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

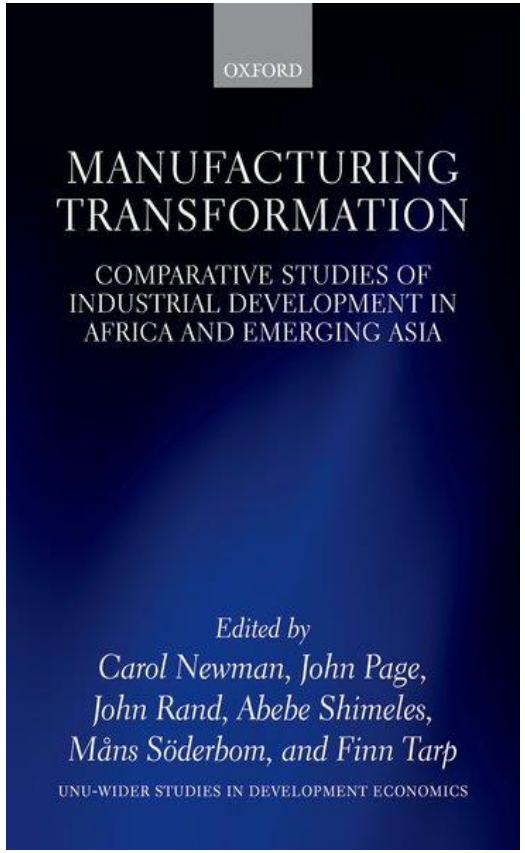
John Page
The Brookings Institution and UNU-WIDER
Uongozi Institute, Dar es Salaam
30 November 2018

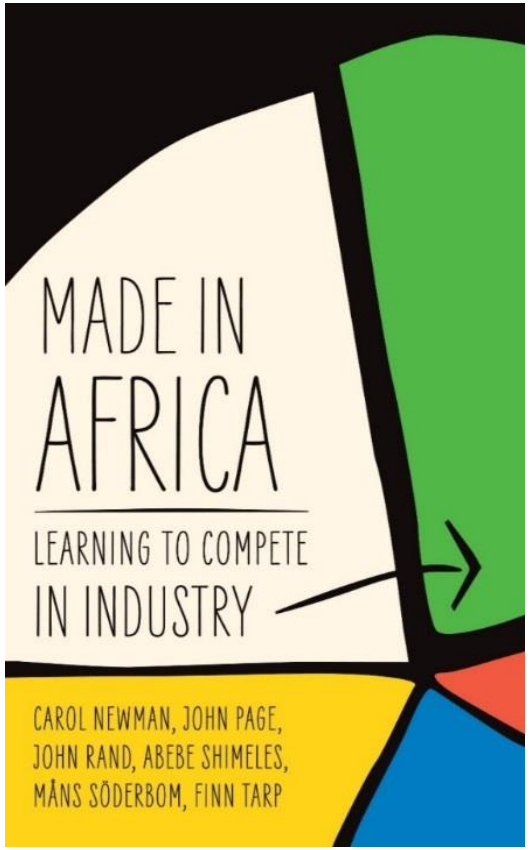
About this MOOC

- 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

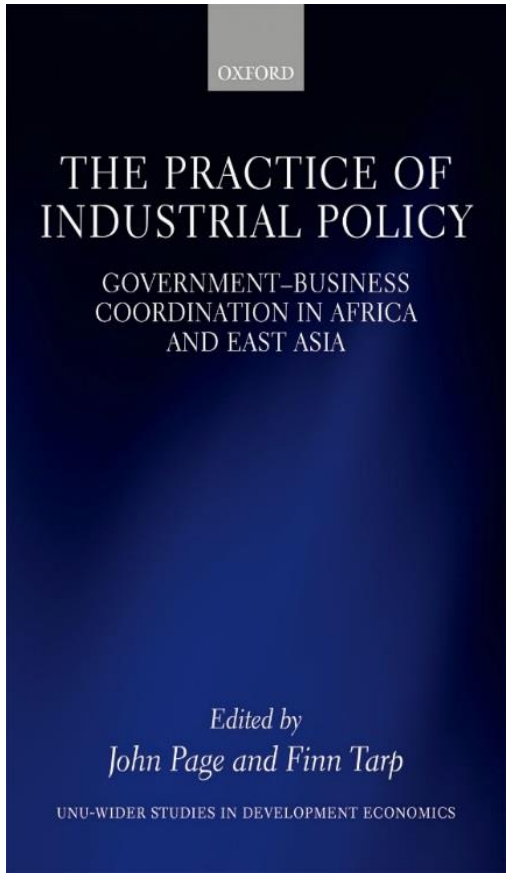
- We began with *Learning to Compete* (with AfDB)
- Which tried to answer a (seemingly) simple question
  - Why is there so little industry in Africa?
- The answer turned out to be sufficiently complicated that we wrote two books!

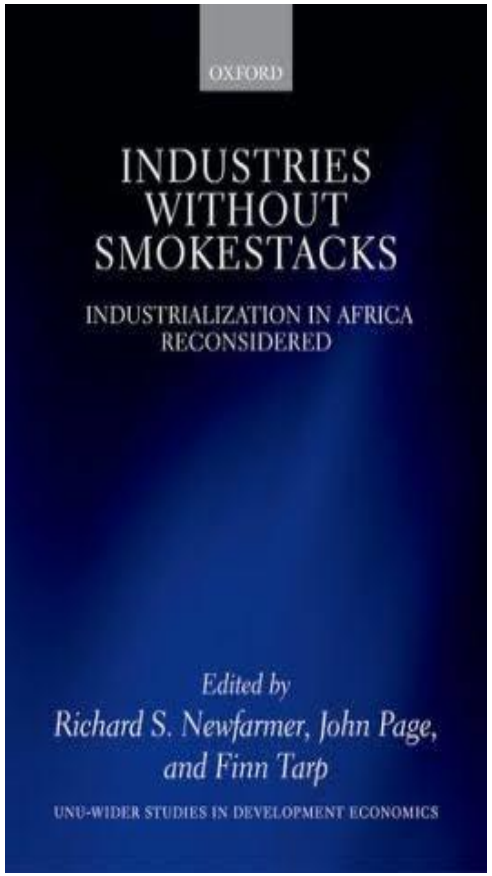




The Brookings-WIDER Research Program

- *The Practice of Industrial Policy* (2017)
  - Comparative studies of business-government coordination in Africa and East Asia
- *Industries Without Smokestacks: Industrialization in Africa Reconsidered* (2018)
  - Broadening the definition of "industry" to tradable services and agro-industrial exports



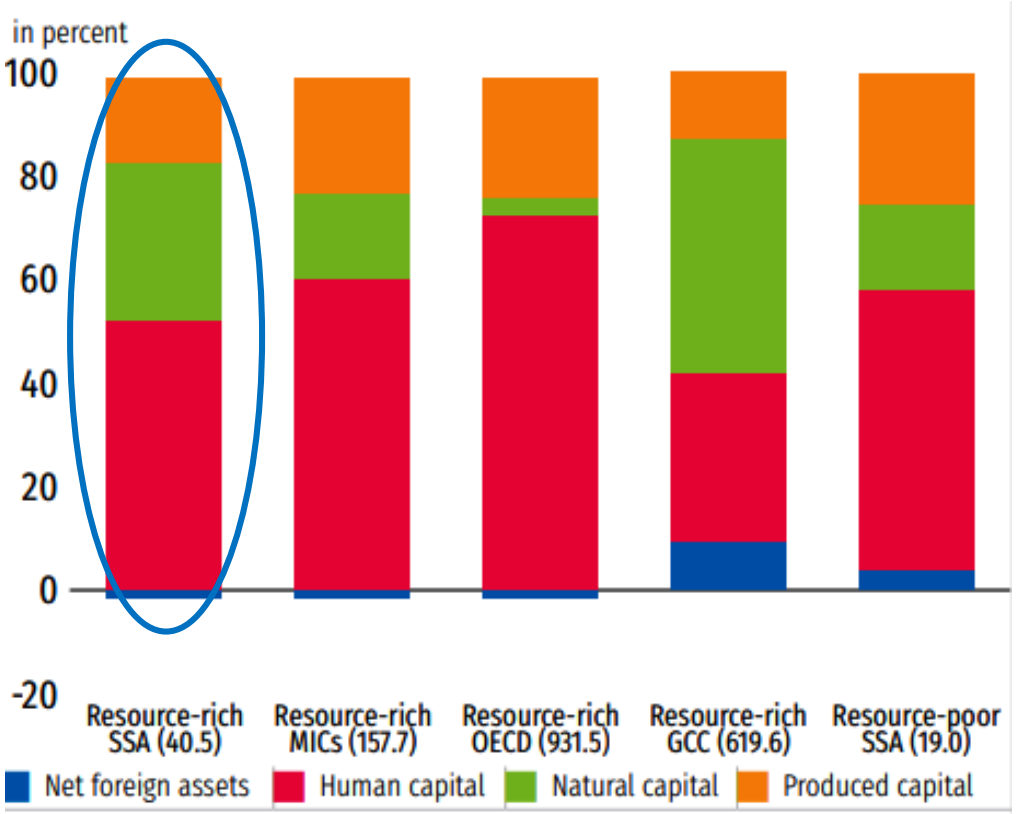


A Final Book

- *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.

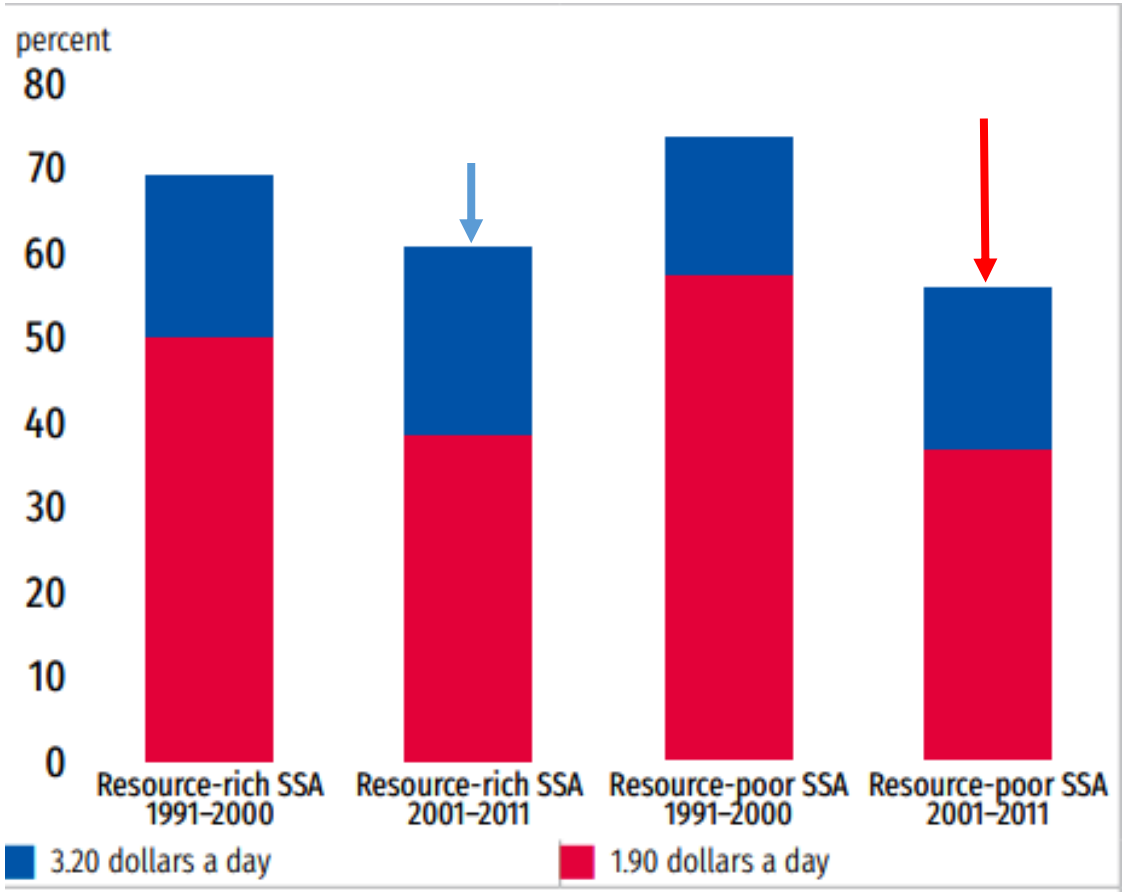


Source: The Changing Wealth of Nations (2018) dataset, World Bank.

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)

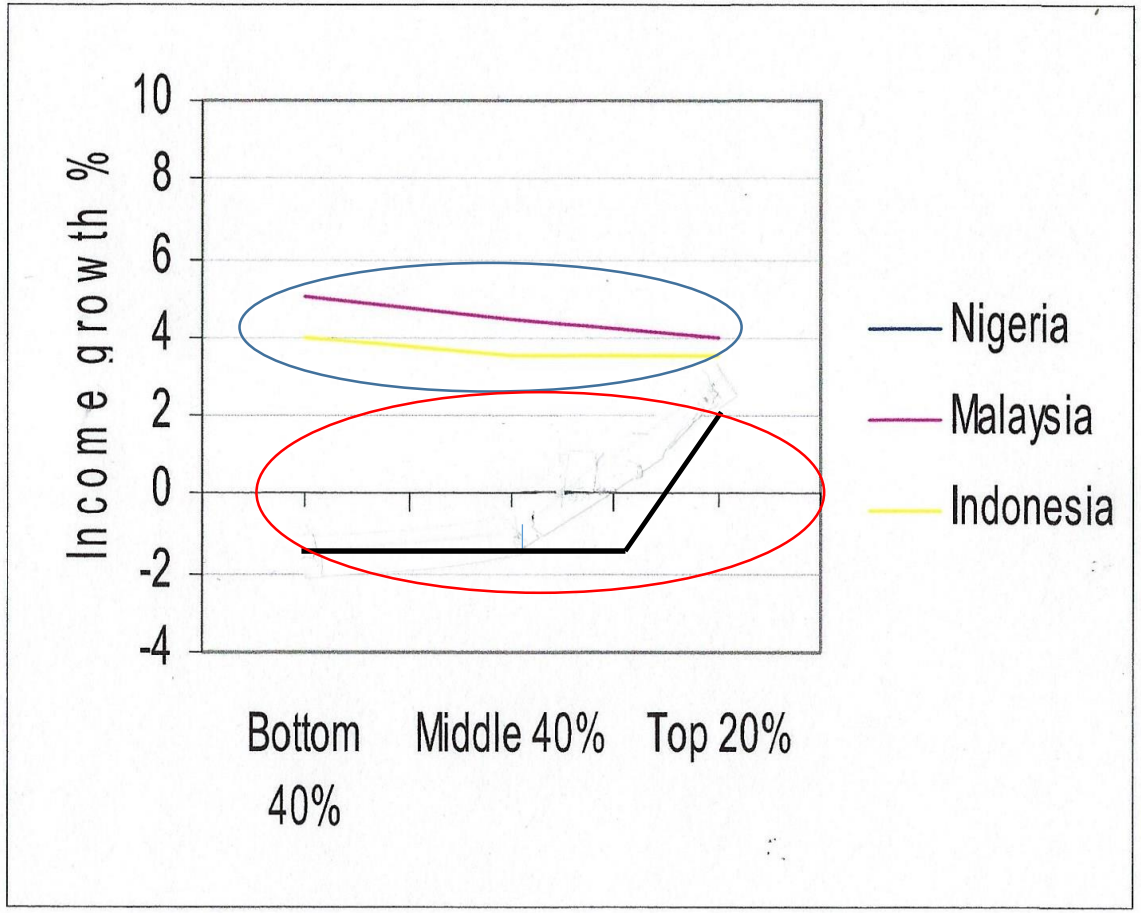
Poverty in Africa, 1991–2011



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



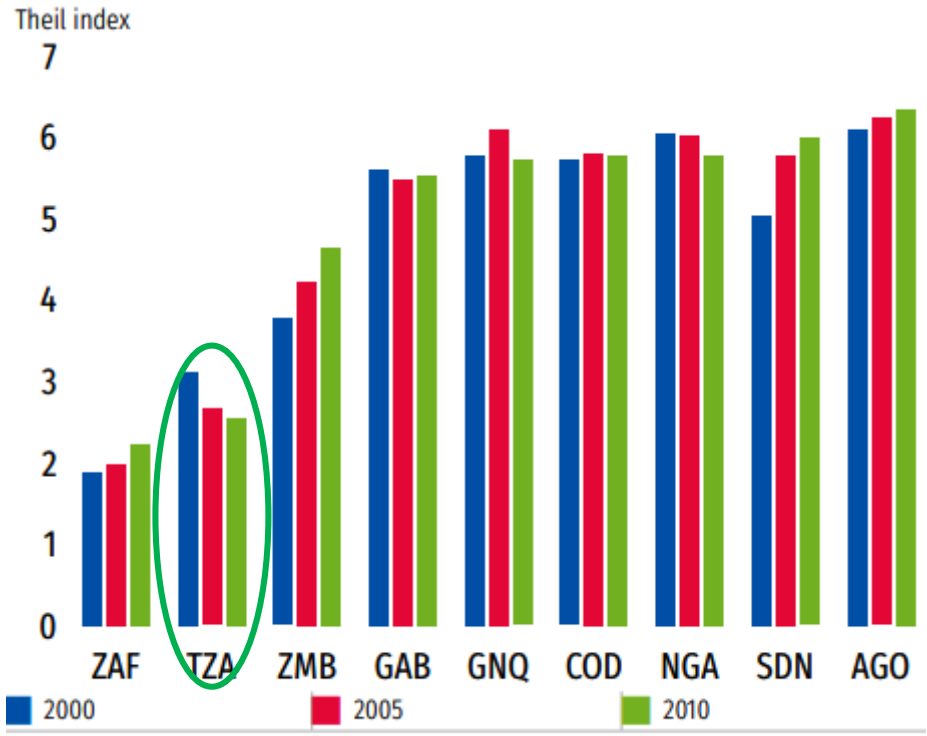
Economic Structure and Growth

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

Export Concentration 2000-2010

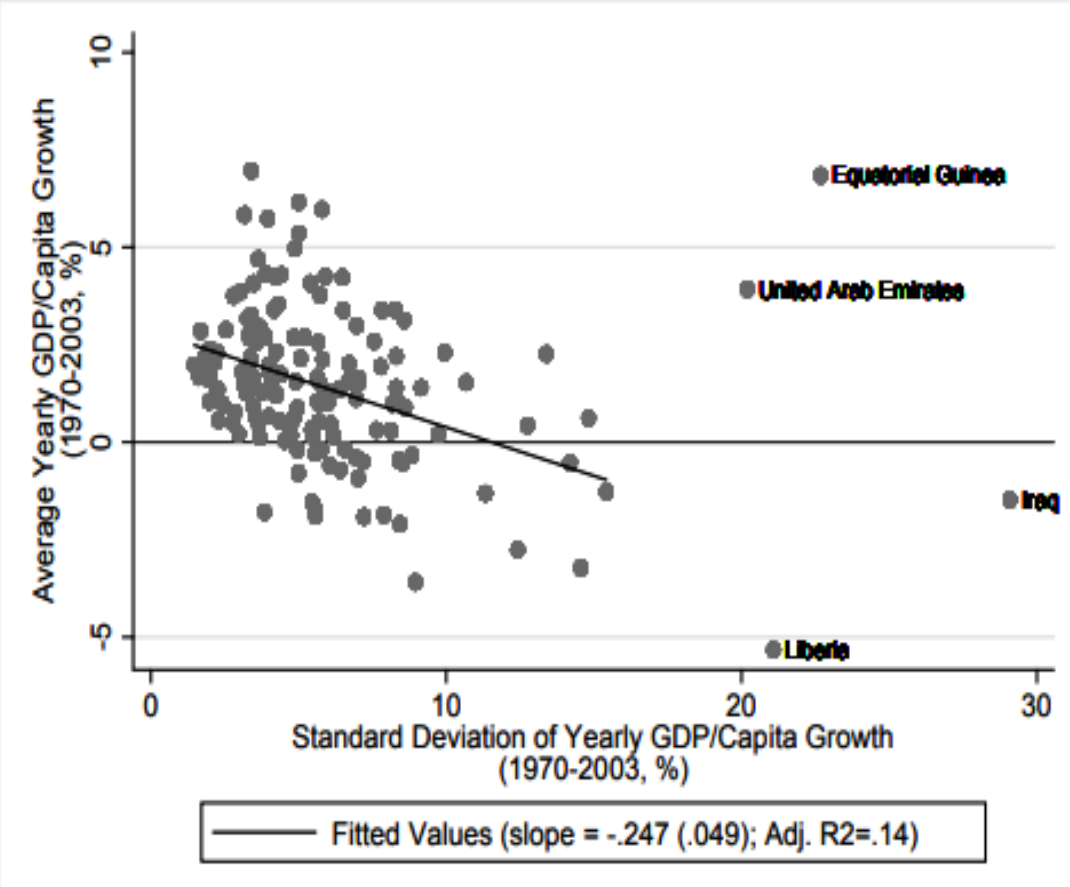


Source: IMF, Diversification database.

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

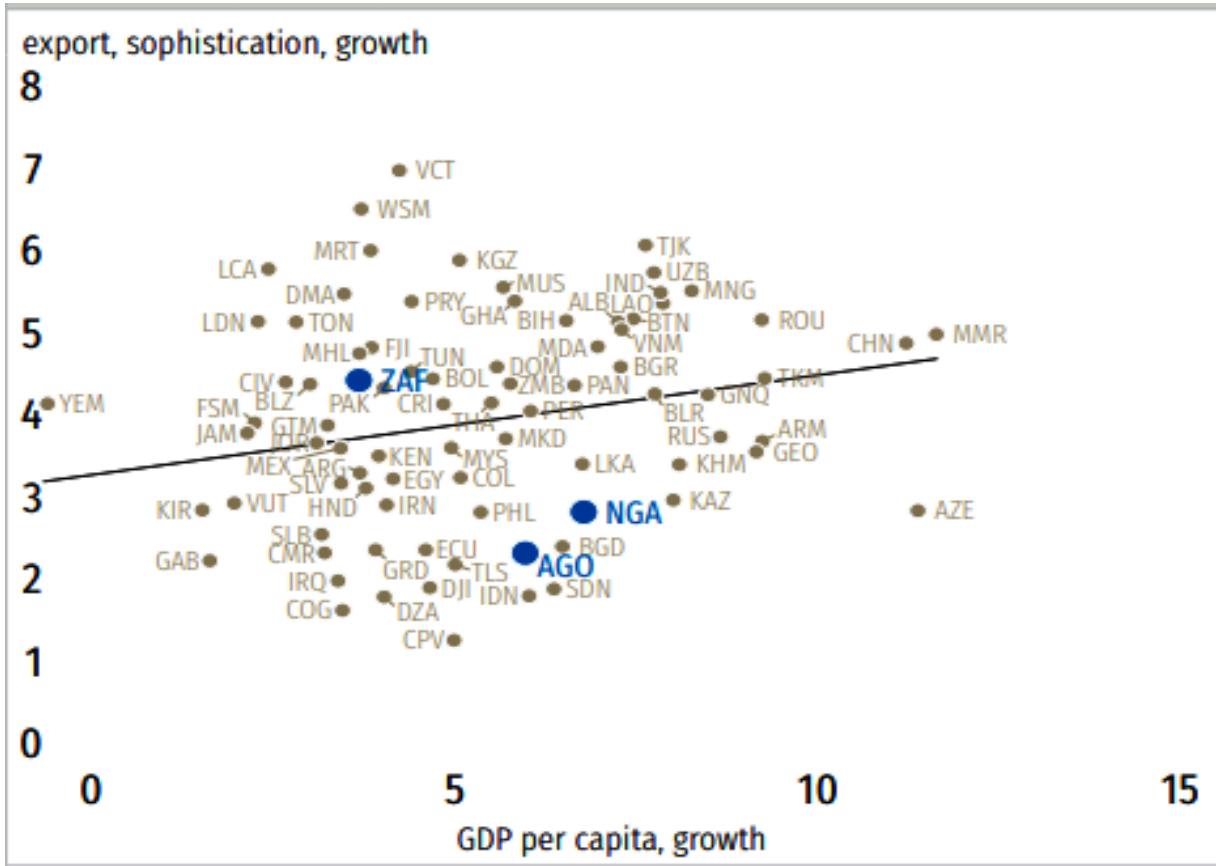
Volatility and Growth, 1979-2003



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).

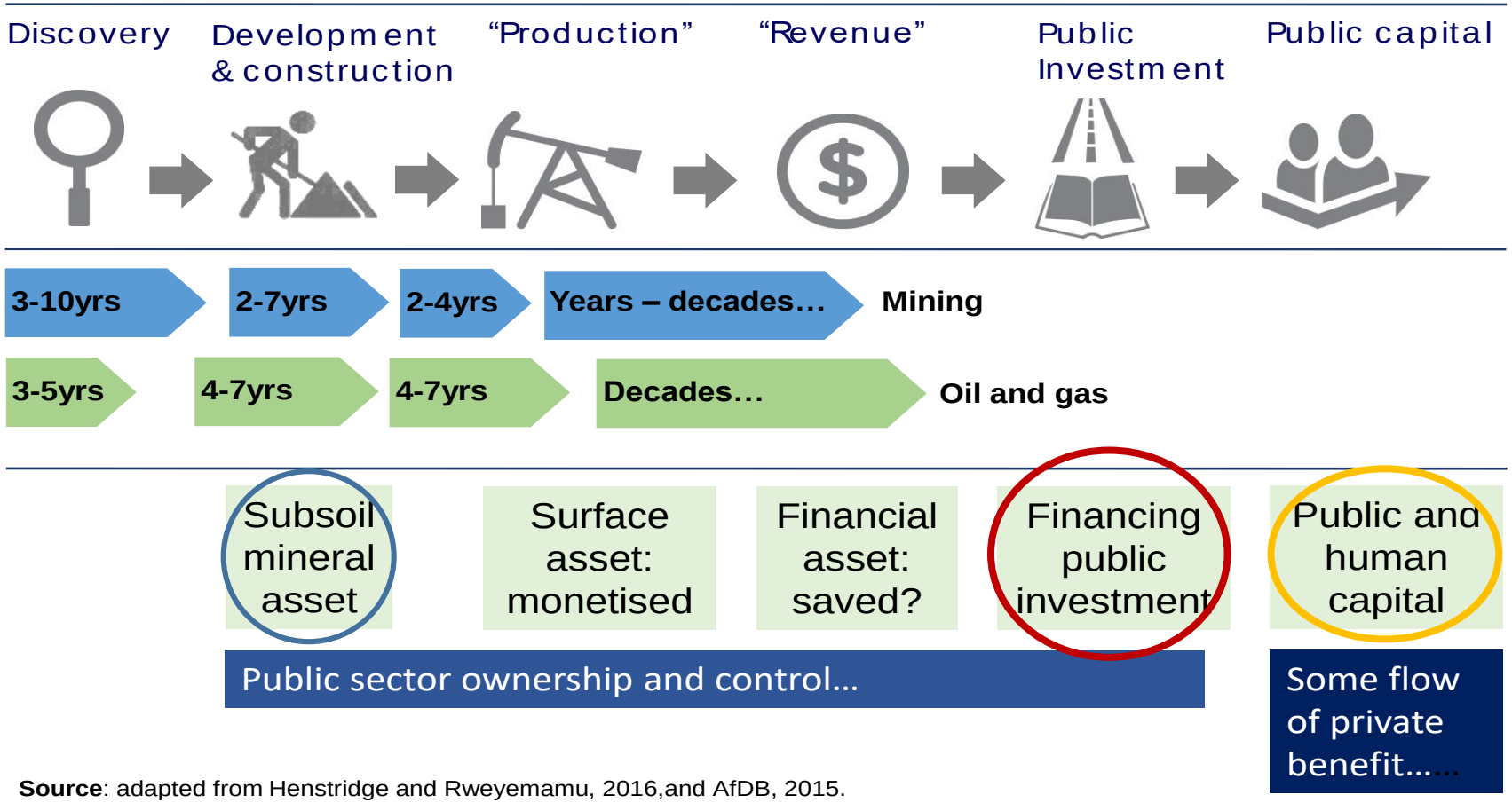
Tanzania: A New Plan Revives an Old Idea

- Growth, transformation and poverty reduction through industrialization
  - establishing special economic zones (SEZs) and industrial parks
  - promoting local content
  - supporting value addition and beneficiation in mining
  - 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.
  - Symptoms of the “Dutch Disease”
- Tradable goods production will expand or contract according to whether it is internationally competitive.
  - This depends on macroeconomic management
  - On policy and institutional changes
  - Investments in physical and human capital
- Today’s lecture (and the new book) focuses on three critical areas.
  - Understanding and managing the boom
  - The construction sector
  - 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.

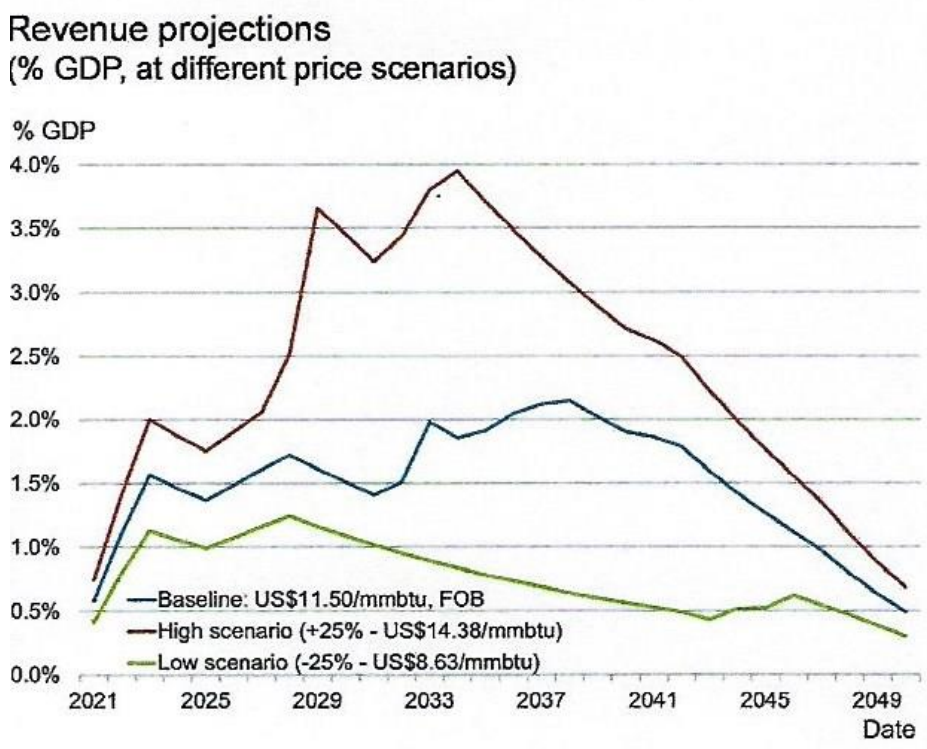
Understanding the Boom
How Much Revenue and When?

- The early questions are mostly about public financial management
  - How large will revenues be?
  - When will they accrue to government?
- These are often the questions that are least well understood by politicians and the public.
  - A tendency to overestimate revenues and underestimate delays
  - 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

Tanzania: Revenue Volatility



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.
  - 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.
  - 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.

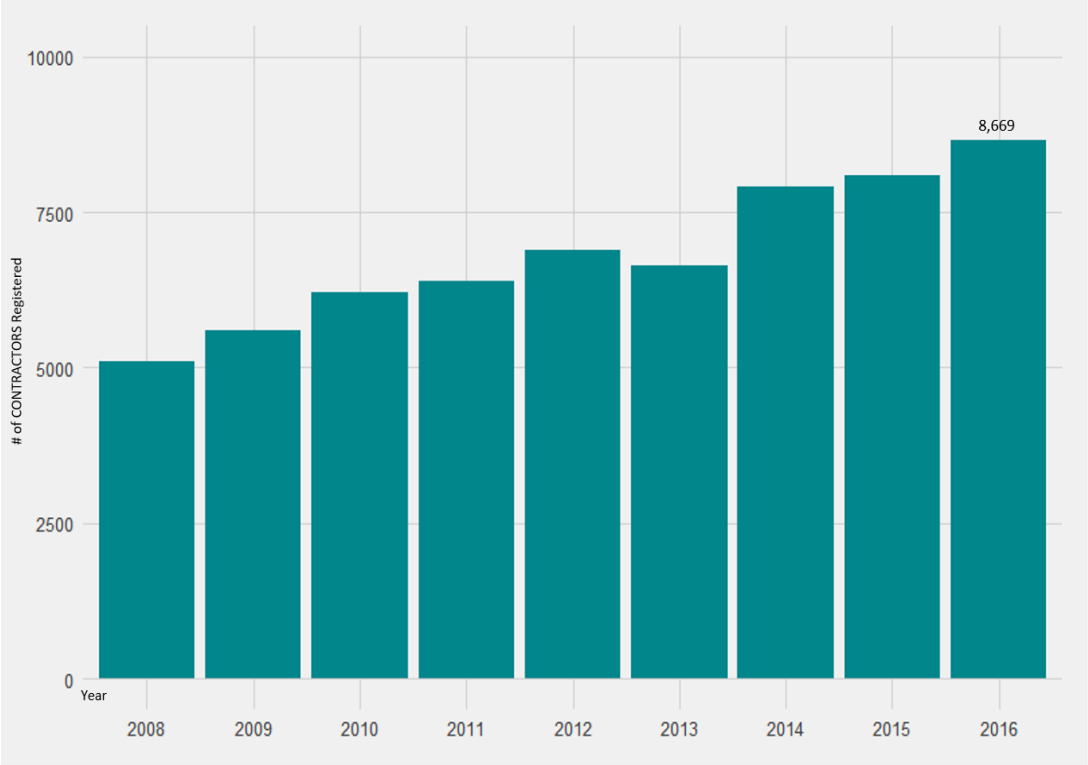
The Construction Sector

- 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.
  - Higher construction costs decrease the amount of infrastructure a country can afford for a given investment budget.
  - High construction costs decrease the likelihood that projects in high cost sectors will be undertaken.
  - 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.
  - 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
  - The supply price of major public investment projects is less sensitive to domestic supply constraints.
  - Fewer domestic firms can benefit from public investment and resource-based construction

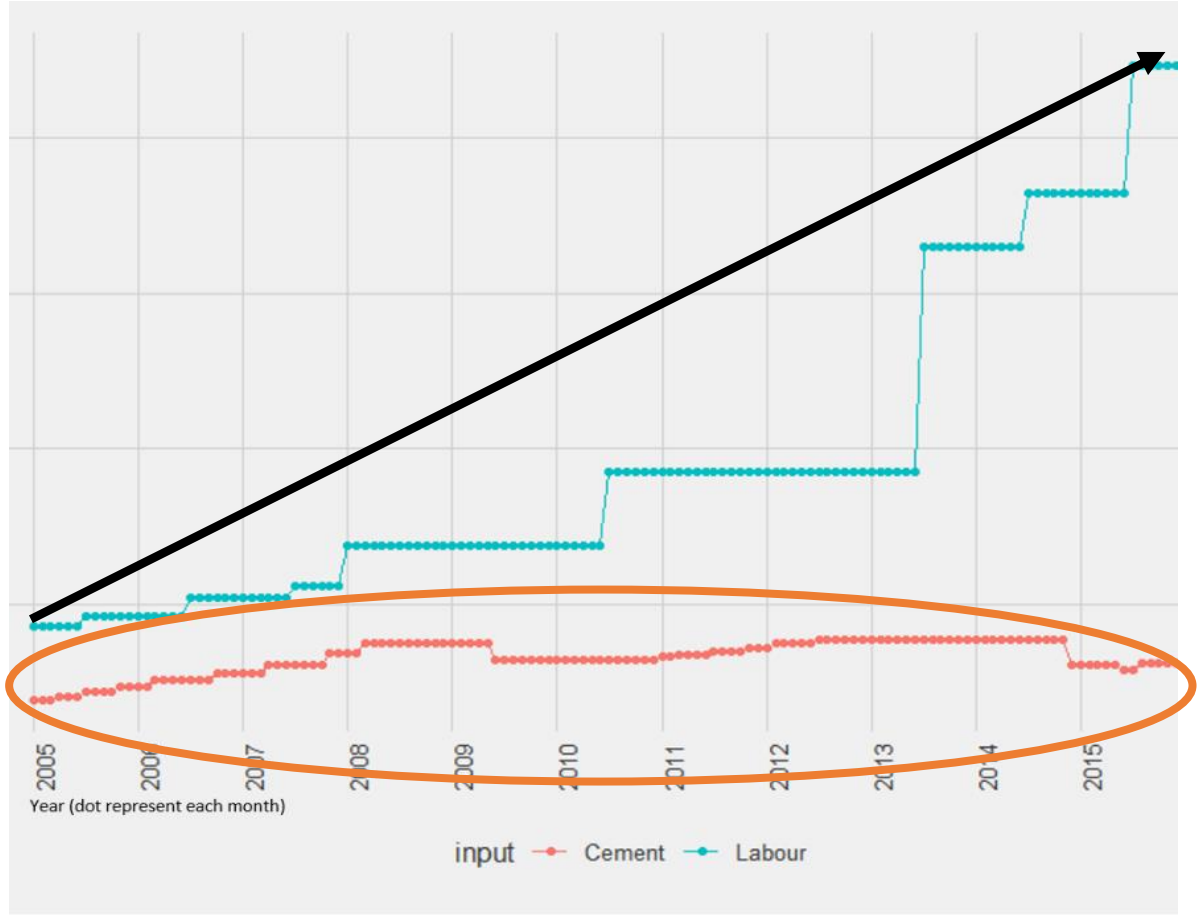
Registered Construction Firms



Some Constraints in Tanzania

- Manufacturing of local construction materials (such as cement) is increasing
  - Price Increases have been moderate
  - Interviews with contractors and clients indicate that quality is a problem.
- Labor costs are rising
  - Bricklayers, welders, electricians and plumbers are complementary to unskilled labor and capital.
  - Most artisans lack formal training.
- Contractors lack the capital to acquire operating equipment and plant.
- Access to land and construction permits delays projects.

Price Indices Cement and Labor



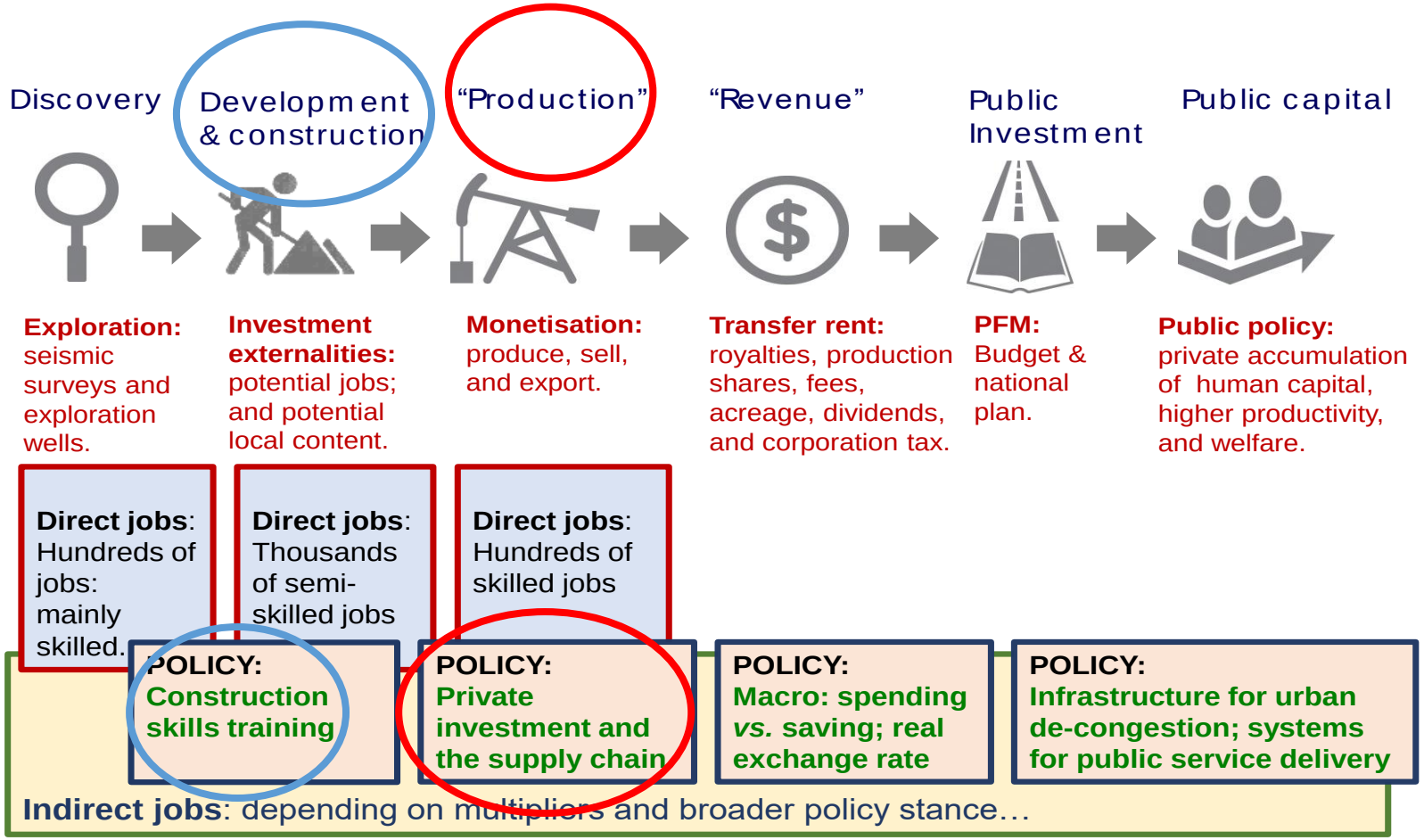
“Investing to Invest”

- 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.
  - 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.
  - “Local content” regulations require resource investors to expand national employment opportunities, procure from local suppliers, open equity to local partners and encourage technology transfer.
  - “Value addition” concentrates on downstream processing of the extracted resource and promotion of related industries.
- Tanzania is undertaking initiatives in both areas.
  - The capacity to create construction jobs has been overlooked.

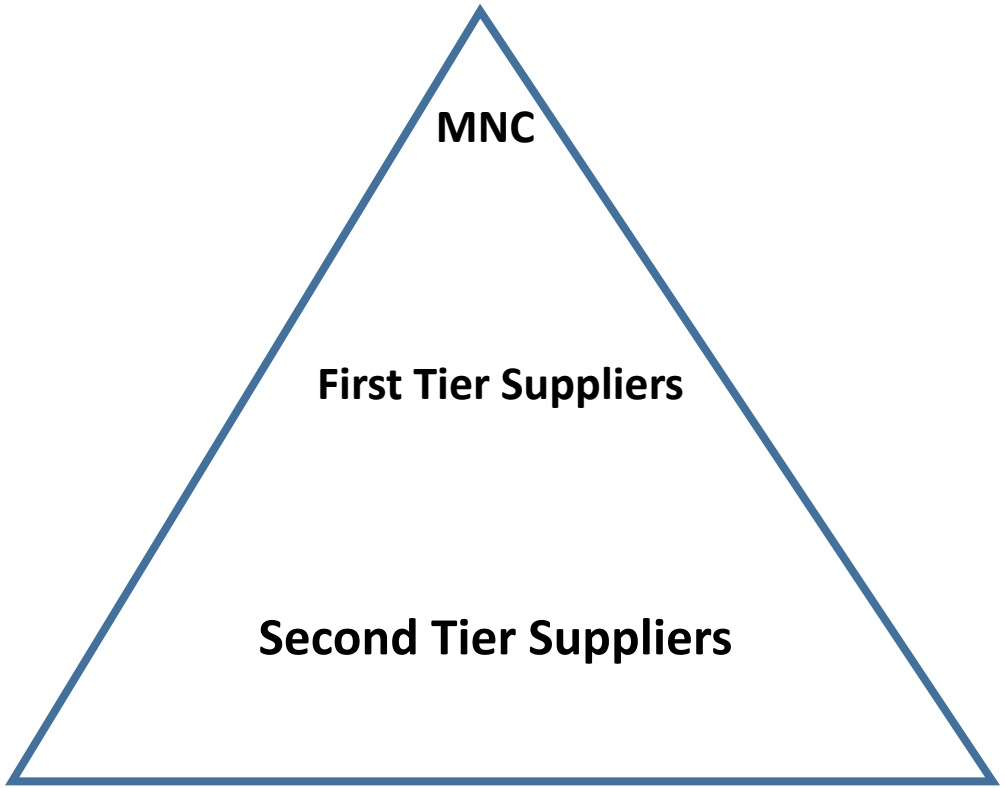
Linking Industry to the Resource: A Framework for Policy



Source: adapted from Henstridge and Rweyemamu, 2016.

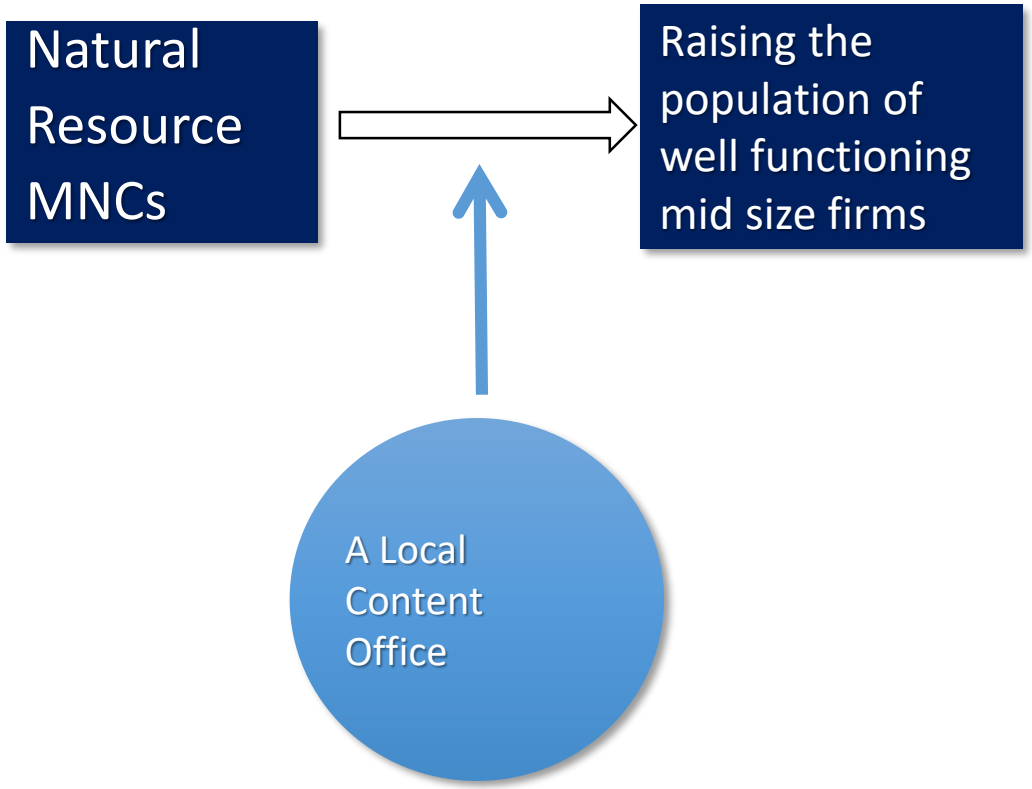
Cracking the MNC Supply Chain

- The supply chains of multinational companies (MNCs) in resource extraction generally have a pyramid structure.
  - A small number of lead subcontractors.
  - 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.
    - 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.
  - 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.
  - 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
  - Strengthening the public financial intuitions needed to manage a modest boom.
  - Developing policies to reduce constraints in the construction sector
  - Building effective institutions to integrate national firms into the resource value chain.