CTA
CONFEDERAÇÃO DAS ASSOCIAÇÕES ECONÓMICAS DE MOÇAMBIQUE

Mozambique's Coming Natural Resource Boom

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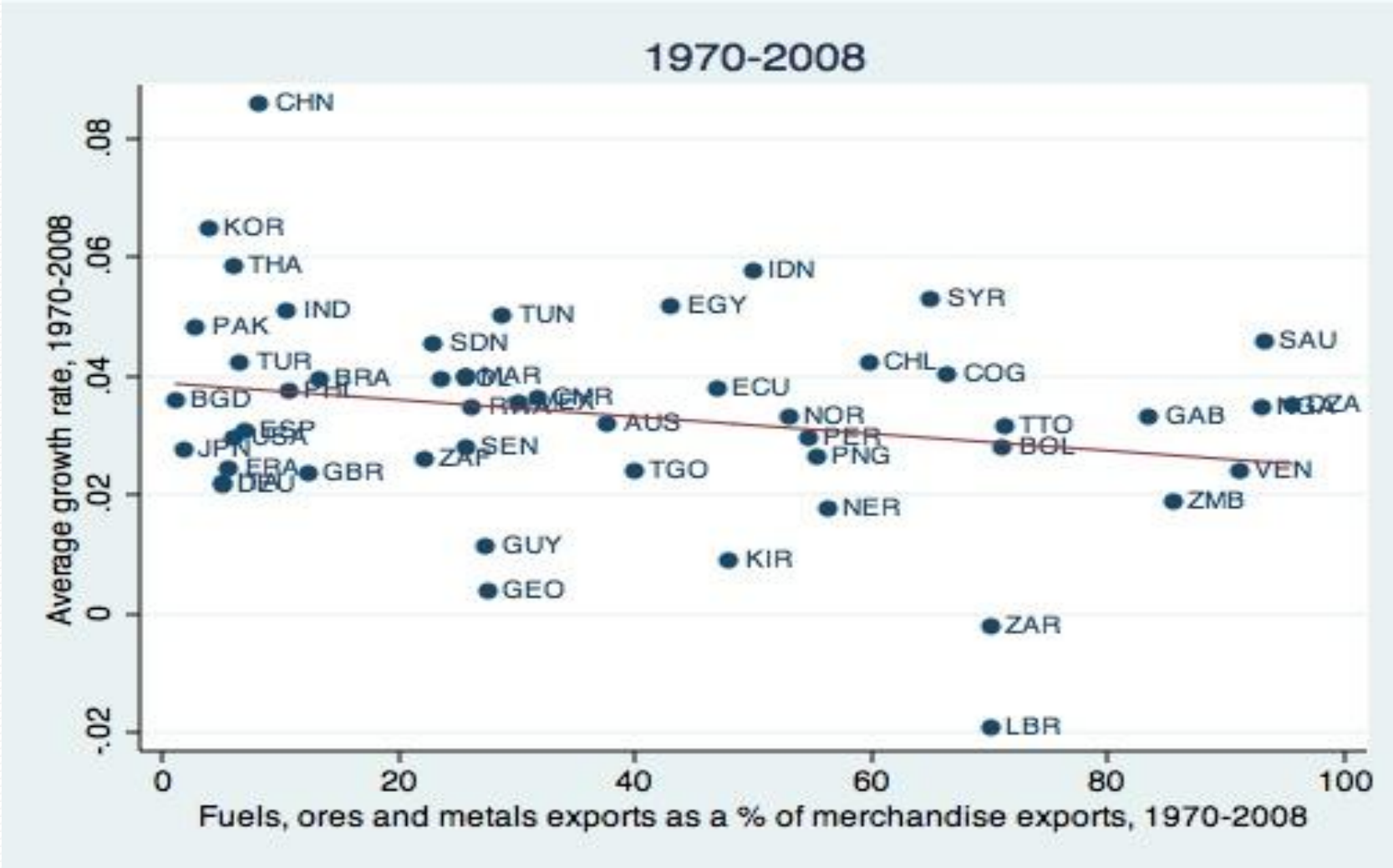
Natural Resource Wealth and Economic Performance



Three Channels of Transmission through which Abundant Resources Can Lead to Poor Economic Performance

- **Volatility**
- **Dutch Disease Effects**
- **Institutions**

Volatility

- World commodity prices are extremely volatile
- Countries with low diversification and large share of resources in GDP therefore suffer large swings in revenues and growth per capita
- High volatility and boom and bust cycles shown to be harmful to economic growth, particularly where financial markets less developed
- Research finds that volatility is the core issue of the "resource curse" problem

Why Is Volatility a Problem for Growth?

- Cyclical shifts of resources (labor, land, equipment) back and forth across economic activities incurs costs (particularly transaction costs)
- Frictional unemployment and incomplete utilization of capital raises costs and reduces productivity
- Volatility in commodity prices and revenues in developing countries often leads to macroeconomic and political instability
  - monetary and fiscal policy tends to be pro-cyclical – expansionary in booms and contracting in busts, adding to extent of volatility
    - ✓ resource riches create incentive to borrow and spend
    - ✓ booms act to undercut political decision-making and create false sense of security, encouraging wasteful investment, increases in government employment and benefits, expansion of welfare programs, etc.
- In addition, there are pro-cyclical private capital inflows as speculators move into local assets.

Dutch Disease Effects

- "Dutch Disease" refers to negative adverse spillover effects of booming resource exports
- Four major Dutch Disease Effects:
  - Large inflows of forex (export revenues and FDI inflows) cause real exchange rate appreciation
  - Windfall revenues cause huge increase in spending (from firm profits, worker incomes, government tax and royalty receipts)
  - Real appreciation and spending effect influence relative prices in economy causing expansionary and contractionary effects in economy
    - ✓ Expansionary – non-tradable prices and output increase
    - ✓ Contractionary – non-resource tradables (manuf., agric, tourism) decline
  - Real appreciation and spending effect create incentives for labor and capital to move into booming sector and non-tradables production

Two important Impacts on the Economy from Dutch Disease

- The decline of non-resource tradables can have adverse effects on future growth
  - Tradables are "special" – crucial for technical change in economy
- Welfare effects on Economy
  - Firms and workers in booming sector gain (higher profits and incomes)
  - Government benefits from higher taxes and dividends
  - Producers of non-tradable goods and services gain
  - Primary losers will be producers of non-resource tradables (including import-competing activities)
- There will be losers and this is a big part of the Dutch Disease problem

Institutions

- Resource dependence found to have significant influence on quality of institutions and this is major channel through which resource curse affects growth
  - Booming revenues can worsen governance resulting in corruption and policy mismanagement undermining growth
- Conversely, effects of resource boom on economy (macroeconomic stability and growth) are moderated by quality of institutions
  - Countries with strong institutions at start of boom shown to do much better, turning possible curse into blessing. Countries with weak institutions shown to so worse.
- "Point-source resources" (oil, gas, minerals, diamonds) found to have the most negative effects on institutions because of central command of resource revenues by government

Mozambique's vulnerabilities to Adverse Effects of The Coming Resource Boom

- Expectations Regarding the Extent of the Coming Boom and Impact on the Economy
- Boom-Related Vulnerabilities
  - Volatility
  - Sensitivity of the Exchange Rate to Fluctuations in Commodity Prices and Capital Inflows
  - Quality of Institutions
  - Absorptive Capacity and Non-tradable Prices

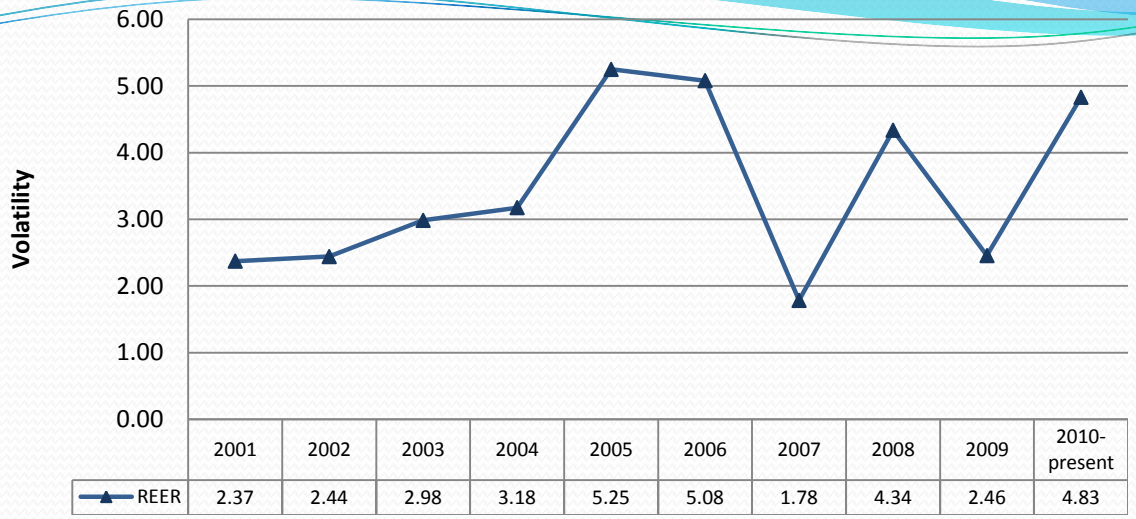
Expected Extent of the Boom and Economic Impact

- Early estimates (2003-10) of mega-project's contribution to GDP and living standards (Mozal, Sasol, Moma, Electricity)
  - 13 % per year to GDP(at factor cost) depending on year; up to 4 % points to growth; effect on living standards low
- More recent IMF estimates assuming 50% rise in Sasol; start of coal production Vale and Rio Tinto, full capacity by reached by 2020
  - Boost to mega-project share in GDP to 18-20 % by about 2016 to 2020
- Projections with new Anadarko and ENI gas discoveries
  - Assuming value of discoveries $400b over 4 decades, exports of $10b per year, extraction companies take 50% share, Mozambique's revenues roughly $5b. Mega-projects add another 20% to IMF projected GDP in year 2020
- So mega-projects by around 2020 roughly 40 to 50% of GDP plus capital inflows

Boom-Related Vulnerabilities: Volatility

- Mozambique primed to experience adverse effects of commodity price shocks
  - Small economy, production and exports concentrated in commodities
  - Less developed financial market (few instruments to hedge)
  - Monetary and fiscal policy likely to be pro-cyclical amplifying price swings
- Data show Mozambique already experiences high volatility in key economic variables
  - Striking feature of real exchange rate has been persistent volatility (see next slide)
  - High exchange rate volatility can reduce investment, productivity, and growth and have negative effects on tradables

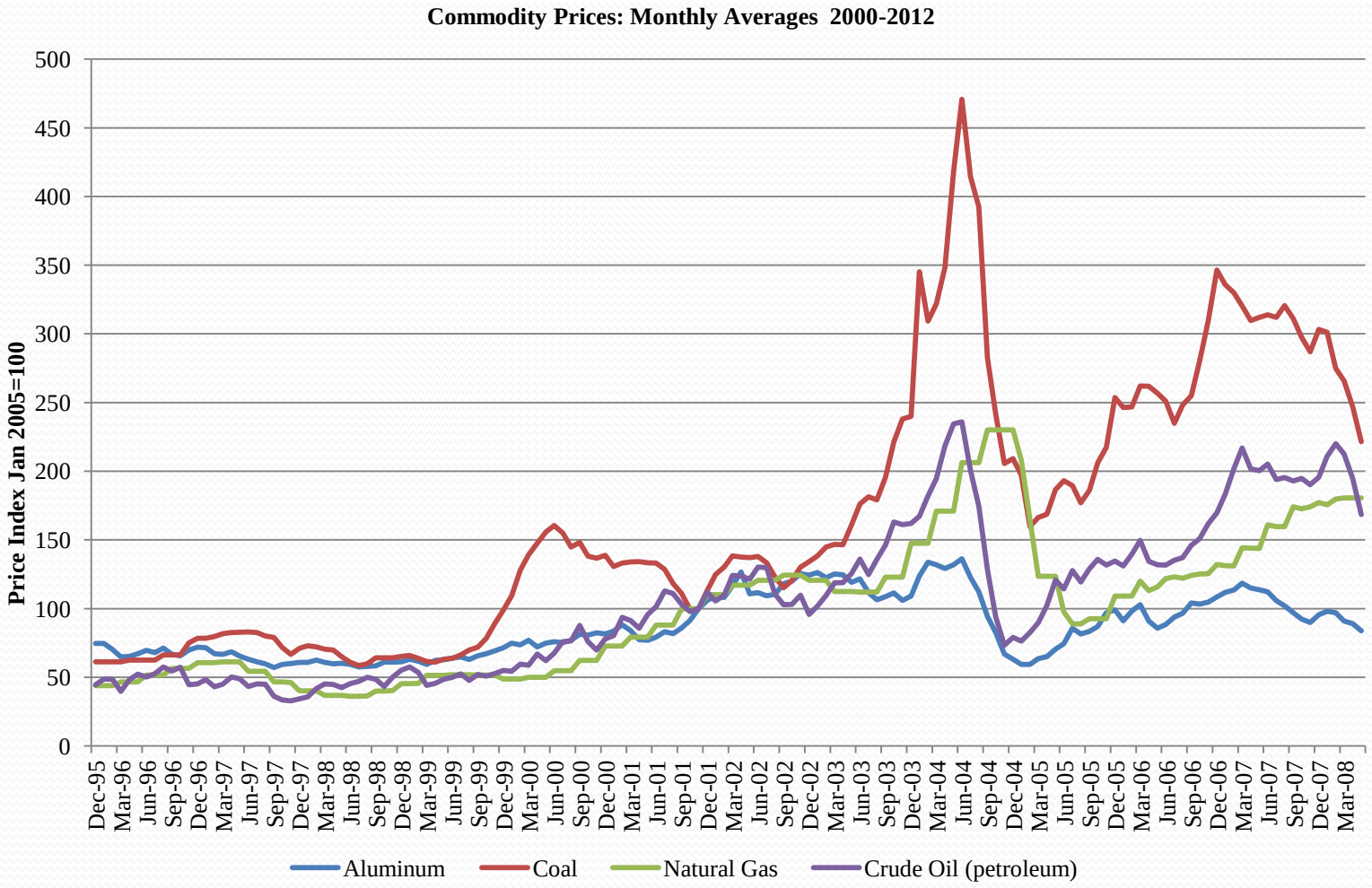
FIGURE 2: VOLATILITY OF REAL EFFECTIVE EXCHANGE RATE



Year	REER (std. dev. first diff of logs)
2001	2.37
2002	2.44
2003	2.98
2004	3.18
2005	5.25
2006	5.08
2007	1.78
2008	4.34
2009	2.46
2010-present	4.83

Period	REER (std. dev. first diff of logs)
2001-2003	2.55
2004-2006	4.65
2007-2009	3.65
2010-Present	4.83

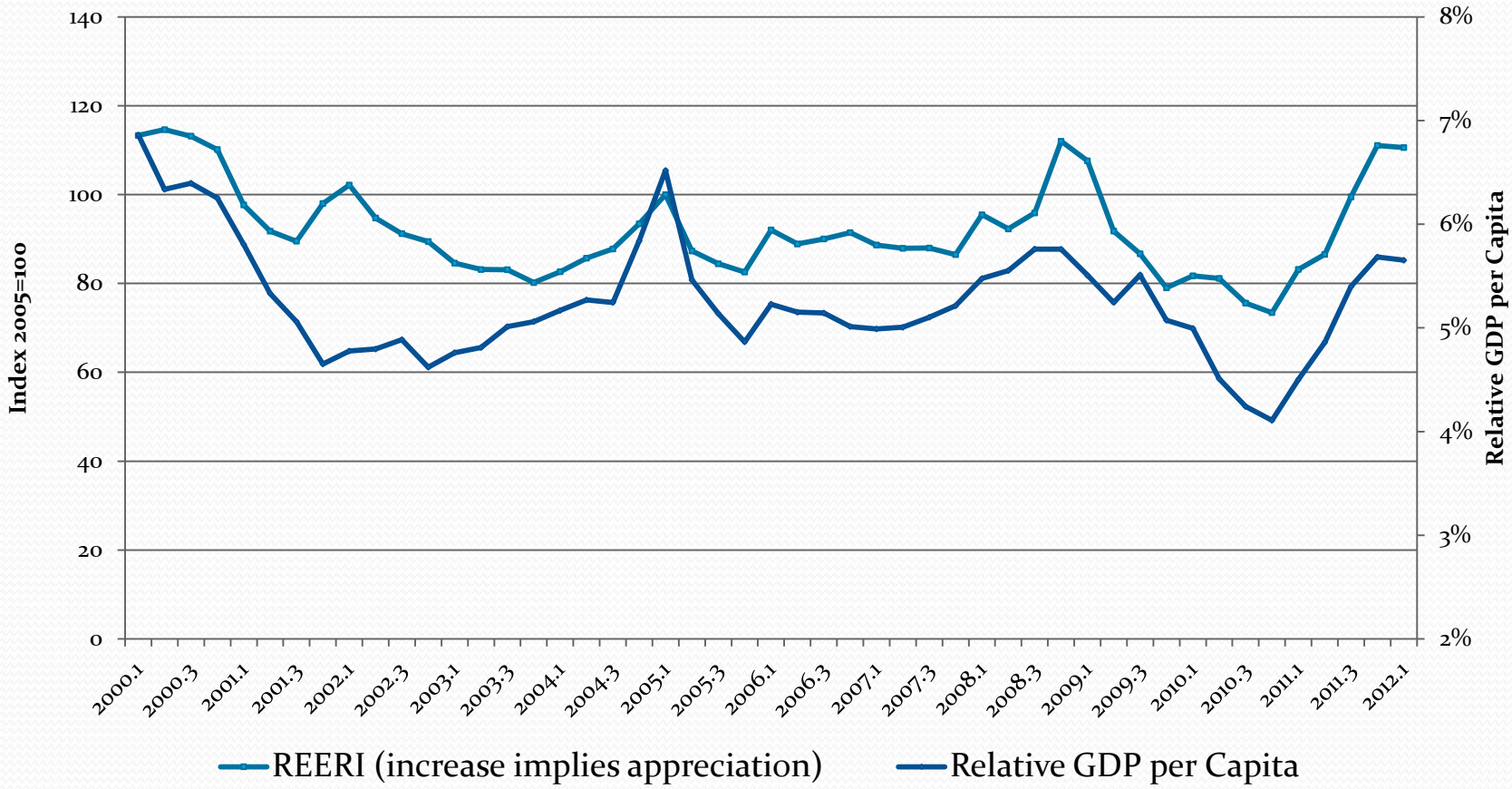
Risks of volatility-related effects apt to grow larger as export basket shifts from aluminum towards coal and natural gas.



SENSITIVITY OF REAL EXCHANGE RATE TO COMMODITY PRICE AND SUPPLY –SIDE AND DEMAND-SIDE SHOCKS

- Key adverse effect of a resource boom is real appreciation of the exchange rate
- What are the major determinants of long-run movements of metical exchange rate?
  - Is metical a "commodity currency" like the currencies of some other commodity exporters – appreciates when prices of export commodities rise and depreciates when they fall?
  - How responsive is metical to supply-side shocks, such as changes in productivity differentials verses trading partners?
  - How sensitive is metical to inflows of capital, such as FDI and AID?
- **Finding**: metical is a "commodity currency"; real world-price of aluminum has significant and stable effect on real exchange rate – a 10 percent increase in real commodity price results in a 1.7% real appreciation in the metical
  - Underscores fact that key vulnerability in coming resource boom is sensitivity of metical to commodity price fluctuations
- **Finding**: supply-side shocks like changes in productivity differentials are key determinants of long-run real exchange rate movements.
- **Finding**: capital flows play significant role in determining movements in exchange rate; influence negative, as capital flows associated with large leakages (imports, profit remittances) and intervention by BOM

Real Exchange Rate and Relative GDP per Capita



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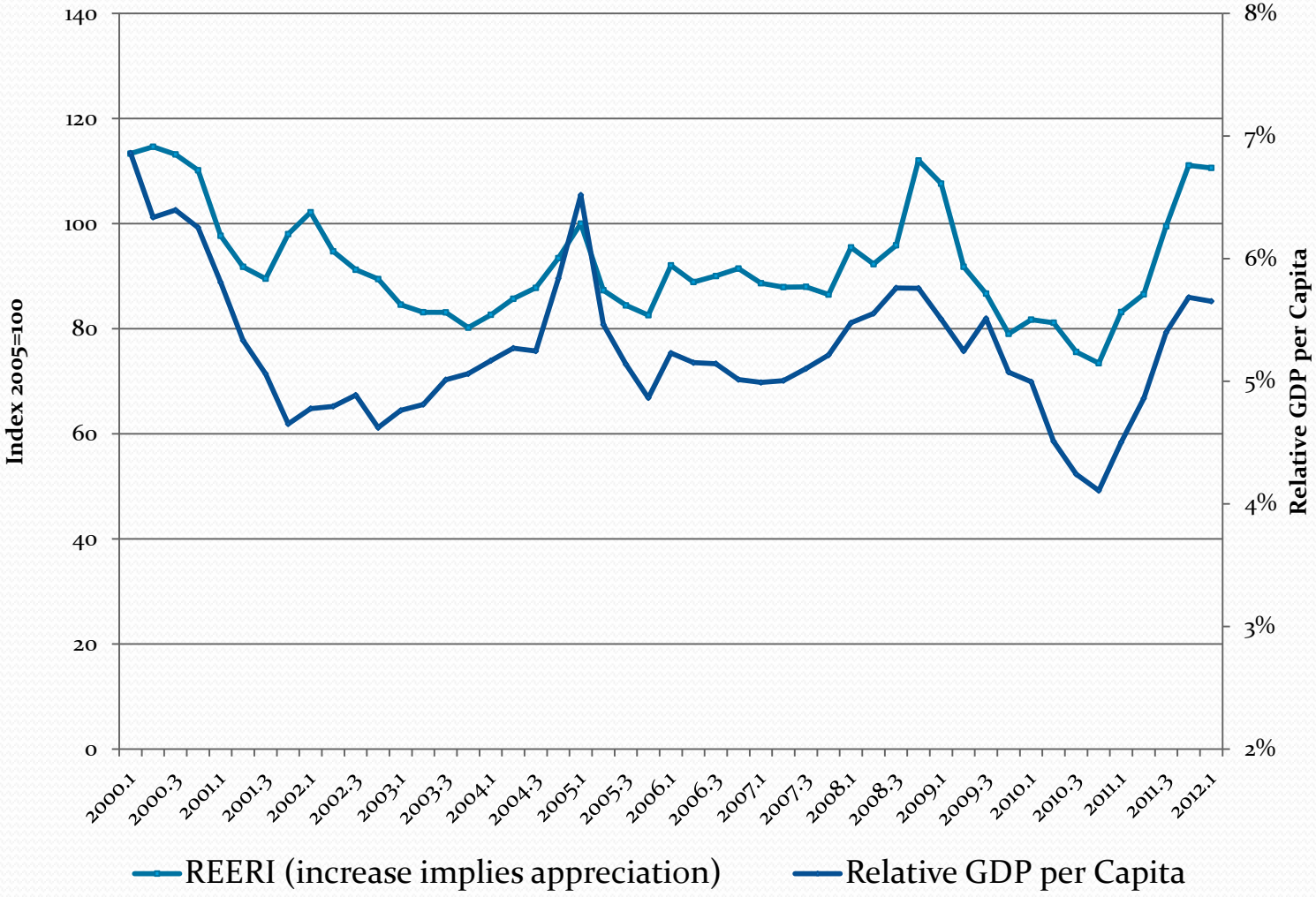

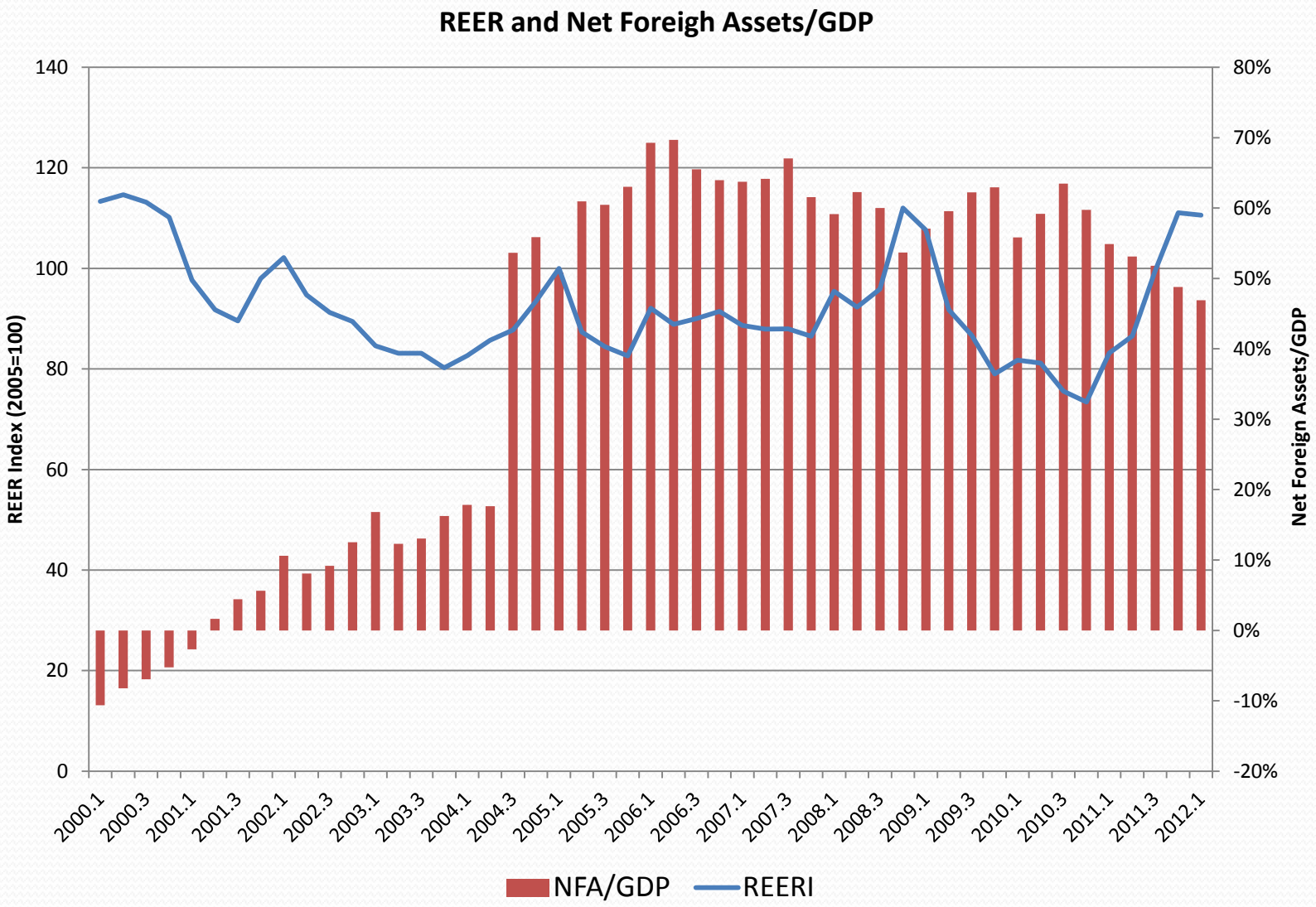
REER and Net Foreigh Assets/GDP
REER Index (2005=100)
Net Foreign Assets/GDP
140
120
100
80
60
40
20
0
80%
70%
60%
50%
40%
30%
20%
10%
0%
-10%
-20%
2000.1
2000.3
2001.1
2001.3
2002.1
2002.3
2003.1
2003.3
2004.1
2004.3
2005.1
2005.3
2006.1
2006.3
2007.1
2007.3
2008.1
2008.3
2009.1
2009.3
2010.1
2010.3
2011.1
2011.3
2012.1
NFA/GDP
REERI

Quality of Institutions

- Significant vulnerability is quality of institutions; outlook for low-income countries with weak institutions before resource windfall is particularly worrying
- World Bank's Governance Indicators for Mozambique 1996-2010
  - Scores poor in government effectiveness, corruption, and rule of law and they have not improved much over years
  - areas of relative strength observed in voice and accountability and political stability – large improvement over period
- Fact that government effectiveness, corruption, and rule of law continue to be weakest areas is worrying because all research shows that "point-source" resource exports are problem for countries lacking strong institutional capability.
- Government adoption of Extractive Industry Transparency Initiative is a positive sign for future

Absorptive Capacity and Non-tradable prices

- Vulnerabilities, plus market imperfections, embryonic financial markets, scarce skilled labor, inadequate infrastructure reduce Mozambique's absorptive capacity
- Ability to absorb large resource windfall extremely limited in short to medium-run; spending (investment or consumption) will quickly run into bottlenecks, reducing the value of spending
- Basic problem: steep supply curves, particularly for non-tradable goods and factors, cause spending to result in higher prices, including real exchange rate appreciation
- Steep supply curves caused by (a) critical shortages in "home-grown" capital (skills, infrastructure) for production of non-tradables (b) inefficiencies and constraints in the business environment

Absorptive Capacity cont'd

- Overcoming bottlenecks and building the economy's absorptive capacity will take time.
- Bottlenecks can be avoided by importing
  - But not all necessary human and physical capital can be imported (some has to be "home-grown"), and importing everything not politically feasible or good for long-run development in Mozambique
- Absorption constraints already beginning to show up in rising prices of non-tradables, particularly in urban centers (e.g., real estate, skilled labor)

Policy Options for Managing the Coming Resource Boom

- Overarching constraints to policy formulation:
  - Revenues result from depleting finite stock of resources, so temporary.
  - Revenues highly uncertain, as commodity prices highly volatile.
  - Low-income, capital-scarce country needs to raise consumption to reduce poverty and increase investment in public goods (education, infrastructure, etc.) to grow faster
  - Current capacity to rapidly absorb windfall revenues quite limited; investment process in country not capable of delivering high returns on very large volumes of investment
  - Capacities associated with effective governance and economic management are still weak
- Constraints mean (a) policies for managing revenues constrained by absorptive capacity (b) adverse effects of boom likely to be stronger; so policy must also address volatility and Dutch Disease directly

Policy Options for Managing the Boom cont'd

- Top priority of revenue management: raise domestic investment, both public and private, to increase growth and, boost consumption
- Implementing priority involves complications – low absorptive capacity severely constrains potential investment returns
- Until investment capacity improved, no other practical option than buy time by accumulating resources in a Sovereign Wealth Fund (SWF) or broader Natural Resource Fund (NRF)
  - Form of national savings, ensures gains partially shared with future generations
  - Important not to allow overseas operations of Fund to delay improvements in the absorptive capacity
  - safeguards needed to ensure Fund not raided by politicians – ultimate safeguard is transparency (The Extractive Industry Transparency Initiative)
- Government's role in raising investment must also involve policies to stimulate more private sector investment (e.g. improve investment environment)

Policy Options for Managing the Boom cont'd

- Second important priority: allocate fraction of revenues directly to citizens
  - Important to raise consumption straight away to address poverty
  - Increment to incomes would finance some private sector investments
  - Direct distribution would reduce risk of public misuse of resources and establish principle that resources belong to all the citizens
- Given volatility of revenues, consumption should be raised slowly to avoid future costly roll-backs
- Implementing direct transfers to citizens not easy, would take some time
  - No system of citizen registration and everyone not in the tax system
  - Given no infrastructure set up for direct distributions, program running through central, district, municipal governments will incur "leakages," but not impossible task – done in other countries
  - Most efficient approach use new technologies, e.g., biometric identification, smartcards and electronic payments into mobile bank accounts, etc.

Policy Options for Managing the Boom cont'd

- Dealing with potential adverse effects of boom: (a) coping with volatility (b) moderating Dutch Disease
- Coping with long-run volatility of resource depletion – make high-return investments in domestic assets to increase future incomes; save portion of revenues (SWF, NRF) for future generations
- Coping with short-run volatility of commodity price fluctuations
  - Index contracts with international companies based on future market conditions with agreement to share gains and loses in some proportion
  - Stabilize consumption and allow investment rate to fluctuate

Policy Options for Managing the Boom cont'd

- Moderating Dutch Disease – best option is SWF or NRF
  - Reduces spending effects in economy and generates capital exports
  - Special kind of exchange rate protection policy; benefits firms in lagging, non-resource tradable sectors in a uniform way, not selectively
- Another way to protect exchange rate: accumulating reserves via foreign exchange intervention by BOM
  - But some difficulties with increasing reserves, once BOM has enough (judged by precautionary and monetary criteria); costly as a long-run strategy
- Final option to moderate Dutch Disease is selective protection (e.g., subsidies, tax breaks, tariffs); much less desirable than first-best policy of exchange rate protection
  - Selective, uneven protection can be inefficient and generate rent-seeking

Policy Options for Managing the Boom cont'd

Welfare Effects of Interventions to Moderate Dutch Disease

- First, there will be **Losers** (e.g., firms benefiting from more capital investment in Mozambique rather than abroad); and **winners** (e.g., firms in non-resource tradable sector); so redistribution of income in economy
- Second, intervention imposes costs in form of potential underinvestment in Mozambique – if revenues go to lower-return foreign investment (via SWF) over higher-return investment in Mozambique, then intervention results in a "cost of protection"
- Policy argument this study: "cost of protection" imposed by allocating revenues to SWF or NRF, today, low, given low absorptive capacity; cost will rise as capacity improves; revenues should thus be allocated over time to raising the domestic investment rate.