Natural Resources and Industrialization: Can Gas Jump-Start Structural Change?

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About this MOOC

• Attempting to bring the Brookings-UNU-WIDER research program on Jobs, Poverty and Structural Change in Africa to a broader audience.

• A multi-year, multi country comparative research program with a focus on firms.

• Use of mixed methods including case studies, quantitative and qualitative analysis
The Brookings-WIDER Research Program

- We began with *Learning to Compete* (with AfDB)
- Which tried to answer a (seemingly) simple question
  - Why is there so little industry in Africa?
- The answer turned out to be sufficiently complicated that we wrote two books!
The Brookings-WIDER Research Program

  - Comparative studies of business-government coordination in Africa and East Asia

  - Broadening the definition of “industry” to tradable services and agro-industrial exports
Natural Resources, Structural Change and Industry in Africa (2019)

- Natural resources are increasingly important in Africa.
- How can the revenues and opportunities associated with natural resource discoveries be used to accelerate structural change?
Resource Discoveries Blessing or Curse?

- The share of natural capital in Africa’s aggregate wealth is the second highest in the world.
- For a growing number of countries – including Tanzania -- the discovery and exploitation of natural resources is a huge opportunity.
- But one that is accompanied by considerable risks.

The “Resource Curse”

- Countries rich in oil, gas and minerals face significant social, economic and political challenges
- Mineral Dependent Economies in Africa have
  - Higher poverty rates
  - Greatly income inequality
  - Lower human development indicators
- Globally, only four resource rich countries have long-term average GDP growth exceeding 4 per cent per year (Botswana, Indonesia, Malaysia and Thailand)


Source: Data from PovCalnet, World Bank.
Avoiding the Resource Curse

• The impact of natural resources on growth and poverty is a consequence of policy decisions.

• The sequence of choices for governments related to resource extraction can be thought of as a decision chain

• For Tanzania, one key decision is how to use natural resources for structural change
Economic Structure and Growth

• Economic structure matters for long run growth for at least three reasons.
  o Diversification is linked to long-run growth
  o Countries whose exports are concentrated in one or two natural resources are exposed to declining commodity prices and volatility
  o What an economy makes and exports matters for its long-term growth

• In the early stages of development, structural change and diversification are closely linked.
Diversification and Growth

- Exports of Africa’s resource-abundant economies are highly concentrated
- Diversification is positively associated with long-run growth
- Increases in diversification are associated with growth accelerations

Source: IMF, Diversification database.
Prices – Declining and Volatile

- Commodity prices are likely to continue their gradual decline relative to manufactured goods and knowledge intensive services.
- Independently of their long-term trend, commodity prices are highly volatile.
- Volatility reduces growth.

Volatility and Growth, 1979-2003

![Graph showing the relationship between average yearly GDP/capita growth and standard deviation of yearly GDP/capita growth.]
What You Make and Export Matters

- Economies with more sophisticated manufacturing sectors grow faster. (Hausmann, Hwang and Rodrik; UNIDO).
- More diverse economies have higher incomes (Imbs and Wacziarg; Cadot et. al.).
- These “stylized facts” are true of both overall production and exports.

Export Sophistication and Growth, 2000-2015

Source: 6-digit product data (BACI, CEPII) and Hausmann et al. (2007) methodology. Note: Values are expressed in compound annual growth. The figure shows the four SSA resource-rich MIC and comparators (other lower or upper middle-income countries).
Tanzania: A New Plan Revives an Old Idea

• Growth, transformation and poverty reduction through industrialization
  o establishing special economic zones (SEZs) and industrial parks
  o promoting local content
  o supporting value addition and beneficiation in mining
  o developing firm capabilities

• The question is: can gas jump-start industrialization?
The Challenge of Diversification

• Relative prices in resource-abundant economies constrain growth of internationally competitive industries and services.
  o Symptoms of the “Dutch Disease”

• Tradable goods production will expand or contract according to whether it is internationally competitive.
  o This depends on macroeconomic management
  o On policy and institutional changes
  o Investments in physical and human capital

• Today’s lecture (and the new book) focuses on three critical areas.
  o Understanding and managing the boom
  o The construction sector
  o Linking industry to the resource
Understanding and Managing the Boom
A Sequence of Asset Transformations

Source: adapted from Henstridge and Rweyemamu, 2016, and AfDB, 2015.
Understanding the Boom
How Much Revenue and When?

• The early questions are mostly about public financial management
  o How large will revenues be?
  o When will they accrue to government?

• These are often the questions that are least well understood by politicians and the public.
  o A tendency to overestimate revenues and underestimate delays
  o Little understanding of revenue volatility
Gas Revenue in Tanzania

• If production of gas starts in 2021, by 2030 projected revenue of US$ 2bn each year would be equivalent to US$ 28 per person -- 1.6 per cent of GDP

• Revenue will only reach its peak in 2035 at about 3 per cent of GDP or US$ 54 per person

• This is large but not likely to transform Tanzania into Kuwait

• Projected revenue from LNG varies each year, because the relationship between the value of production and revenue changes
Managing a Modest Boom: Managing Expectations

• Despite projections implying that production of gas is at least a decade away in Tanzania, expectations have been high.

• Today the prospects of the energy companies reaching a final investment decision appear to be growing increasingly remote.
  o Initial optimism about the extent of the undersea gas reserves has come up against the reality of declining natural gas prices.

• The public needs to be aware of the uncertainty attached to commodity prices and the extent of commercially extractable resources.
  o Argues for public disclosure of production agreements

• Unlike Ghana and Mozambique, Tanzania has resisted the temptation to front-load public expenditures and accumulate debt.
Managing a Modest Boom: How Much Spending?

- Investments in the domestic economy should only be made when they offer higher returns than foreign assets.
- Two factors often undermine the quality of public spending out of resource revenues.
  - The quality of project appraisal and selection
  - Budgeting the recurrent costs of maintenance
- Both of these areas can be addressed through public policy and more effective institutions.
- Getting feedback from the economy as the public investment program is implemented will show whether the limits of absorptive capacity have been reached.
  - When inflation accelerates and the exchange rate is appreciating beyond manageable limits, the pace of spending needs to be scaled back.
The Construction Sector

• Investing resource revenues means transforming resources “below the ground” into physical assets “above the ground.”

• Construction determines the ability to transform investment effort into investment outcomes.
  o Higher construction costs decrease the amount of infrastructure a country can afford for a given investment budget.
  o High construction costs decrease the likelihood that projects in high cost sectors will be undertaken.
  o High costs reduce the number of projects being carried out, lowering the ability of construction service providers in the sector to build capabilities.
Construction in Tanzania

• The construction sector has been growing rapidly.
  o The great majority of firms are small (84 per cent)
• Foreign firms account only for 2.4 per cent of contractors but represent almost half of large contractors (46 per cent).
• This is good and bad news
  o The supply price of major public investment projects is less sensitive to domestic supply constraints.
  o Fewer domestic firms can benefit from public investment and resource-based construction
Some Constraints in Tanzania

• Manufacturing of local construction materials (such as cement) is increasing
  o Price Increases have been moderate
  o Interviews with contractors and clients indicate that quality is a problem.

• Labor costs are rising
  o Bricklayers, welders, electricians and plumbers are complementary to unskilled labor and capital.
  o Most artisans lack formal training.

• Contractors lack the capital to acquire operating equipment and plant.

• Access to land and construction permits delays projects.
“Investing to Invest”

• Improve the capabilities of MSMEs in construction through targeted training programs.

• Assist business organizations in the construction sector to acquire good management practices and make them available to their members.

• Make institutional and policy reforms of land rights and construction permits.

• Develop construction skills locally.
  
  o The government should allocate resources to training well before the construction phase of the resource project.

• Make immigration policies (in the EAC) more flexible to ease skilled labor constraints.
Linking Industry to the Resource

• Political pressures to “localize” the benefits of a natural resources discovery are a reality faced by all governments of resource-abundant economies.
  o “Local content” regulations require resource investors to expand national employment opportunities, procure from local suppliers, open equity to local partners and encourage technology transfer.
  o “Value addition” concentrates on downstream processing of the extracted resource and promotion of related industries.

• Tanzania is undertaking initiatives in both areas.
  o The capacity to create construction jobs has been overlooked.
Linking Industry to the Resource: A Framework for Policy

Indirect jobs: depending on multipliers and broader policy stance…

Monetisation:
produce, sell, and export.

Transfer rent:
royalties, production shares, fees, acreage, dividends, and corporation tax.

PFM:
Budget & national plan.

Public policy:
private accumulation of human capital, higher productivity, and welfare.

Exploration:
seismic surveys and exploration wells.

Investment externalities:
potential jobs; and potential local content.

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Source: adapted from Henstridge and Rweyemamu, 2016.
Cracking the MNC Supply Chain

• The supply chains of multinational companies (MNCs) in resource extraction generally have a pyramid structure.
  o A small number of lead subcontractors.
  o Many second-tier subcontractors or suppliers.

• MNCs and their first-tier suppliers often prefer to operate almost exclusively with foreign second-tier suppliers.

• In Tanzania, foreign firms spend significantly more on imported materials than locally-sourced materials due to a “missing middle of capable mid-size firms.”
Integrating into the Supply Chain

• In Tanzania, the policy objective is to raise the population of capable mid-sized firms.
• Integrating local firms into the resource value chain depends on addressing the priorities and concerns of both the MNCs and the government.
• Well-designed institutions to negotiate and manage local participation are critical to success.
• Create a unit—located within the office of the head of state or government—to act as the broker between the multinational companies and domestic firms.
  o Incorporate periodic reviews and evaluate against observable outcomes.
Widening the Options

• Horticulture, agro-processing, tourism, tradable services (such as Information and communication services) and transit trade and logistics extend the range of options for structural change and diversification.
  o These industries are particularly relevant for Tanzania

• Investments and policy reforms directed at reducing the impact of Dutch Disease are equally applicable to manufacturing, tradable services, agro-industry and horticulture.

• Focus on an “export push,” using trade policies, public investments, regulatory reforms, and institutional changes to support new exporters.
  o A critical component of the export push is prudent macroeconomic management of the resource windfall.
Summing Up

• Avoiding the resource curse is about making good public policy choices.

• In Tanzania there is a high potential pay-off to investing in the future competitiveness of the economy.

• To do this will require
  o Strengthening the public financial intuitions needed to manage a modest boom.
  o Developing policies to reduce constraints in the construction sector
  o Building effective institutions to integrate national firms into the resource value chain.