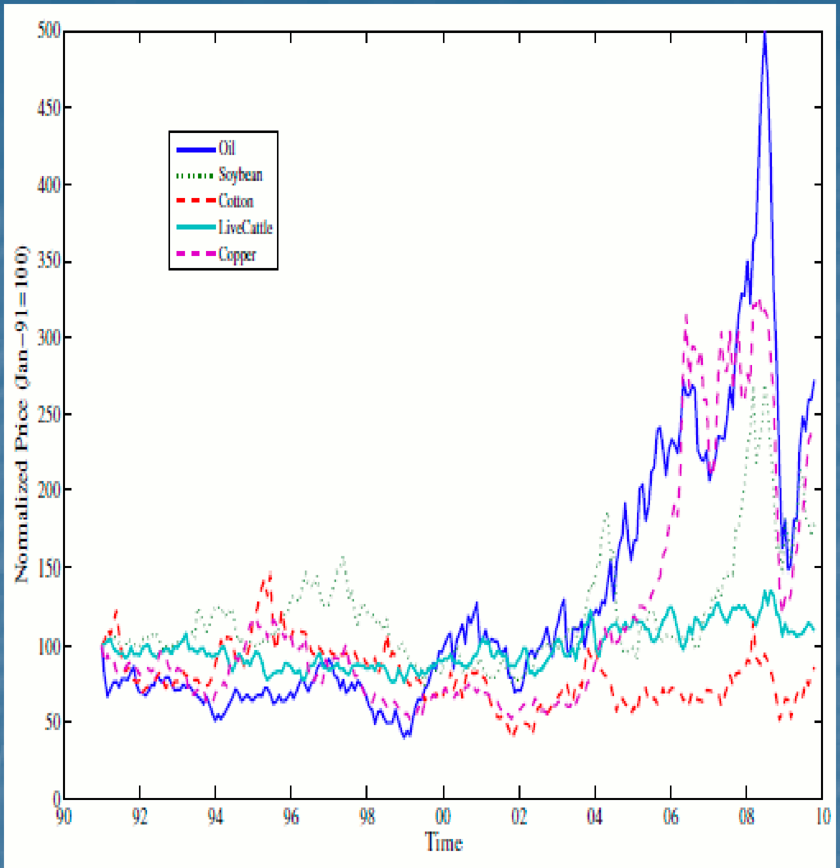
2. **Crowding-out** of **manufacturing**



3. **Institutions**

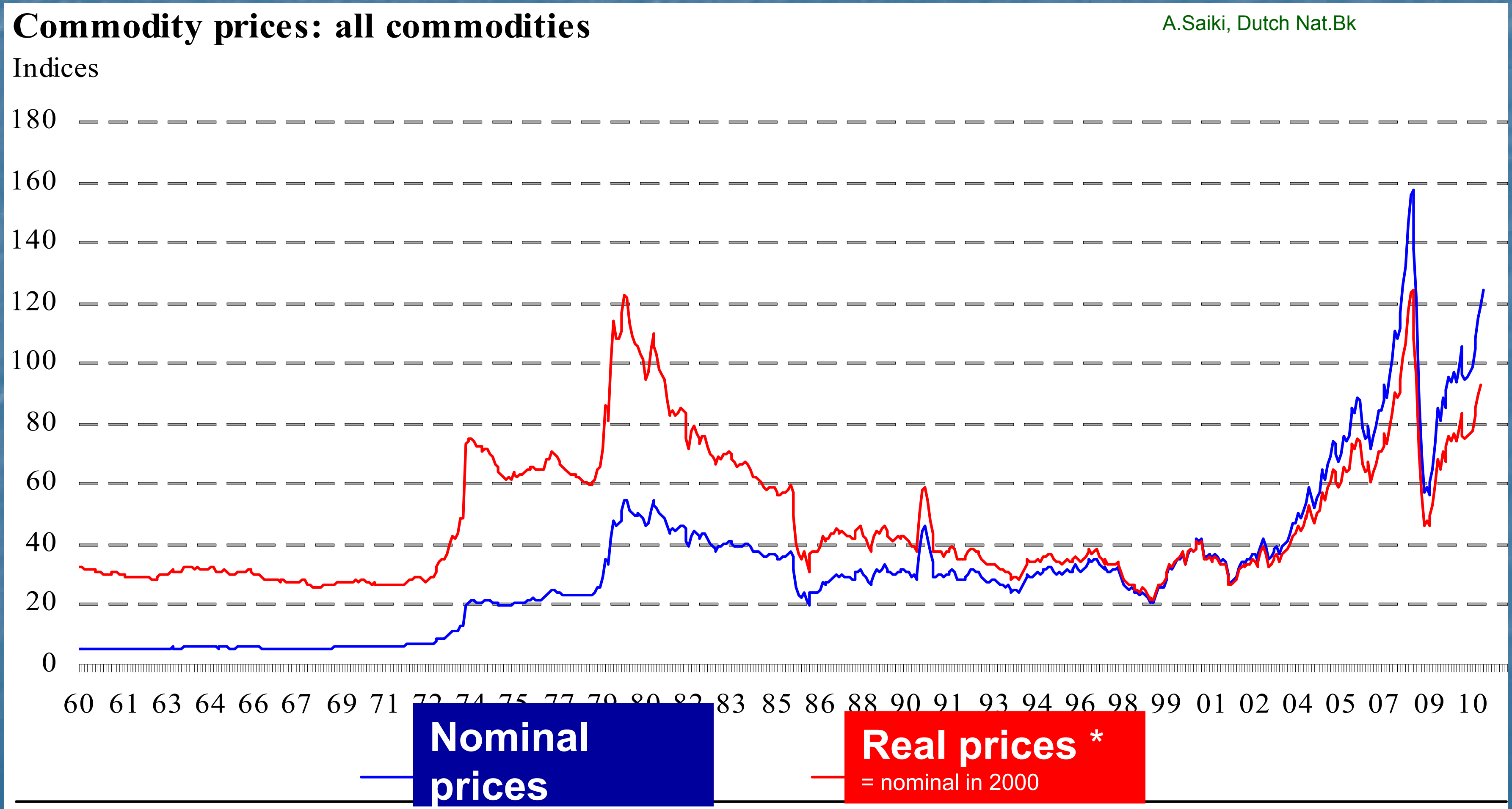
4. **Anarchy**
5. **"Dutch disease,"** including
   1. Procyclical monetary/exchange rate policy
   2. Procyclical fiscal policy.

(1) Volatility in low-income countries



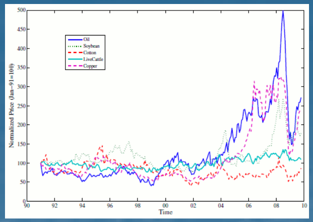
- arises in part from fluctuations in global prices of export commodities.

Commodity prices have been especially volatile over the last decade



*) Deflated by US consumer price index.
Source: HWWA, Datastream.

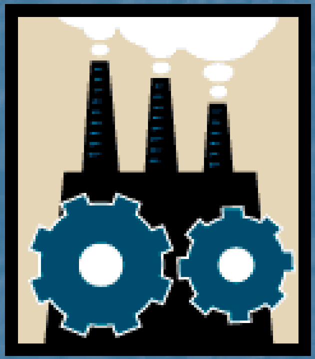
Effects of Volatility



- Volatility can *per se* be bad for economic growth.
- Cyclical shifts of resources back & forth across sectors may incur needless transaction costs.

- On the one hand,
  the private sector dislikes risk as much as the government does & will take steps to mitigate it.
- On the other hand the government cannot entirely ignore the issue of volatility;
  - e.g., exchange rate policy.

2. Natural resources may **crowd out manufacturing**,

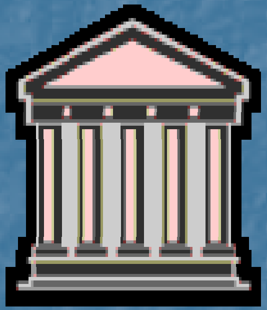


- and manufacturing could be the sector that experiences learning-by-doing
  - or dynamic productivity gains from spillover.
  - Matsuyama (1992) model.

- So commodities could be a dead-end sector.

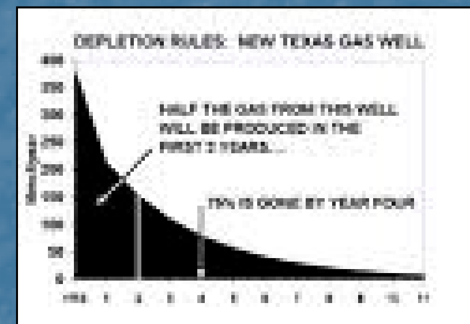
3. Autocratic or oligarchic institutions may retard economic development.

- Countries where physical command of natural resources by government or a hereditary elite automatically confers wealth on the holders
  - are likely to become rent-seeking societies;
- and are less likely to develop the institutions conducive to economic development,
  - e.g., rule of law, decentralization & economic incentives;
  - as compared to countries where moderate taxation of a thriving market economy is the only way government can finance itself.
  - Engerman-Sokoloff explanation of why industrialization came in the North of the Western Hemisphere before the South.

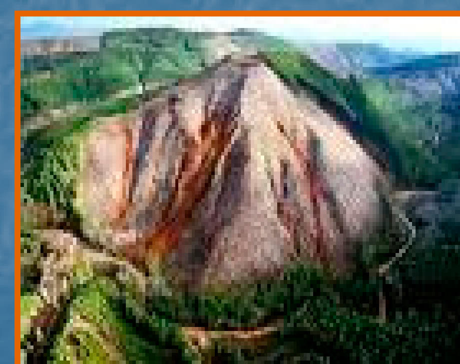


4. Anarchic institutions

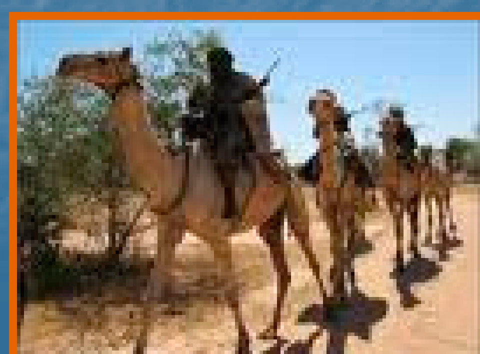
1. Unsustainably rapid depletion of resources



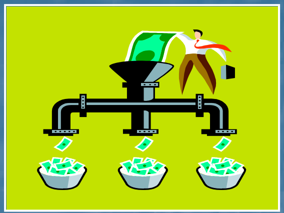
2. Unenforceable property rights



3. Civil war



The procyclicality of fiscal policy

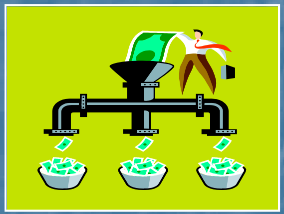


- Fiscal policy has tended to be procyclical in developing countries [1]
  - -- correlation of income & spending mostly positive --
  - especially in comparison with industrialized countries.

- A reason for procyclical public spending: receipts from taxes or royalties rise in booms; The government cannot resist the temptation or political pressure to increase spending proportionately, or more.

[1] Cuddington (1989), Tornell & Lane (1999), Kaminsky, Reinhart, & Vegh (2004), Talvi & Végh (2005), Alesina, Campante & Tabellini (2008), Mendoza & Oviedo (2006), Ilzetski & Vegh (2008), Medas & Zakharova (2009), Gavin & Perotti (1997).

Two budget items account for much of the spending from commodity booms:



- (i) Investment projects.
  - Investment in infrastructure in practice often consists of "white elephant" projects,
    - which are stranded without funds for completion or maintenance when the oil price goes back down.
      - Gelb (1986) .
- (ii) The government wage bill.
  - Oil windfalls are often spent on public sector wages
      - Medas & Zakharova (2009)
  - which are hard to cut when prices go back down
      - Arezki & Ismail (2010)

(5) Procyclicality

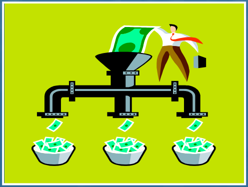
- Low-income countries are historically prone to procyclicality:
  - "Procyclical" = destabilizing.
- Particularly among commodity producers.
- The **Dutch Disease** describes unwanted side-effects of a strong, but perhaps temporary, rise in the export commodity's world price.

The Dutch Disease:
5 side-effects of a commodity boom

- 1) A real appreciation in the currency
- 2) A rise in government spending
- 3) A rise in nontraded goods prices
- 4) A resultant shift of resources out of non-export-commodity traded goods
- 5) Sometimes a current account deficit

The Dutch Disease: The 5 effects elaborated

- 1) A real appreciation in the currency
  - taking the form of nominal currency appreciation if the exchange rate floats
    - e.g., floating-rate oil exporters, Kazakhstan, Mexico, & Russia.
  - or the form of money inflows & inflation if the exchange rate is fixed ;
    - e.g. fixed-rate oil-exporters, UAE & Saudi Arabia.
- 2) A rise in government spending
  - in response to increased availability of tax receipts or royalties.



The Dutch Disease: 5 side-effects of a commodity boom

- 3) An increase in nontraded goods prices (goods & services such as housing that are not internationally traded),
  - relative to internationally traded goods
    - esp. manufactures.

- 4) A resultant shift of resources out of non-export-commodity traded goods
  - pulled by the more attractive returns in the export commodity *and in non-traded goods*.

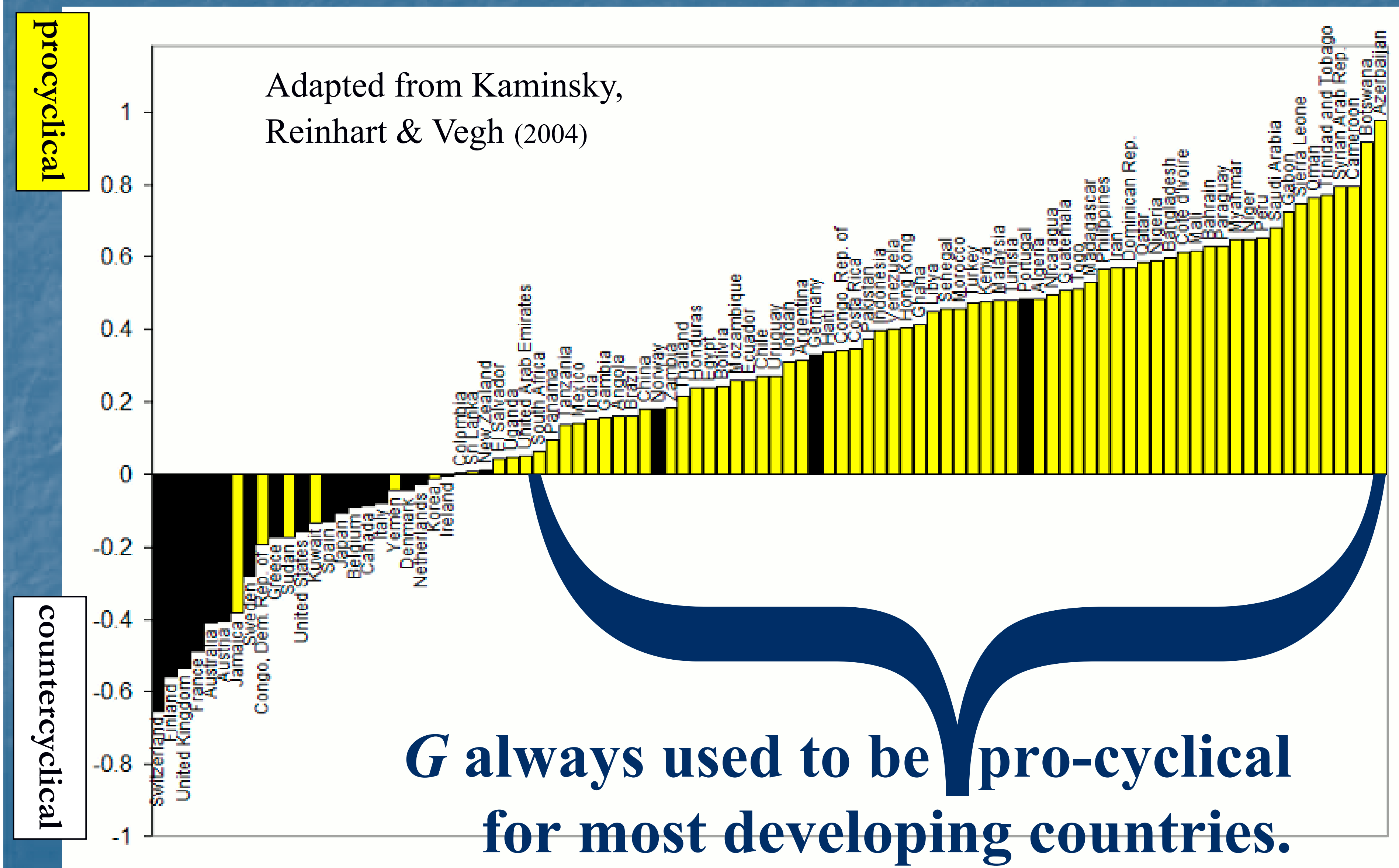
The Dutch Disease: 5 side-effects of a commodity boom

- 5) A current account deficit
  - thereby incurring international debt that is hard to service when the boom ends.
    - E.g. the end of the 1970s commodity boom.
  - Most developing countries avoided current account deficits in 2003-11.

Procyclicality

- Most developing countries in the 1990s brought chronic runaway budget deficits, money creation, & inflation, under control,
- but many still show monetary & fiscal policy that is procyclical rather than countercyclical:
  - They tend to expand in booms
  - and contract in recessions,
  - thereby exacerbating the magnitudes of swings.

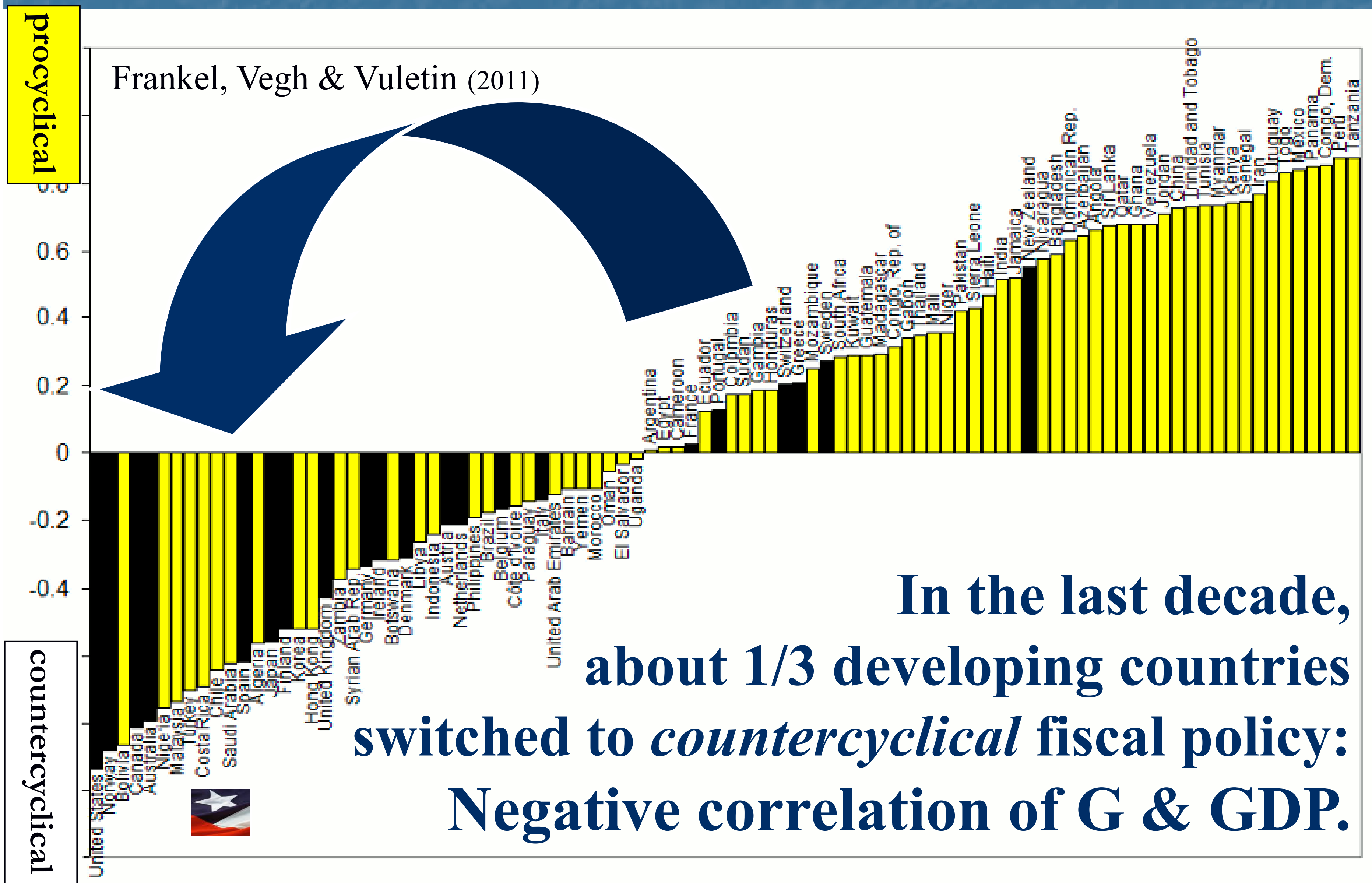
Correlations between Gov.t Spending & GDP 1960-1999



The procyclicality of fiscal policy, cont.

- Procyclicality has been especially strong in commodity-exporting countries.
- An important development -- some developing countries, including commodity producers, were able to break the historic pattern in the most recent decade:
  - taking advantage of the boom of 2002-2008
    - to run budget surpluses & build reserves,
  - thereby earning the ability to expand fiscally in the 2008-09 crisis.
  - Chile is the outstanding model.

Correlations between Government spending & GDP 2000-2009



In the last decade, about 1/3 developing countries switched to *countercyclical* fiscal policy: Negative correlation of G & GDP.

The Natural Resource Curse should not be interpreted as a rule that resource-rich countries are doomed to failure.

- The question is what policies to adopt
  - to avoid the pitfalls and improve the chances of prosperity.
- A wide variety of measures have been tried by commodity-exporters cope with volatility.
- Some work better than others.

Summary: 10 recommendations for commodity-exporting countries

Devices to share risks

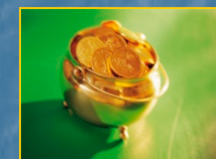
1. Index contracts with foreign companies to the world commodity price.
2. Hedge commodity revenues in options markets

3. Denominate debt in terms of commodity price

10 recommendations for commodity producers continued

Macroeconomic policy

4. Allow some currency appreciation in response to a rise in world prices of export commodities, but only after accumulating some foreign exchange reserves.



5. If the monetary anchor is to be Inflation Targeting, consider using as the target, in place of the CPI, a price measure that puts weight on the export commodity (Product Price Targeting).

PPT

6. Emulate Chile: to avoid over-spending in boom times, allow deviations from a target surplus only in response to permanent commodity price rises.

Summary: 10 recommendations for commodity producers, concluded

Good governance institutions

7. Manage Commodity Funds transparently & professionally,
   like Botswana's Pula Fund
   -- *not* subject to politics like Norway's Pension Fund.

8. Invest in education, health, & roads.
9. Publish What You Pay.
10. Consider lump-sum distribution of oil wealth, equal per capita.

Elaboration on two proposals to reduce the procyclicality of macroeconomic policy
for commodity exporters

- I) To make monetary/exchange rate policy less procyclical:
  Product **P**rice **T**argeting

PPT

- II) To make fiscal policy less procyclical: **emulate Chile.**

I) The challenge of designing a currency regime for countries where terms of trade shocks dominate the cycle

- Floating accommodates terms of trade shocks,
  - thus giving countercyclical monetary policy;
  - but does not provide a nominal anchor.

- Inflation targeting, in terms of the CPI,
  - provides a nominal anchor;
  - but can dictate a *procyclical* monetary policy.

- Needed:
  an anchor that accommodates trade shocks

Product Price Targeting:

PPT

Target an index of domestic production prices. [1]

- Include export commodities in the index and exclude import commodities,
    - so money tightens & the currency appreciates when world prices of export commodities rise,
        - not when world priced of *import* commodities rise.
    - Automatically countercyclical.
- The CPI does it backwards:
    - It calls for appreciation when import prices rise,
    - and not when export prices rise !

[1] Frankel (2011).

II) Chile's fiscal institutions since 2000

- 1st rule – Governments must set a budget target,
  - set = 0 in 2008 under Pres. Bachelet.

- 2nd rule – The target is structural: Deficits allowed only to the extent that
  - (1) output falls short of trend, in a recession, or
  - (2) the price of copper is below its trend.

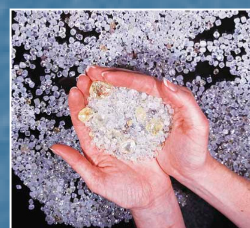
- 3rd rule – The trends are projected by 2 panels of independent experts, outside the political process.
  - Result: Chile avoids the pattern of 32 other governments,
    - where forecasts in booms are biased toward over-optimism,
  - which is why Chile ran surpluses in the 2003-07 boom,
  - while the U.S. & Europe failed to do so.













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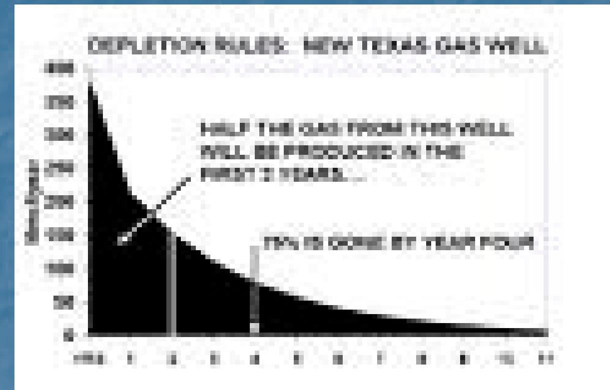
Appendix: Anarchic Institutions

Unsustainably rapid depletion



- When depletable resources are in fact depleted, the country may be left with nothing.
- Three concerns:
  - Protection of **environmental quality**.
  - A motivation for a strategy of economic **diversification**.
  - A motivation for the **Hartwick** (1997) **rule**:
    - Invest rents from exhaustible resources in other assets.

Unenforceable property rights

- Depletion would be much less of a problem if full property rights could be enforced,
  - thereby giving the owners adequate incentive to conserve the resource in question.
- But often this is not possible
  - Especially under frontier conditions.

- Overfishing, overgrazing, & over-logging are classic examples of the "tragedy of the commons."
- Individual fisherman, farmers or loggers have no incentive to restrain themselves, while the fisheries or pastureland or forests are collectively depleted.

War

- Where a valuable resource such as oil or diamonds is there for the taking, factions will likely fight over it.
- Oil & minerals are correlated with civil war.
  - Collier & Hoeffler (2004), Collier (2007), Fearon & Laitin (2003) and Humphreys (2005).
- Chronic conflict in such countries as Sudan comes to mind.
- Civil war is, in turn, very bad for economic development.