Extractives & Development

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Energy Transitions
Climate Change

Climate change is the biggest threat to development. Adaption to climate change, & action on mitigation has implications for Extractive industries

- **Phasing out of Fossil Fuels:**
  - Especially coal. Much of India’s electricity generated from coal. China too (but now phasing out: air pollution)
  - Oil & gas => solar, wind & other renewables => large (& uncertain) demand & price effects
  - “Leave it in the Ground” campaigns: realistic?

- Countries & companies may have large amounts of what become “stranded assets” (unusable oil, gas, coal). So fewer “Dubais of Africa”?

- Major concern for oil companies: BP v ExxonMobil. Also financial regulators.

- Metals? Recycling: yes BUT stocks to recycle in developing countries are limited. So demand for newly mined metals will grow.

- Wind-turbines, solar panels need a lot of metals. And electricity transmission requires copper whatever the source. Public transportation systems etc.

- So expect climate change action to affect global demand (& price) for metals – could boost demand and price. But then mining requires energy! So need ‘green mining’ (run the mine from renewable energy)
THE POLITICAL ECONOMY OF CLEAN ENERGY TRANSITIONS

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UNU-WIDER STUDIES IN DEVELOPMENT ECONOMICS
Developing Countries as Producers
Asset transformation – a diagram

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<td>Finding the sub-soil asset.</td>
<td>Bringing it above ground.</td>
<td>Monetising the asset.</td>
<td>Investment in physical and human capital.</td>
<td>Realising benefits in higher living standards</td>
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Source: Oxford Policy Management

This sequence is often referred to as the Extractives Value-Chain
Long Term Nature of Extractive Industries

Figure 2: The Mine Project Life Cycle:

Note: (i) the huge early peaks of construction spending  
(ii) the potential longevity of some mines (up to 100 years)  
(iii) the potentially long delays in the government receiving significant revenues  
(iv) the potentially long run-on of costs associated with mine closure
More detail on the Life Cycle

- Developing countries will often choose not to (or be unable to) carry out all the stages of (say) copper production as in Zambia) beyond the Concentrate or First stage
- Hence they may forego the additional value-added and tax revenues associated with the later stages
- There are often strong economic reasons (of cost and scale) why the countries should not process their minerals (or oil and gas) further. But the topic is highly politcised.
The Resource Curse?

DRC, Nigeria, Venezuela etc.

- Huge literature arguing that resource wealth harms inclusive development (& peace)
Why a Resource Curse?

1. Crowding out of non-resource activities
   • Dutch Disease
2. Crowding-out of learning by doing activities such as manufacturing
3. Pro-cyclicality: especially of
   • fiscal policy
   • capital flows
4. Autocratic & weak institutions/governance & corruption
Sachs and Warner 1995

From 1995 series of papers that helped to publicise Resource Curse
Paper: http://www.nber.org/papers/w5398

- Sample of 95 developing countries. Examined each country's annual growth rate (1970-90) in relation to the country's natural resource-based exports in 1970 as a % of GDP
- Results: on average, countries which started the period with a high value of resource-based exports to GDP tended to experience slower growth during following 20 years
- Controlled for other possible explanations of GDP growth such as climate, geography or past rates of growth
- Results stated in very strong terms with few qualifications. “Almost without exception, the resource-abundant countries have stagnated in economic growth since the early 1970s, inspiring the term, ‘curse of natural resources’.”
- => small industry of papers mining the data
From Sachs and Warner (2001)

Figure 4: Scatter Plot

Note: (i) the general tendency for a downward (left to right) slope
(ii) But the huge range of the country scatter points
Issues from regressions

- The scatter is very wide even in the S and W papers – there are many countries not located anywhere near the fitted regression line.
- This is reflected in a relatively low $R^2$ coefficient in the regressions. Only about 58% of the variation in growth rates can be explained by the fitted regressions.
- The “coefficient values on the natural resources variable are quite small (0.03 to 0.05).
- Later regression results (for the same data period) show an even more ambiguous situation.
- Causation issue:
  - War-prone countries (see Collier) may fall into resource dependence since this may be the only sector where they can attract investment. Resource dependence is thus caused by war and not the reverse.
  - Countries with weak institutions may similarly find that resource activities are the only ones that can attract investment. They too are then the cause not the result of resource dependence.
Resource Curse: empirics summed up

1. The Econometric results provide at best ambiguous results about the presence of a resource curse.
2. There are problems in using short run cross country data (e.g. 20 years) to explain very long-term phenomena – effects need time to work their way through and different countries will be in different stages of adapting to new natural resource finds (e.g. Ghana’s mineral resurgence began in 1986 but Tanzania’s and Zambia’s only in about 1998).
3. Even where fitted equations seem robust, the outlier countries that have escaped the curse may be more interesting than the other cases.
   - Why have countries such as Australia, Chile and Botswana done well on the back of minerals when others have failed?
4. Certainly there is no real evidence of INEVITABILITY.
1. Dutch Disease: 
-the side-effects of a commodity boom

An increase in private (especially extractive company) local spending combined with a probable hike in government spending can result in:

- Upward pressure on the prices of *non-traded* goods including local labour, land and housing
- so an appreciation of the *real exchange rate* (defined as the ratio of the prices of non-traded to traded goods)
- some resulting reduction in the profitability of some export traded goods (higher costs but no ability to raise selling prices)
- and a resultant shift of resources away from traded goods other than extractives to non-traded goods
- leading probably to a deterioration of the non-extractives external trade position
Dutch Disease – Empirical Effects

Source: Magud and Sosa (2010) - based on some 50 separate empirical studies.

Note:

• The very common effect on the real exchange rate and on the re-allocation of resources away from non-resource tradeables
• The effect on growth rates is less clear cut – partly because the natural resource provides an offsetting growth stimulus that can be large
Dutch Disease – Political Economy Explanations

Again there are many strands. Most involve the generic problem of the governments of low income countries having suddenly expanded liquid resources at their disposal. The arguments have included:

• Weaker public expenditure management. The pressure on making the “right choices” may seem somehow less important when the revenue source is some form of external windfall.

• Reduced tax effort (Collier - 2007)

• Increased corruption - the illegal diversion of resources.

• Increased rent seeking via the new incentives that economic agents perceive to compete for “artificially contrived transfers” (Tollison, 1982),

• *Dirigiste* economic policies and poor investments. The exploitation of mineral wealth has a long history in poorer countries of encouraging host governments to intervene (too?) actively in investment decisions
2. Learning by doing effects

- Argument that the *manufacturing* sector is most likely to experience “learning-by-doing”
  - These are dynamic productivity gains from spillover that help to drive faster growth.
- Hence a focus on extractives could slow down the economy’s overall rate of productivity change and so its economic growth
- If so, too heavy a concentration of extractives could give short run gains but a long-run dead end
- But some historical experience argues against this – Canada, Australia, the USA and more recently Brazil and Chile have seen good growth in both extractives and in manufactures
- Also why does manufacturing need to be the ONLY source of learning-by-doing? - modern extractives engage very advanced technologies for both operations and management!
3. Pro-cyclicality

• In an ideal world government spending as well as capital inflows would adjust counter-cyclically to the ups and downs of general economic activity.

• But in the real world pro-cyclical movements can occur instead. Such “perverse” movements can be especially large in resource-dependent countries because:
  • Commodity-linked revenues (taxes, royalties, profits) can be a very substantial proportion of government revenue
  • Commodity price volatility is high
  • International capital flows are also prone to be pro-cyclical: e.g. borrowing constraints may be relaxed during booms.
Example: World Copper Price
1995-2014

Figure 6: Copper prices (US$/metric tonne)
- Weekly average price
- Annual world mine production (metal content, 330 metric tonnes)

Why is fiscal policy Pro-cyclical

- Save (e.g. in SWF, fiscal buffer) v spend (consumption v investment in physical & human capital)
- Fiscal policy has tended to be pro-cyclical in developing countries. Correlation between income and spending is mostly positive especially among commodity exporters.
- Extractives taxes & royalties rise in booms
  - Most governments cannot resist the temptation to increase spending proportionately, or more.
  - But then they are forced to contract in recessions,
  - So deficits often move in line with commodity booms (e.g. Mexico)
  - In practice, oil windfalls are often spent on public sector wages (especially election time e.g. Ghana)
4. Institutions – autocratic, oligarchic or anarchic

- Several types of weak or failing institutions can
  - contribute to the failure of the asset transformation process and
  - so create some of the symptoms of the resource curse.
- Some evidence that huge oil and other extractive resources have further weakened institutions in some countries - but no inevitability about this,
- Autocratic systems of governance (e.g. an hereditary or some other narrow elite) may be prone to confer resource wealth disproportionately on the members of that elite, causing:
  - Intensification of rent-seeking tendencies
  - Further reduction of popular pressures (via their tax obligations) to enforce good practice on their governments
  - Reduced likelihood of decentralization of power and decision-making and so weakened incentives for broadened economic activity supported by extractives
War – the extreme example of a political contest

- There is a significant recent literature arguing that extractive wealth is correlated with the likelihood and incidence of civil war.
- Where a valuable resource such as oil or diamonds exists there may sometime be factions prepared to fight over it (e.g. the Congo, Sudan).
- But again there is no inevitability. Many extractive rich countries have avoided civil war. So there have to be some pre-existing conditions (e.g. weak or fragile institutions or established ethnic divisions) that make conflict more likely in some cases.
- Where it occurs, civil war is unambiguously bad for economic development – the ultimate example of the resource curse IF resources can be shown to be the cause of war.
Conclusions (1)

• The four possible causes of the so-called “resource curse” are all plausible and examples of each of them can be seen in some specific countries. But no inevitability
• The key to this is sound economic management. In particular:
  o There are well established techniques combining monetary and fiscal policy that can mitigate real exchange rate over-valuation / Dutch Disease – examples of Botswana and Malaysia
  o There are good country examples of how to successfully avoid the pro-cyclicality of fiscal policy – example of Chile
  o Sound local content and other polices can build non-extractive activities on the back on an impetus from extractives – example Chile and Brazil.
Conclusions (2)

- Probably, the biggest single problem lies with governance and **weak institutions**

- Countries that already have some fragility or gaps in their public institutions need to work extremely hard to prevent these weaknesses intensifying once the attraction of an extractives bonanza appears on the horizon
  - Ghana in recent years looks like an example of this problem, Tanzania prospectively is another emerging example

- There are an increasing number of regional and international initiatives such as the Extractive Industries Transparency Initiative & industry initiatives to improve governance.
UNU-WIDER YouTube Channel

Extractive industries and development

This interview series relates to the UNU-WIDER project 'Extractives for development'. The project focuses on the implications of natural resources and their management for economic development—aiming to find ways in which resource wealth c... more