

Fiscal Affairs Department

DESIGN AND EVALUATION OF FISCAL REGIMES FOR EXTRACTIVE INDUSTRIES: AN IMF PERSPECTIVE



Fiscal Affairs Department

USGS National Minerals Information Center

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Focus of presentation

- Guiding principles for extractive industries taxation
- The IMF's Fiscal Analysis of Resource Industry (FARI) methodology
- Overview of fiscal regimes in selected countries
- Reflecting IMF policy advice and capacity building in developing countries

GUIDING PRINCIPLES FOR EXTRACTIVE INDUSTRIES TAXATION



Defining the fiscal regime

- The combined system of tax and non-tax instruments used to raise government revenue from extraction activity.
- It includes not only conventional instruments such as royalty and corporate income tax, but also resource rent taxes and production sharing.
- It can include state equity participation which have fiscal effect on the revenue sharing even where held by a commercially operating state owned enterprise.

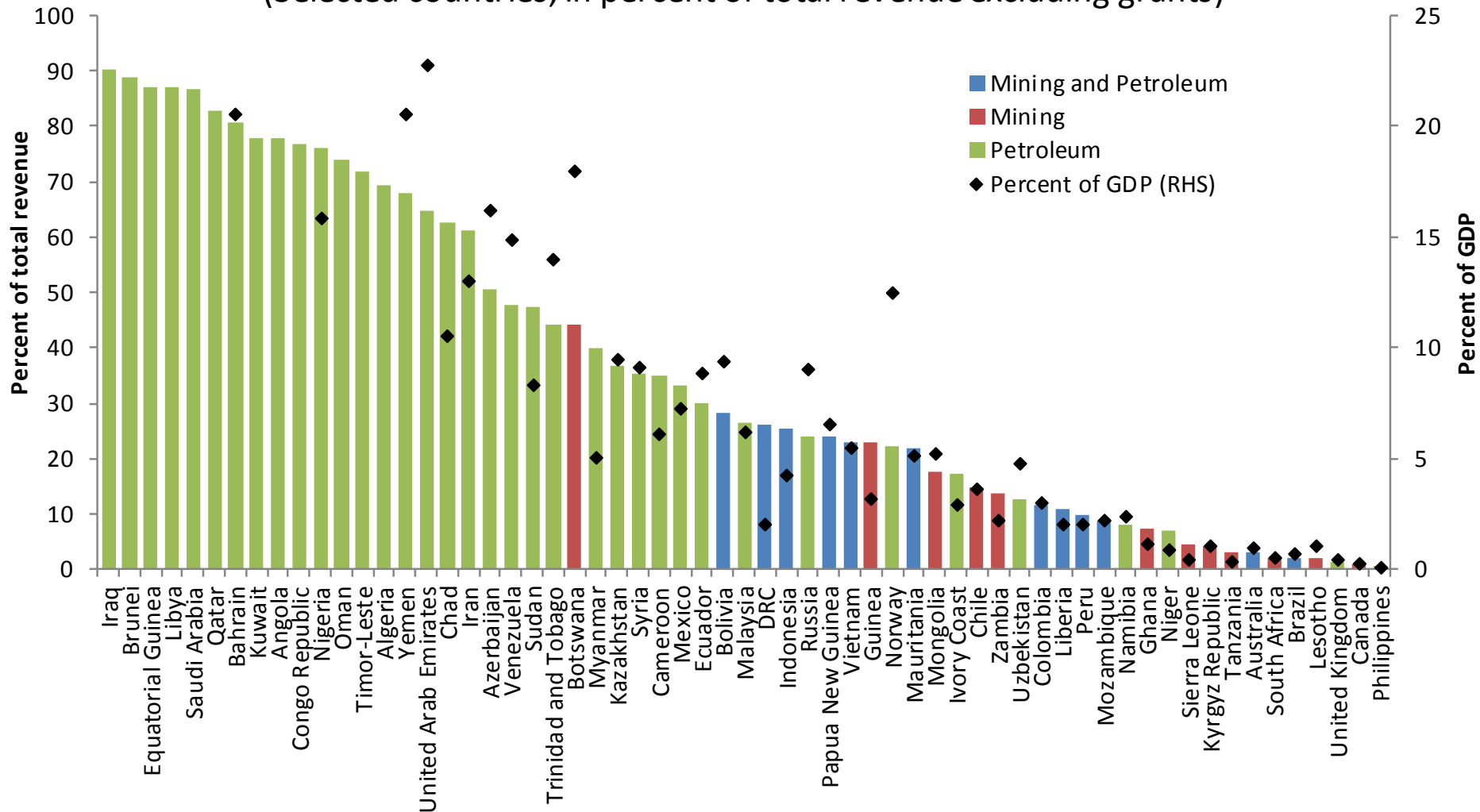


Take account of sector characteristics

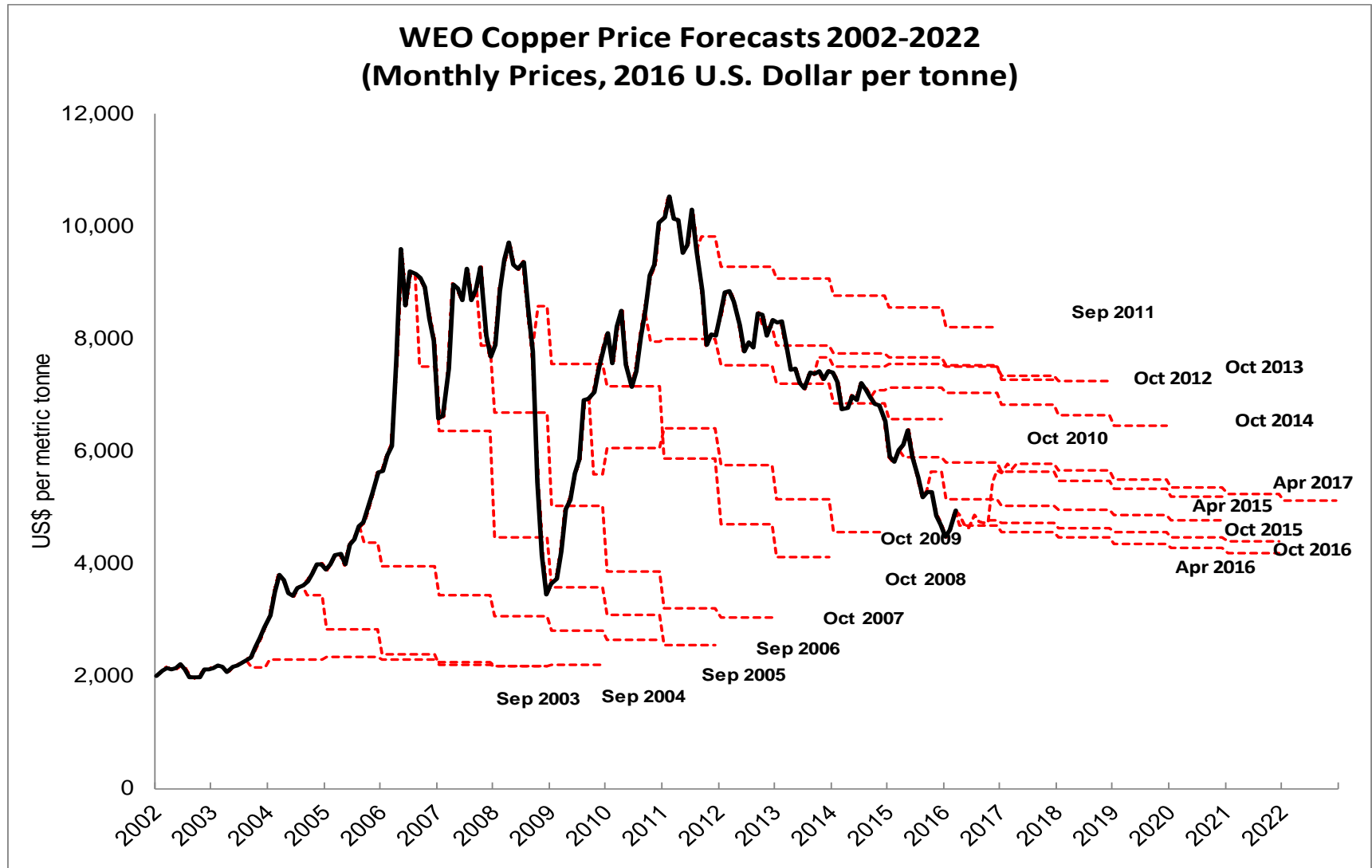
- Key revenue source for many countries
- Large upfront capital investment, and long production periods
- Pervasive uncertainty
- Potential for substantial (economic) rents
- Asymmetric information
- Extensive involvement of multinationals in some countries... and of state-owned enterprises in others
- Non-renewable resources (exhaustibility is unique)

Key source of revenue for many developing countries

Government Receipts from Natural Resources, averages 2000-2014
(Selected countries, in percent of total revenue excluding grants)

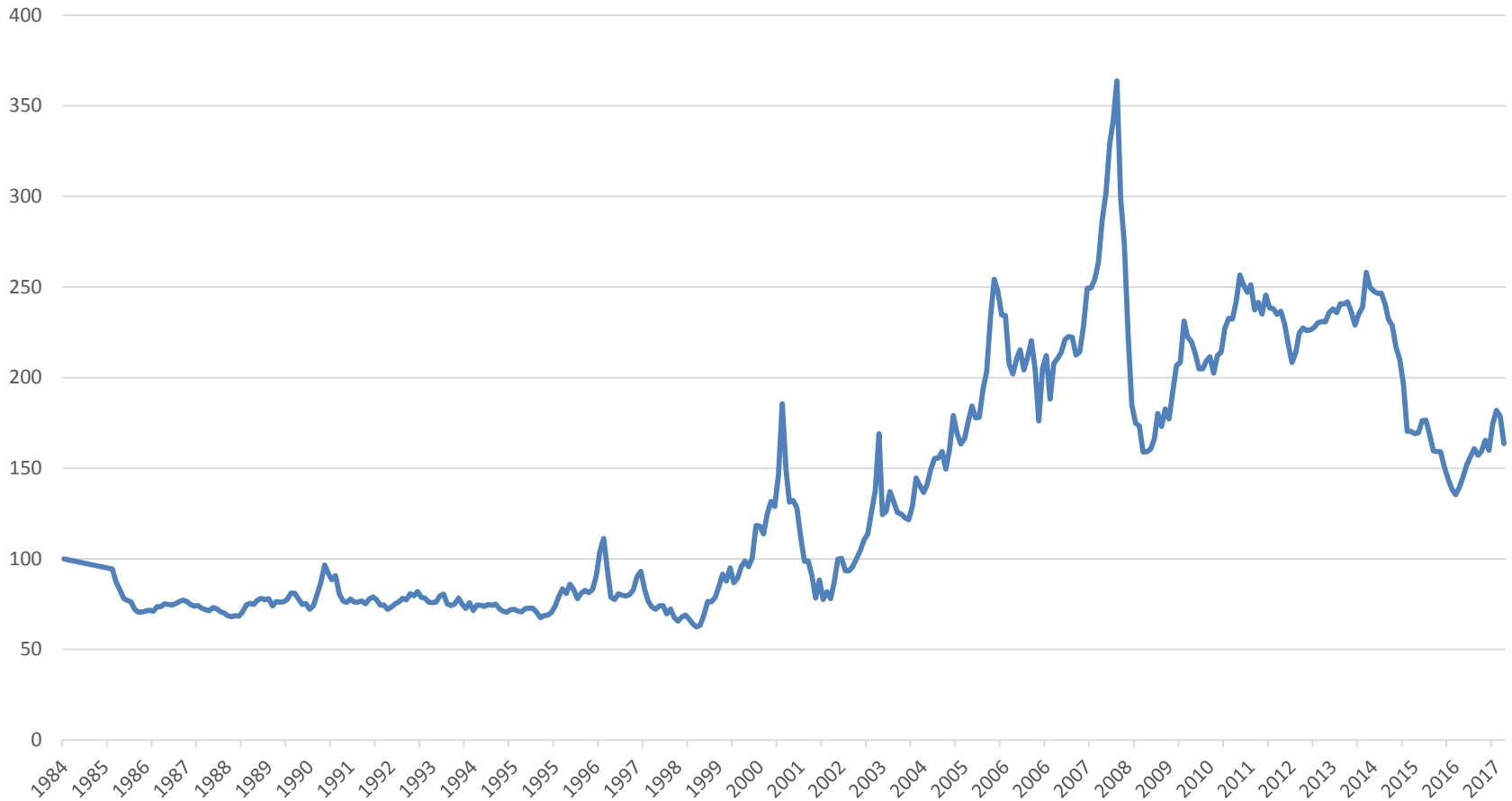


Pervasive uncertainty... in prices



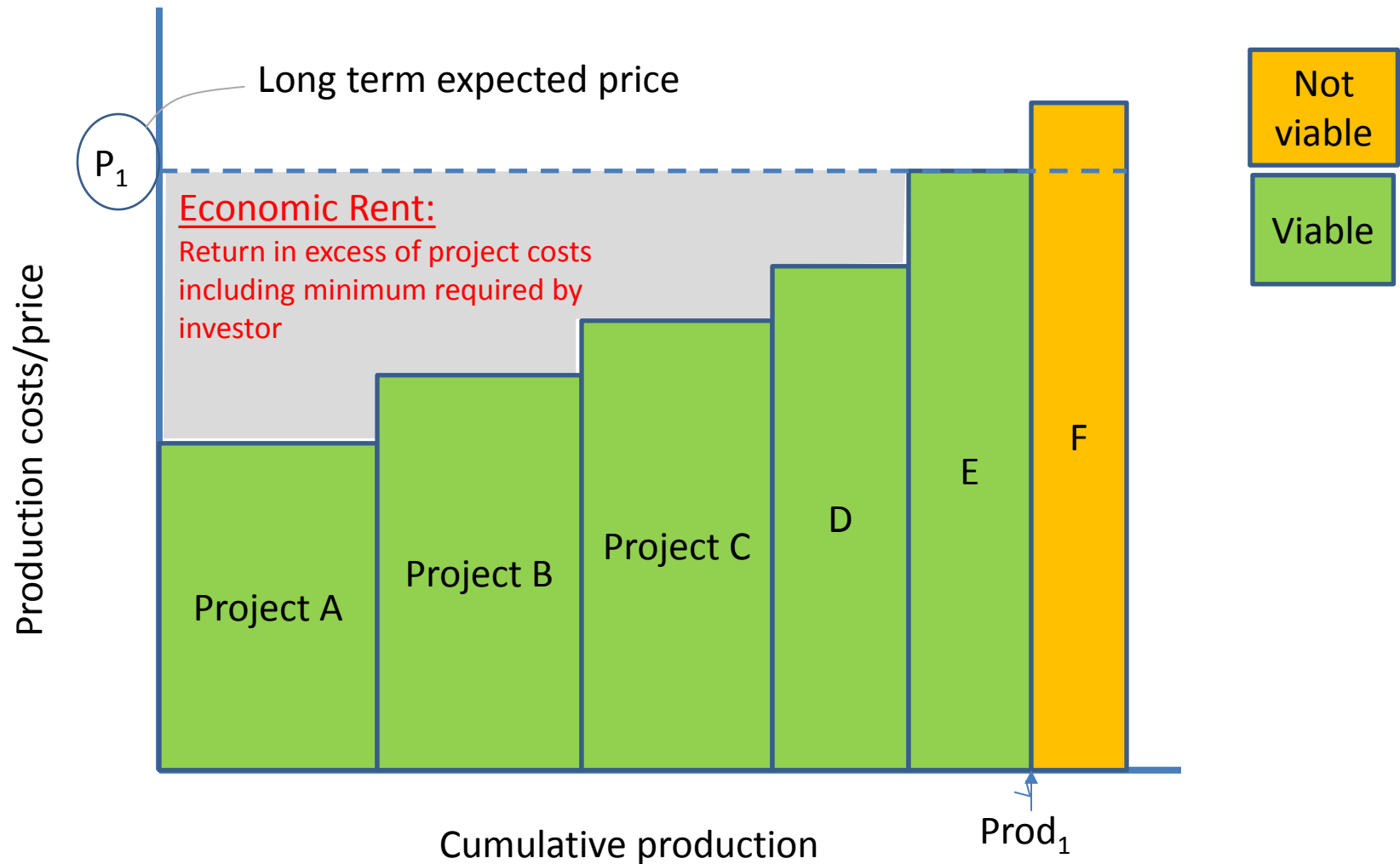
... and costs

Producer Price Index: Total Mining Industries, 1984=100



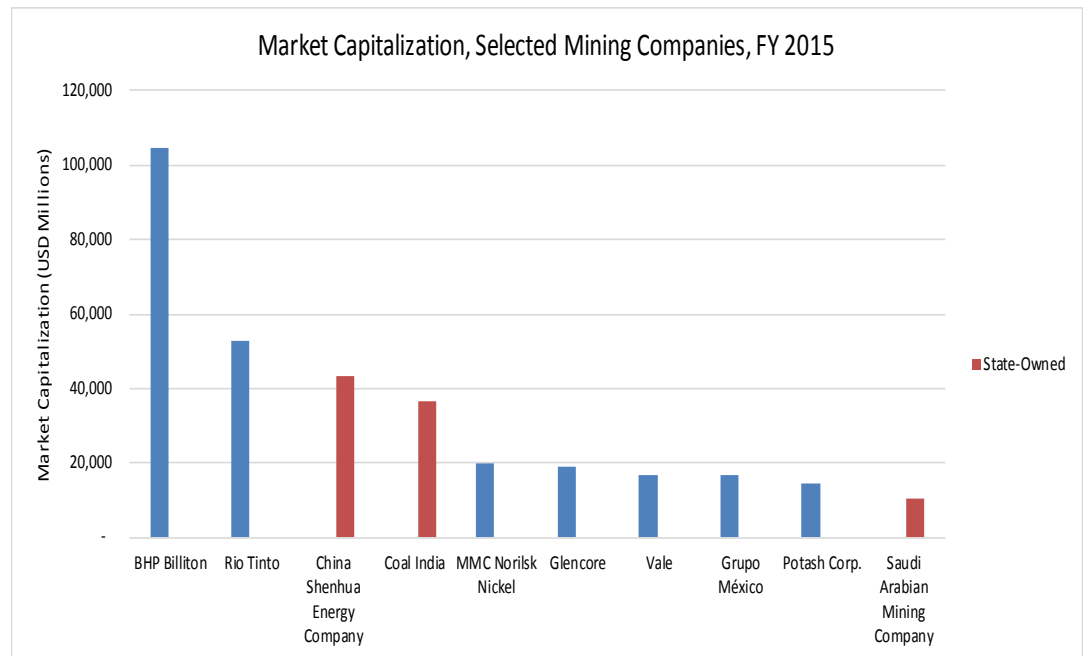
Source: Federal Reserve Bank of St. Louis

... but potentially high economic rents



Extensive involvement of multinationals and state-owned companies...

- Top 40 split between traditional and emerging market companies
- In 2016 three of the 10 largest mining companies were state-owned
- Other significant state-owned companies, such as Chile's Codelco, which is the largest copper producer in the world.



So what should fiscal regimes aim at?

- Avoid deterring the investment!
- Maximize present value of government revenues...
- ...combined with early and dependable revenue
- Improve adaptability (although higher progressivity means more risk)
- Provide ease of administration (for authorities) and compliance (for taxpayers)

Three main fiscal schemes (sometimes blended)...

1. **Contractual**, including production sharing or service contracts
2. **Tax and royalty**, with licensing of areas
3. **State ownership or participation**



A wide range of possible instruments

- **Bonuses** (with bidding)
 - Rare in mining but sometimes used in mature jurisdictions
- **Royalties**
 - Distort extraction (and, hence, exploration) decisions
 - Can be used in principle to influence extraction path
 - Revenue from start of production
- **Corporate income tax**
 - Tax the normal return on equity
 - Ring-fencing rules
 - International tax issues (Double tax treaties, withholding taxes)




A wide range of possible instruments (2)

- **Rent taxes**
 - Non-distorting in principle...
 - ...but usually combined with distortive taxes
 - Many forms, with different timing of receipts
- **Production sharing (mostly used in petroleum)**
 - Various mechanisms are available
 - Can secure revenue from start of production, and could be designed to increase revenue as profitability increases
- **State participation**
 - Can help resolve asymmetric information
 - But potential governance issues and fiscal costs

What is adopted in practice?

- Fiscal regimes vary greatly among countries (results from 2012 survey)

Fiscal Instrument	No. of mining countries (out of 25)	No. of petroleum countries (out of 67)
Signature bonus	1	16
Production bonus	None	10
Royalties	25	50
Resource rent taxes	5	9
Additional income taxes	4	3
Production sharing	None	34
State participation	5	27
Social investments/infrastructure	1	6



So what would be an attractive fiscal framework?

Country circumstances require tailored advice, but generally within a framework that combines:

- **A royalty on gross revenue**
- **A tax targeted explicitly on rents** (and thus on the achieved results of extraction)
- Together with **normal corporate income tax**
- **Bonus-bidding** may have a role in mature or promising environments

FISCAL ANALYSIS OF RESOURCE INDUSTRIES (FARI) METHODOLOGY

FARI Main Uses

- 1. Fiscal regime design and evaluation (our focus today)**
 - Can be used to evaluate fiscal terms, assess bids in a competing round, or perform sensitivity analysis
- 2. Revenue forecasting**
 - Composition and timing of expected revenue streams
 - Revenue management and calibration of fiscal rules
 - Integration of forecasts into macro framework
- 3. Revenue administration**
 - Comparing actual, realized revenues with model results (tax gap analysis, risk assessment)

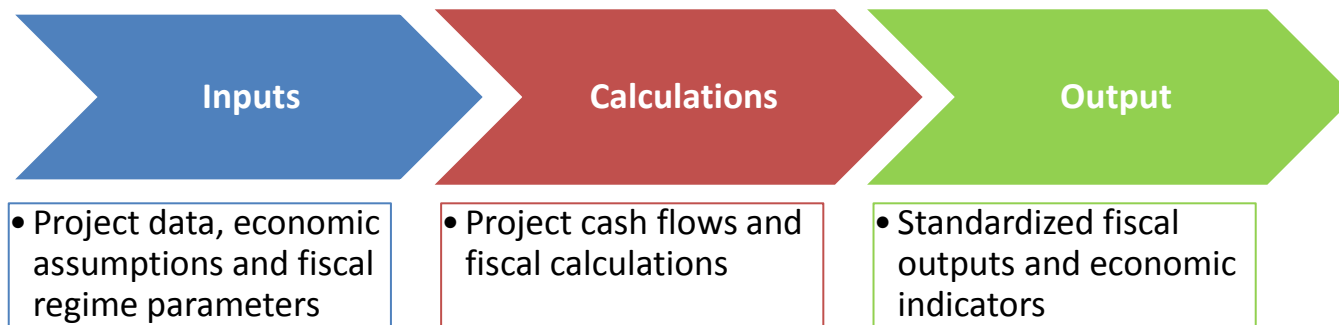


Design Principles

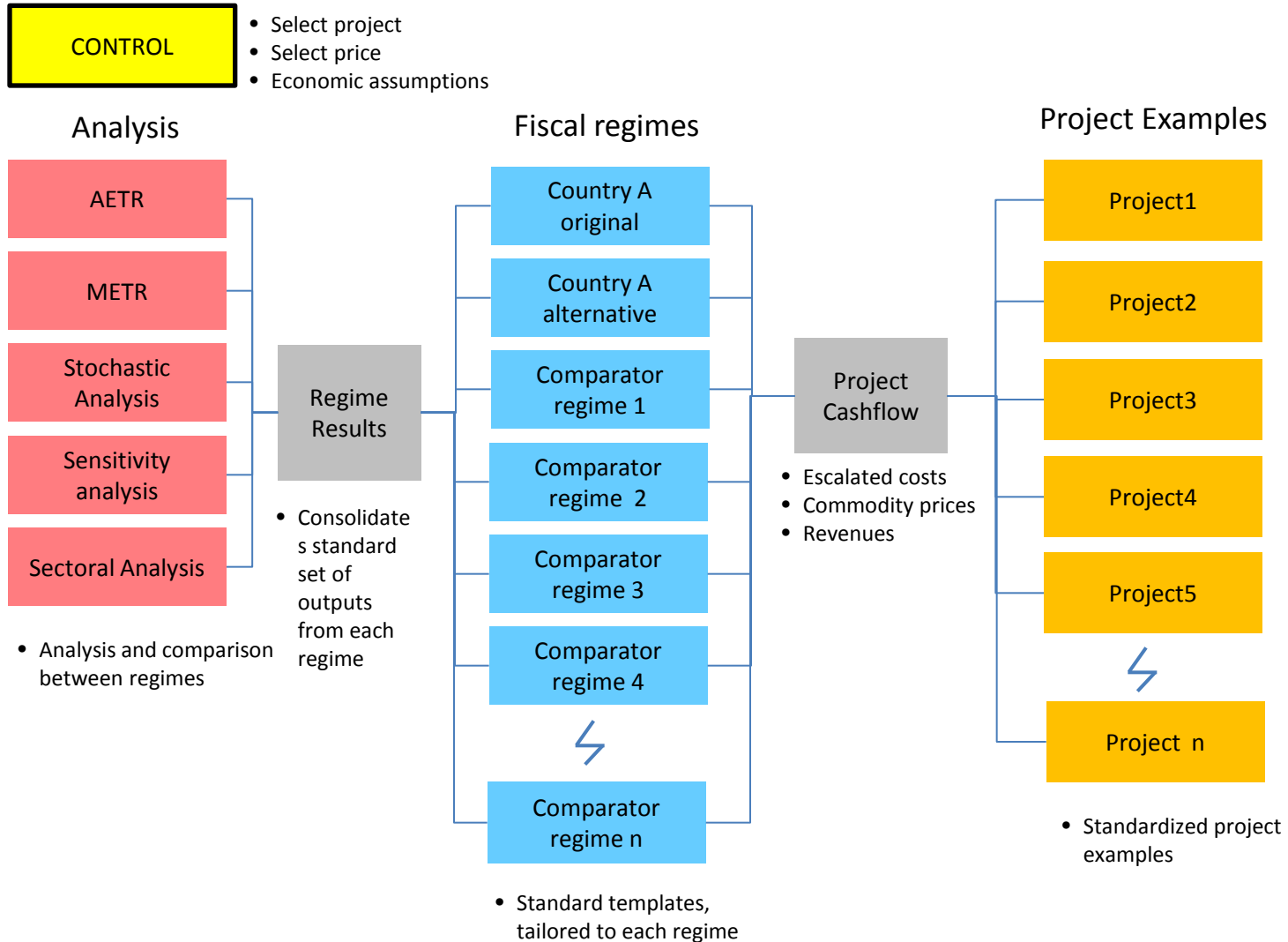
- Excel based, discounted cash flow model structure
- Simple framework that can be easily picked up by analysts with limited experience on natural resource taxation
- Flexible approach to handle diversity in fiscal regimes
- Standard suite of analytical routines and outputs

Project-specific modeling approach

- The interaction of different fiscal instruments is complex and its effects varies from project to project
 - Limited insight from headline tax rates and fiscal parameters
 - For example, appropriate treatment of depreciation, loss carry forwards, and ring-fencing is important
- Thus, modeling should be project specific:



Model Structure





Indicators commonly used in FARI

Average Effective Tax Rate

- Government revenues as a share of pre-tax net cash flow
- Cumulative over project life at various discount rates

Marginal Effective Tax Rate

- The tax wedge for a marginal project which just reaches the hurdle rate post-tax

Share of Total Benefits

- Government revenues as a share of revenue minus operating cost (quasi-rents)
- Cash flows available to meet investment, return on investment, and taxes

Breakeven Price

- Price required to achieve a minimum post-tax IRR required by the investor

BRIEF OVERVIEW OF MINING FISCAL REGIMES IN SELECTED COUNTRIES

Mix of established, small and potential gold producers with different regimes

- Established producers, such as Australia (Western Australia), Ghana, South Africa, and Canada (Ontario)
- And other small and potential producers such as Chile, Brazil, Mongolia, PNG, Liberia, and Zambia
- The fiscal regimes of these countries include a wide range of instruments, such a different type of royalties, CIT, additional profit taxes, and state participation.



Royalties: different variations

- Most countries in the sample have fixed rate royalties levied on the value of production...
- However, **Ontario** levies its royalties on net profits with the rate varying on the location of the mine;
- **PNG** royalty base is the net-smelter return or the FOB export value; and
- **South Africa's** royalty rates vary as a function of the ratio of EBIT to gross sales and whether the mineral has been refined.



CIT also follows different forms

- Most countries have a fixed rate CIT (some are a combination of national and state/provincial CITs) ranging from 24% to 42%...
- **Chile** offers a higher rate for projects with fiscal stability contracts;
- **PNG** levies a higher rate on non-resident companies;
- **South Africa** and **Zambia** have a variable CIT rate, which depends on the ratio of taxable income to gross income



Additional profit taxes: two cases

- **Chile** applies a specific mining tax (SMT) to companies with sales over 12,000 metric tones per year
- The tax base is taxable mining income, the effective rates range from 0.04% and 14%, and the tax is deductible against CIT
- **Liberia** imposes a resource rent tax (RRT) that is triggered when the pre-tax IRR of a project reaches 22.5%
- The tax base is the project cash flows, and the rate is 20%, and the RRT is deductible against CIT



State participation: three variants

- **Ghana** imposes a 10% free state equity interest on mining projects, which effectively works as a dividend withholding tax (subject to dividend distribution policies)
- **Mongolia** imposes a 34% state equity carried through exploration and development, which is repayable from the start of production with interest
- **PNG** state participation option ranges between 0 to 30%, and it is only carried during exploration, which means the state has a working (fully paid) interest from development

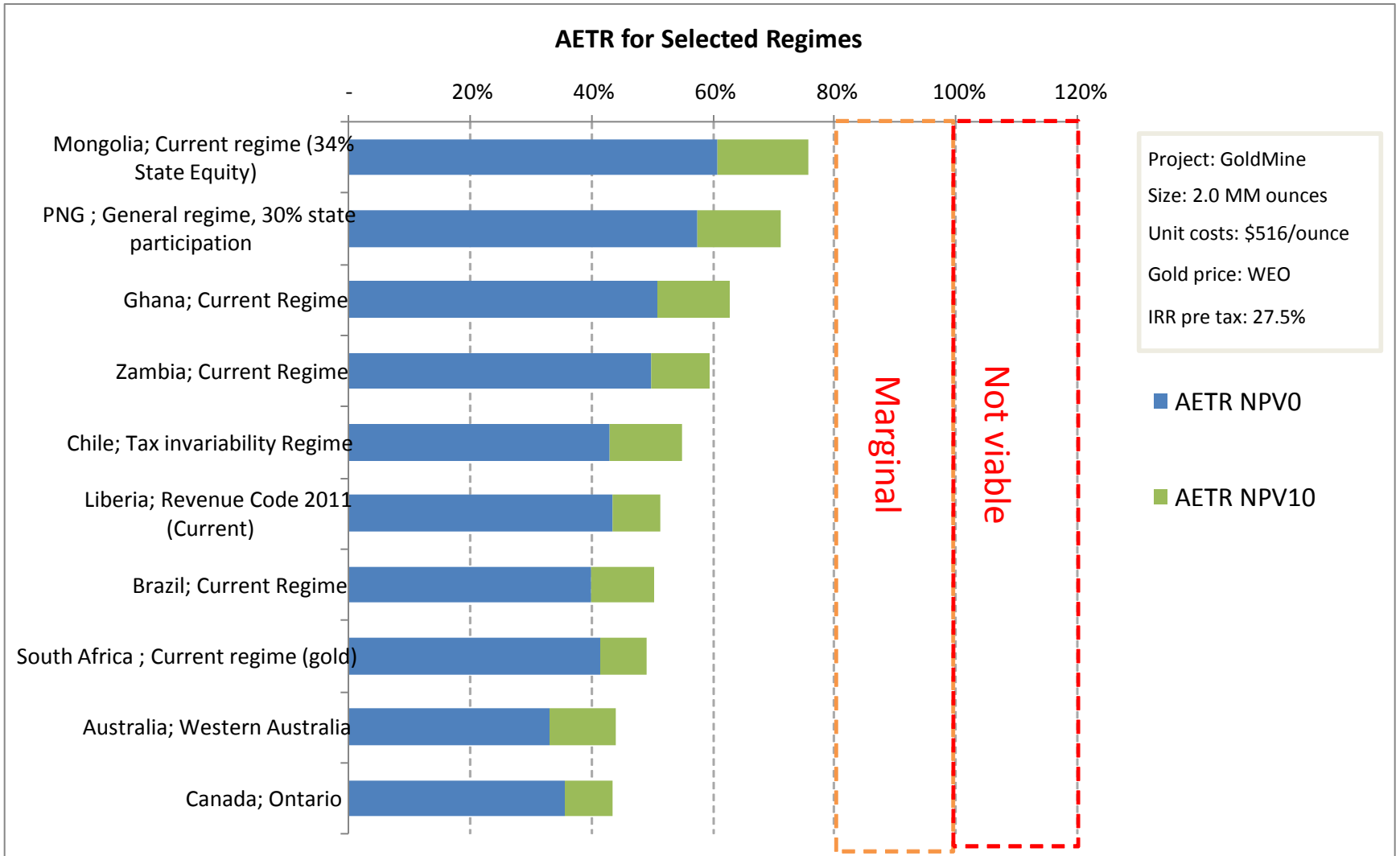
ILLUSTRATION OF FARI MODELING RESULTS

Gold mine: project economics

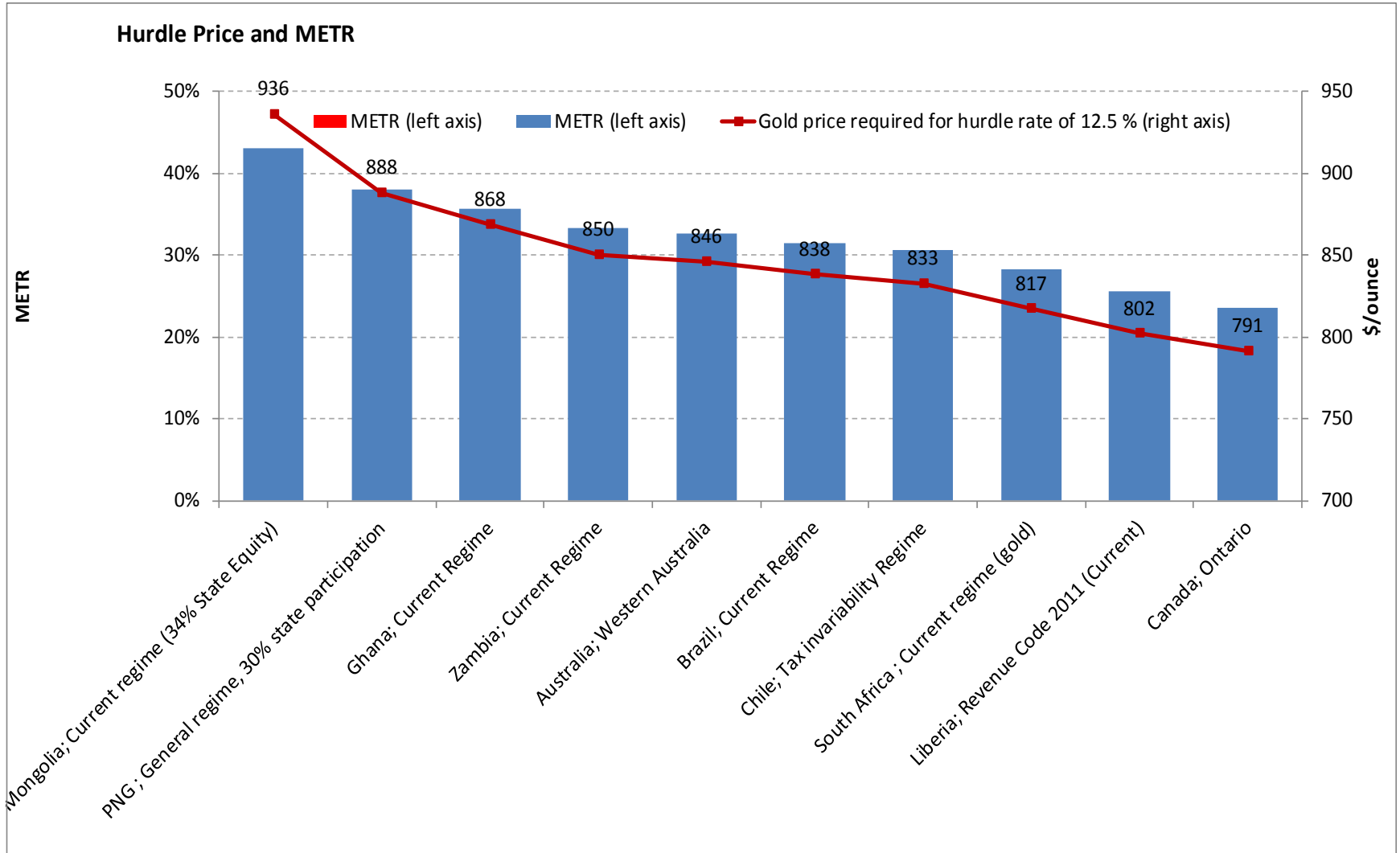
- An illustrative small/medium gold mine is used for illustration purposes
- The mine produces 2 million ounces of gold over 12 years, reaching a peak production rate of 200,000 ounces in years 3-11.
- With a unit cost of \$516/ounce and using the latest WEO price projections, the mine is relatively profitable with a pre-tax IRR of 27.5%

Government take (AETR)

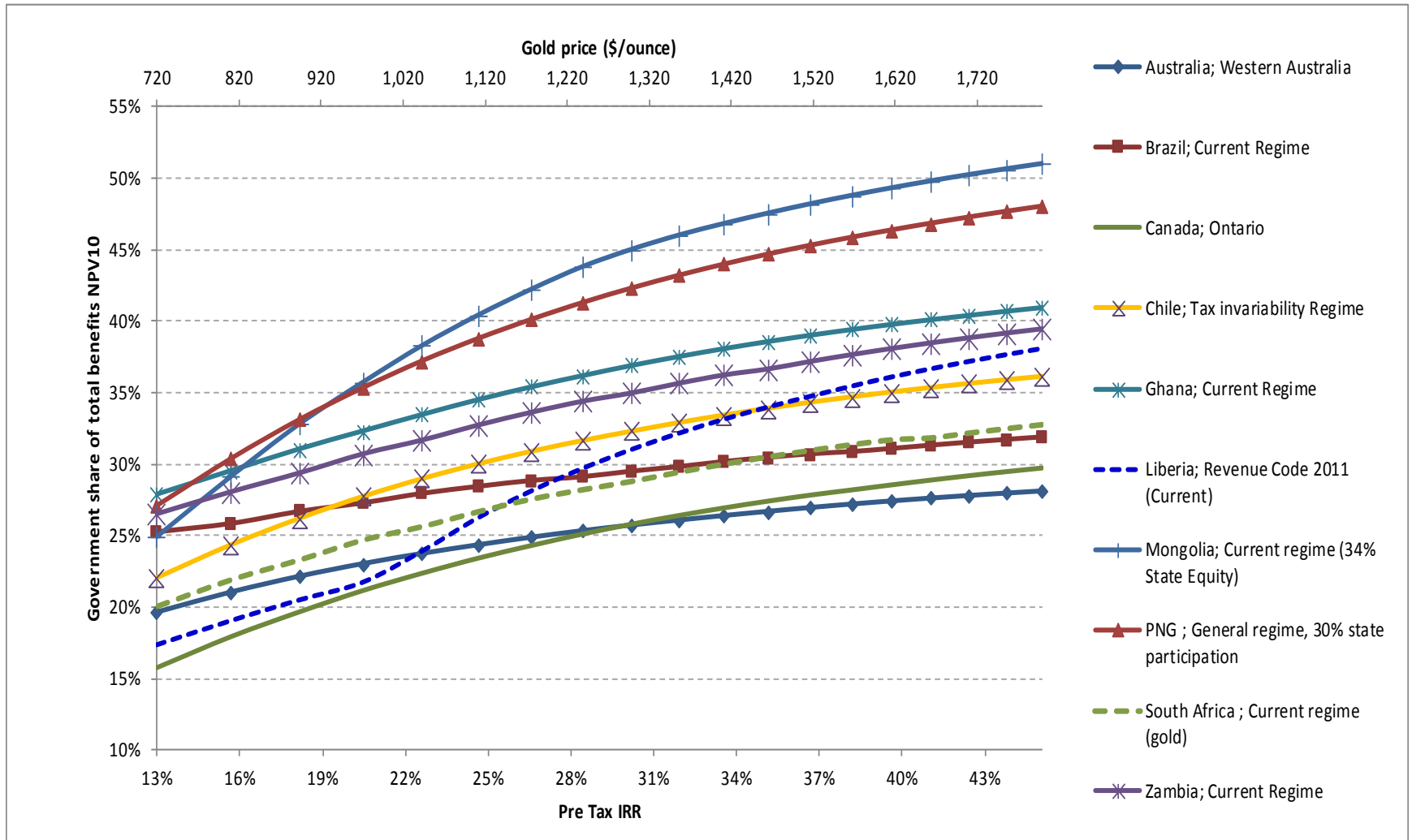
[Correct spelling of “marginal”; what is “invariability regime” for Chile?]



Breakeven price and METR



Progressivity: government share of total benefits



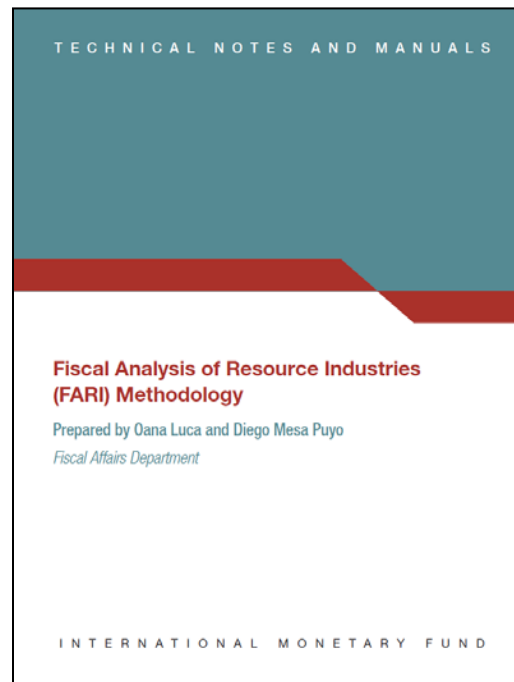
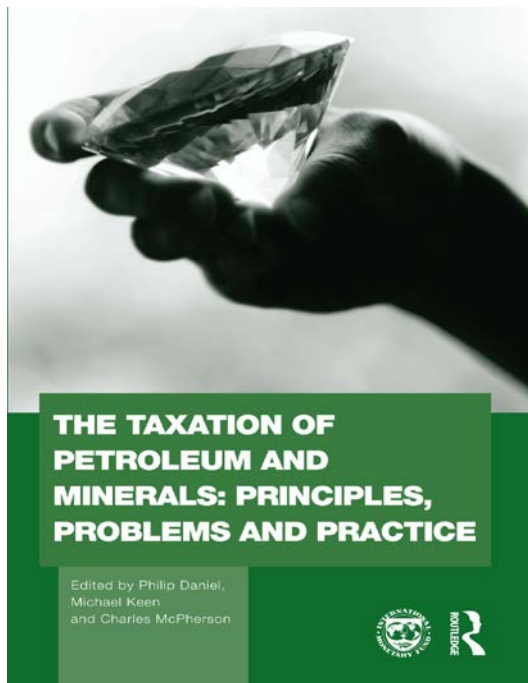
IMF ADVICE IN KENYA: CASE STUDY

Kenya's petroleum fiscal regime reform

- Recent discoveries attracted investor interest
- However, fiscal regime dated from the 1980's
- Kenya asked FAD for technical assistance on tax policy for extractive industries
- FAD fielded various missions between 2013 and 2016 to assist in reforming the fiscal regime for petroleum:
 - New model PSC, with improved petroleum sharing mechanism
 - Revised income tax legislation for the sector
 - Improved capacity building across government ministries on fiscal regime design and fiscal modeling for the sector

For More Information...

Please visit: <http://www.imf.org/external/np/fad/fari/>



QUESTIONS?