

# FISCAL MANAGEMENT OF MINING AND PETROLEUM IN WEST AFRICA

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## Fiscal Regimes for Extractive Industries in West Africa: Principles and Practice

Diego Mesa Puyo  
Fiscal Affairs Department



Australian Government  
Department of Foreign Affairs and Trade



Ministry of Foreign Affairs of the Netherlands



Norad



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra  
Swiss Confederation

Federal Department of Economic Affairs,  
Education and Research SHER  
State Secretariat for Economic Affairs SHER

# Agenda

- Why special fiscal regimes for mining and petroleum?
- Types of fiscal regimes and instruments
- Brief survey of regimes in selected West Africa countries
- Fiscal regime evaluation: an illustration using a stylized petroleum field

# **WHY SPECIAL FISCAL REGIMES FOR MINING AND PETROLEUM?**

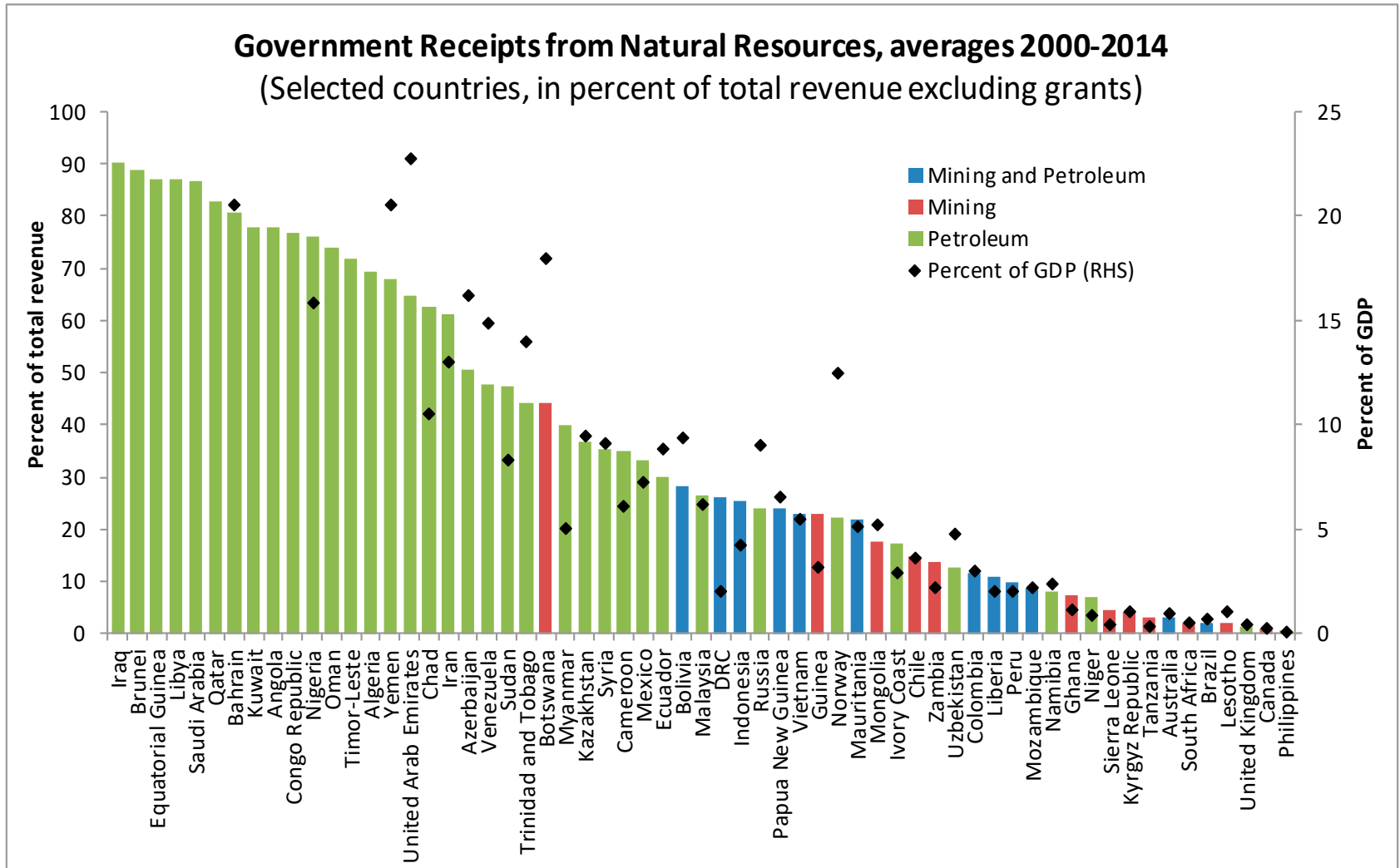
# How is the fiscal regime defined?

- A system combining tax and non-tax instruments to raise government revenue from resource extraction
- It includes conventional instruments such as royalty and CIT, as well as contractual schemes such as PSCs
- It can further include elements of state participation with a fiscal effect on the division of revenues, even when held by a commercially operating SOE

# Mining and petroleum characteristics

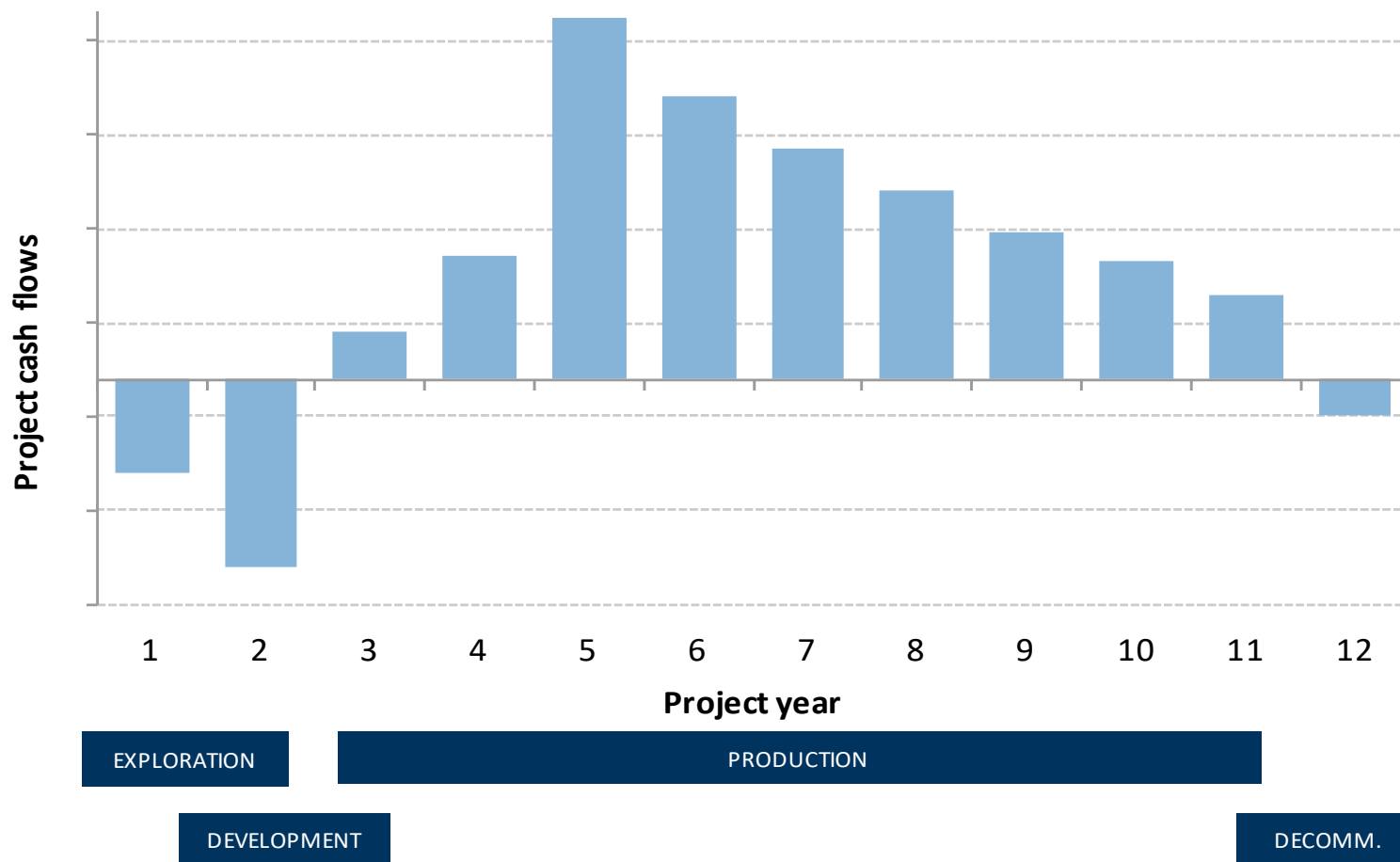
- Key revenue source for (increasingly) many countries
- Large upfront capital investment, and long production periods
- Pervasive uncertainty (both on prices and costs)
- Potential for substantial (economic) rents
- Asymmetric information
- Extensive involvement of multinationals in some countries... and of State-Owned Enterprises in others
- Non-renewable resources (exhaustibility is unique)

# Key source of revenue for many developing countries



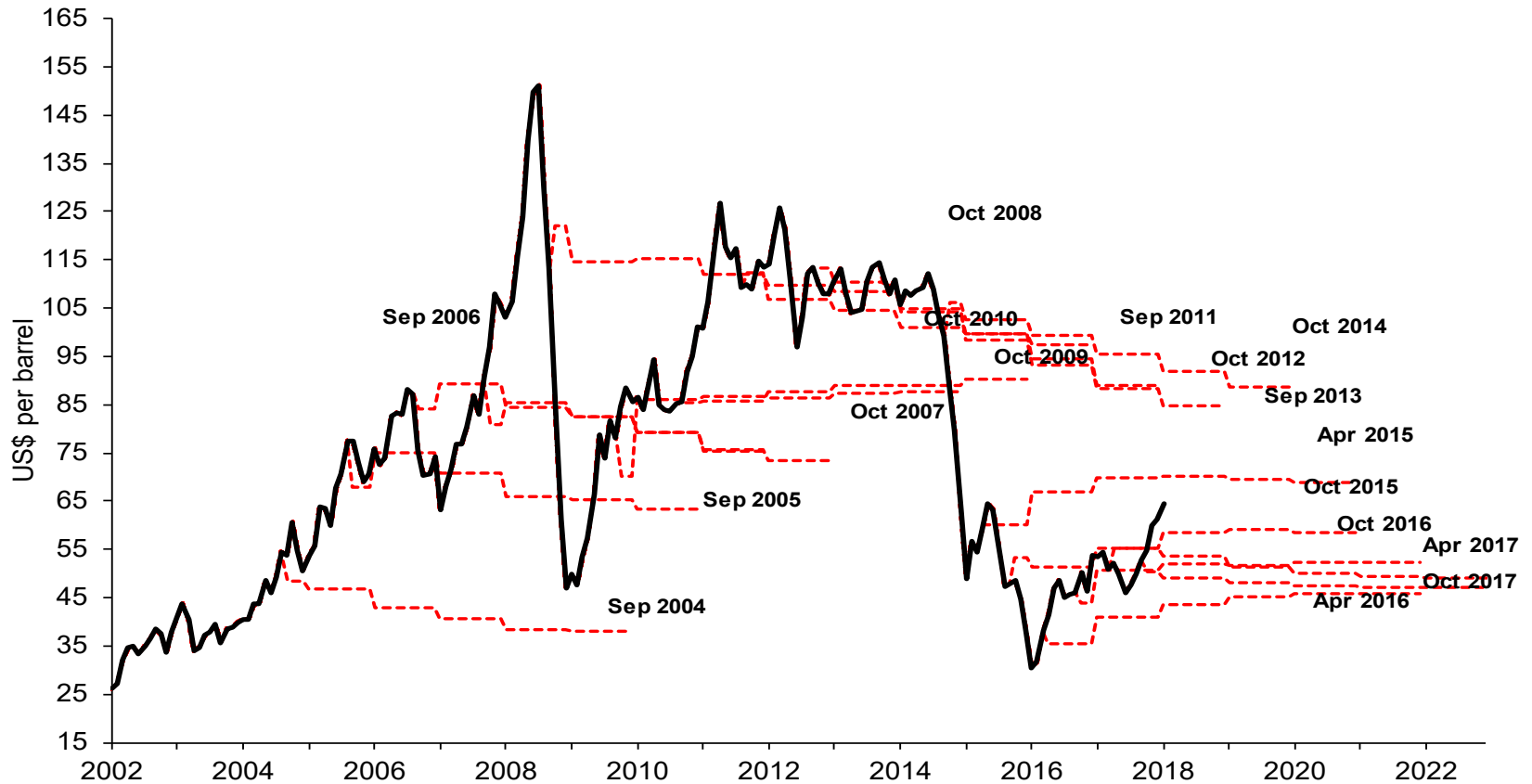
# Large up-front capital investment and long production periods

Typical cash flow profile of a petroleum project



# Pervasive uncertainty... in petroleum prices

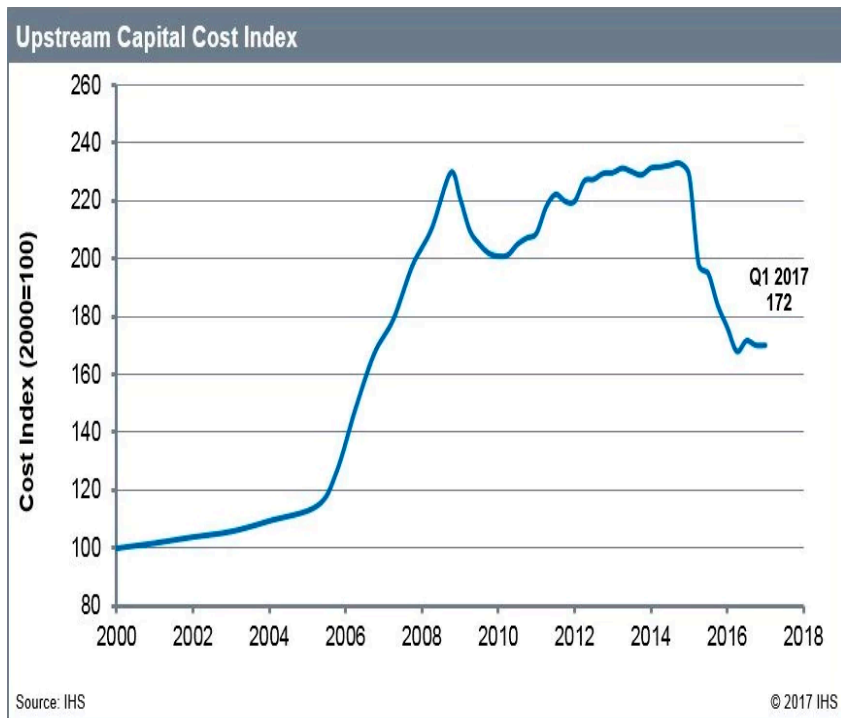
**WEO Oil Price Forecasts 2002-2022**  
(Monthly prices, 2017 U.S. Dollar per Barrel)



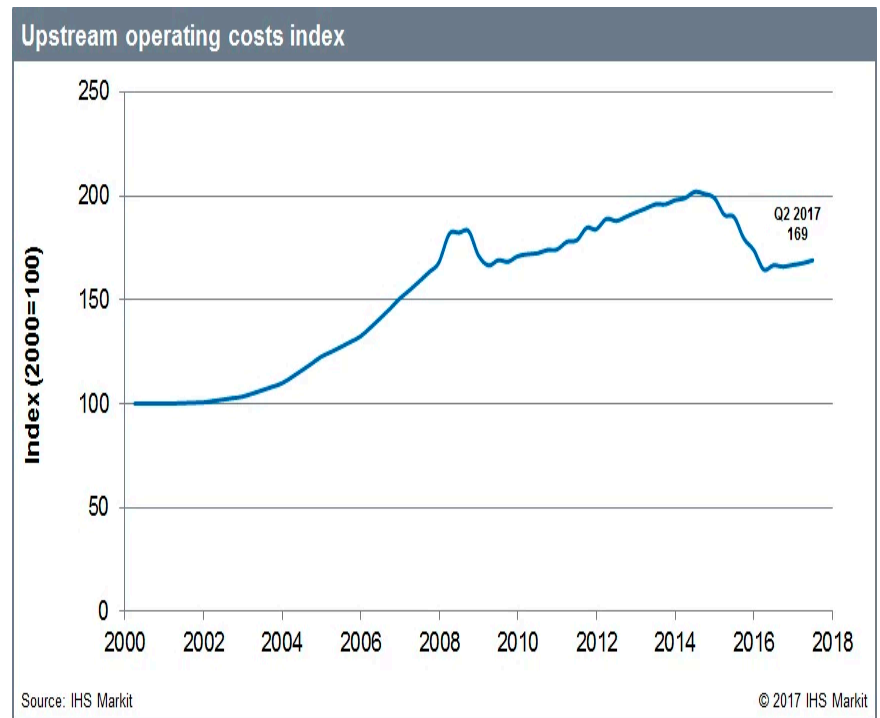


# ... and upstream costs

## Upstream Capital Cost Index



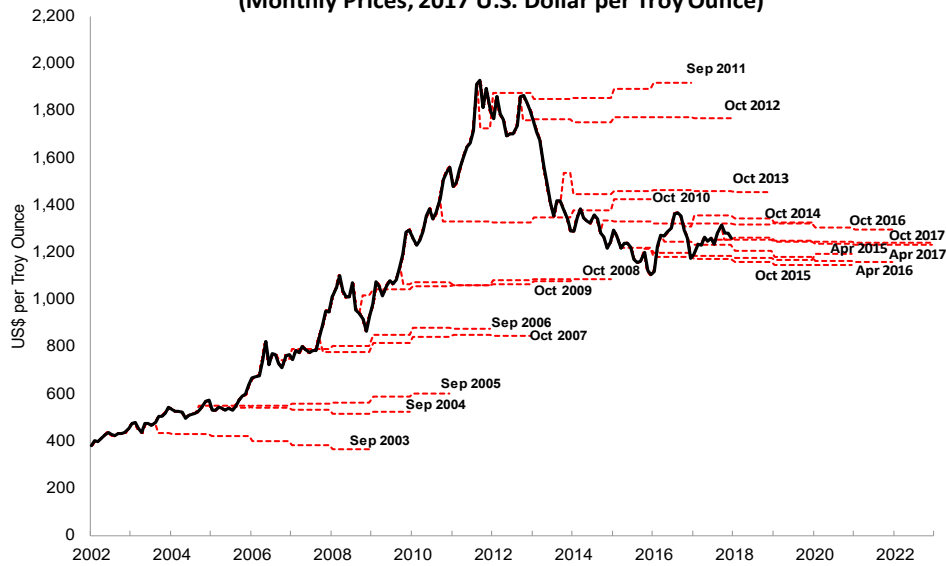
## Upstream Operating cost Index



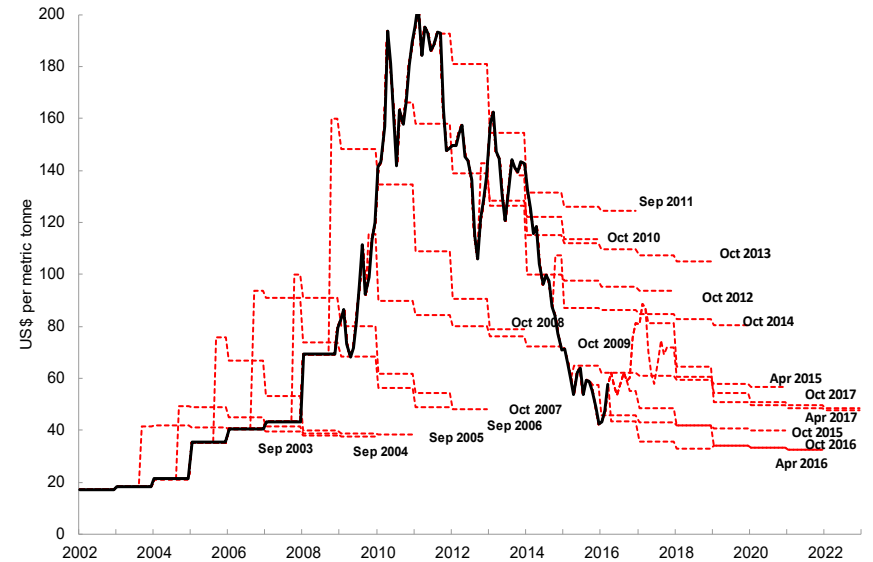
Source: IHS Energy

# Pervasive uncertainty... in mineral prices

**WEO Gold Price Forecasts 2002-2022**  
(Monthly Prices, 2017 U.S. Dollar per Troy Ounce)

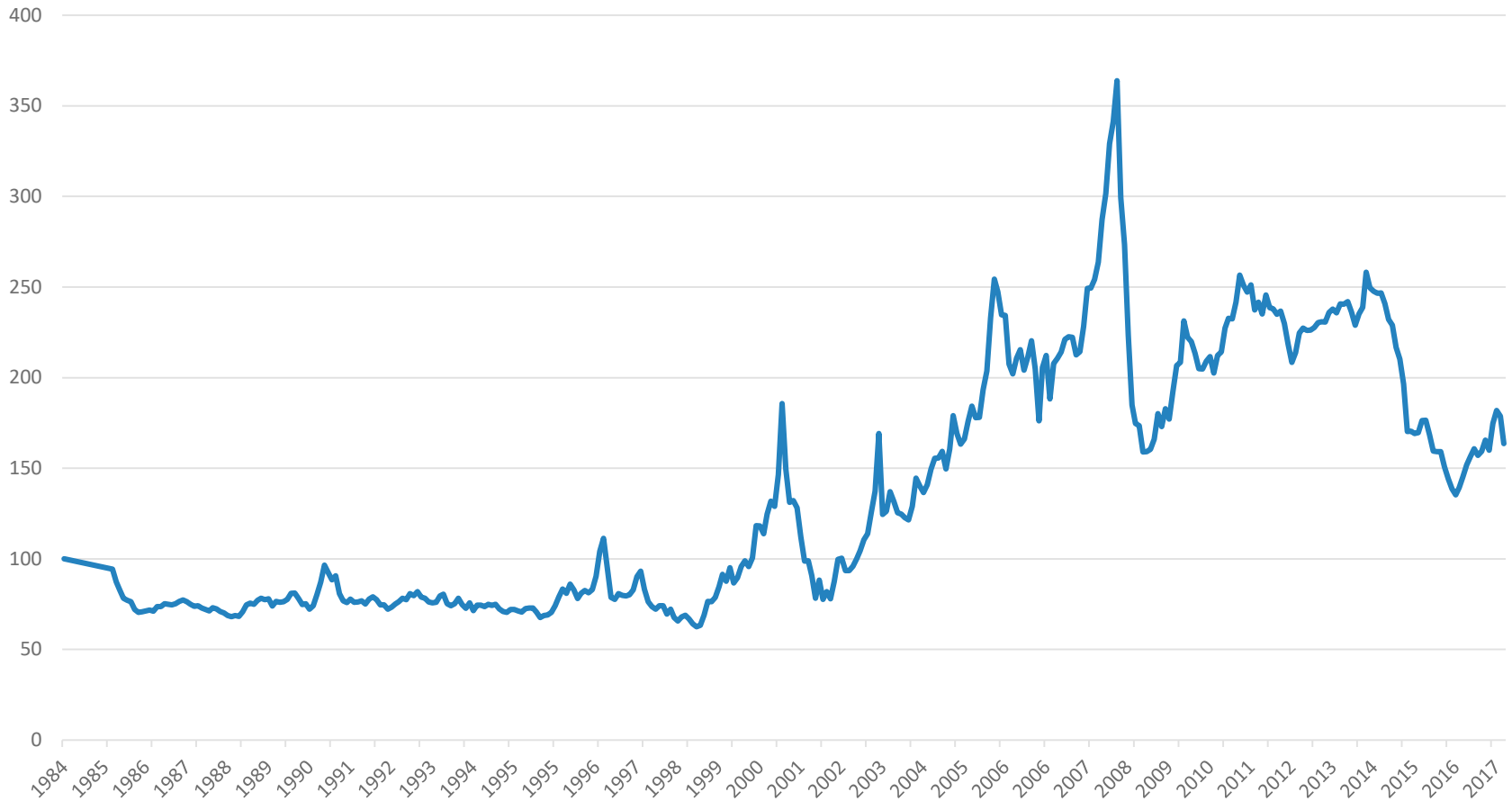


**WEO Iron Ore Price Forecasts 2002-2022**  
(Monthly Prices, 2017 U.S. Dollar per metric tonne)



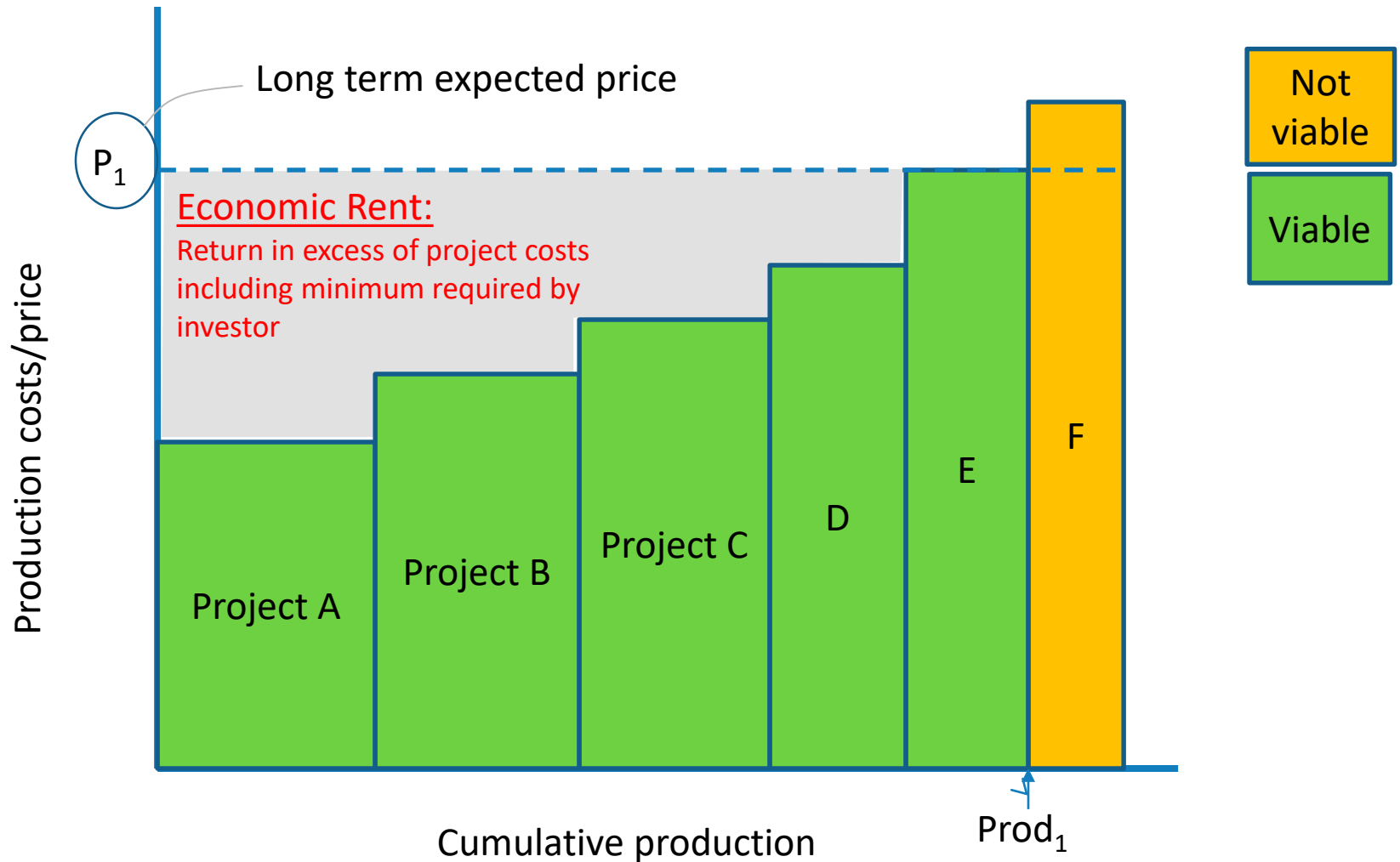
# ... and mining costs

Producer Price Index: Total Mining Industries, 1984=100

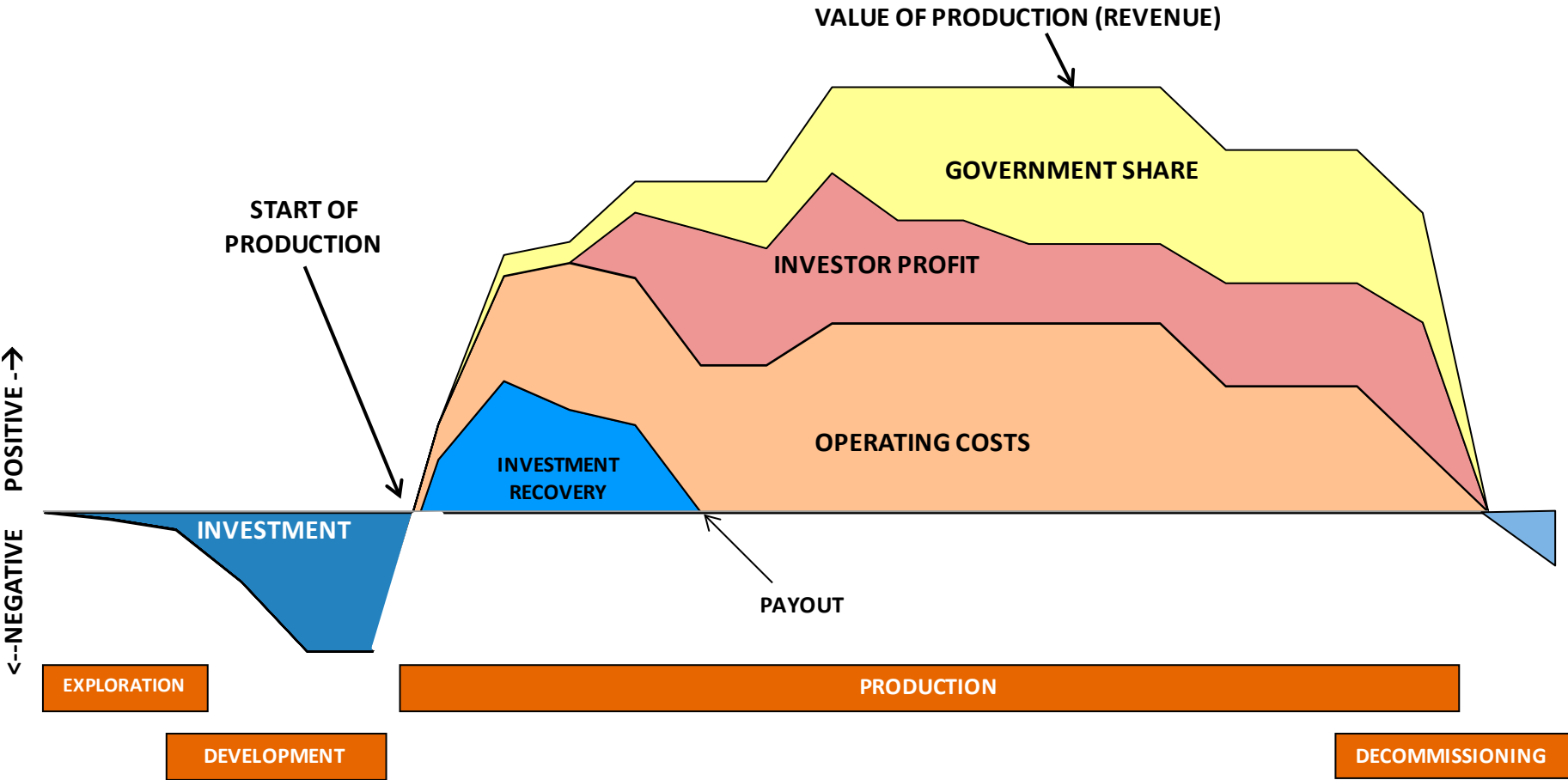


Source: Federal Reserve Bank of St. Louis

# ... but potentially high economic rents



# Back to our cash flow example



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

- The sector is dominated by multinationals (whether publicly traded or state-owned)
- In 2011 six of the 10 largest companies, by market capitalization, were in the extraction business
- While this has changed over the past 6 years, in 2017 one EI company remained in the top 10
- On the other hand, between 2/3 and 3/4 of world oil production comes from NOCs...

# So what should fiscal regimes aim at?

- **Attract investment** so resources can be developed
- **Maximize present value** of government revenues
- **Anticipate timing** of receipts
- **Manage riskiness** of receipts
  - Risk/reward allocation between governments & MNEs
- **Improve progressivity**
  - But more progressive means more risk
- **Provide ease of administration** (for authorities) and **compliance** (for taxpayers)

# **TYPES OF FISCAL REGIMES AND INSTRUMENTS**



# Three main fiscal schemes (sometimes blended)...

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

# A wide range of possible instruments

- **Bonuses** (with bidding)
  - Common in mature petroleum jurisdictions
- **Royalties**
  - Distort extraction (and, hence, exploration) decisions
  - Can be used in principle to control extraction path
  - Revenue from day 1
- **Corporate income tax**
  - To ensure equity income not favorably treated
  - Sometimes included in production sharing scheme

# A wide range of possible instruments (2)

- **Explicit rent taxes**
  - Non-distorting in principle
  - Many forms, with different timing of receipts
- **Production sharing**
  - Production shared between government and investor according to a predetermine formula
- **State participation**
  - Can help resolve asymmetric information
  - But potential governance issues

# What instruments should an attractive fiscal regime include?

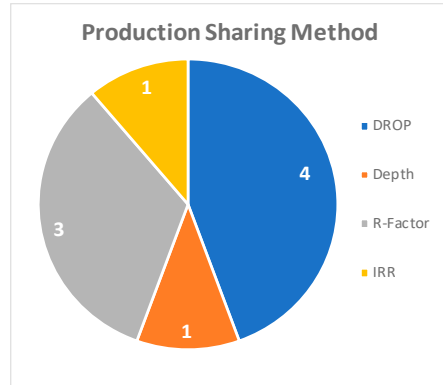
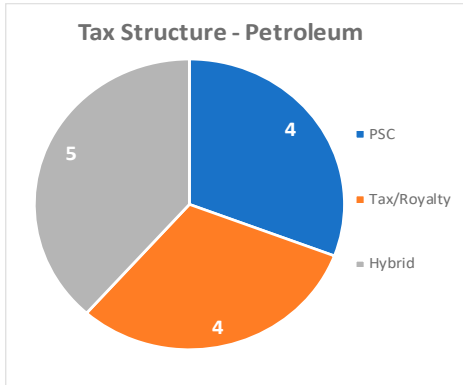
Country circumstances require tailored advice, but generally an appropriate framework should combine:

- **A modest royalty on gross revenue**
- **A tax (or production sharing mechanism) targeting rents** (project results is a good proxy)
- Together with **normal corporate income tax**
- **Bonus-bidding** may have a role in mature or promising environments

# **BRIEF SURVEY OF REGIMES IN SELECTED WEST AFRICA COUNTRIES**

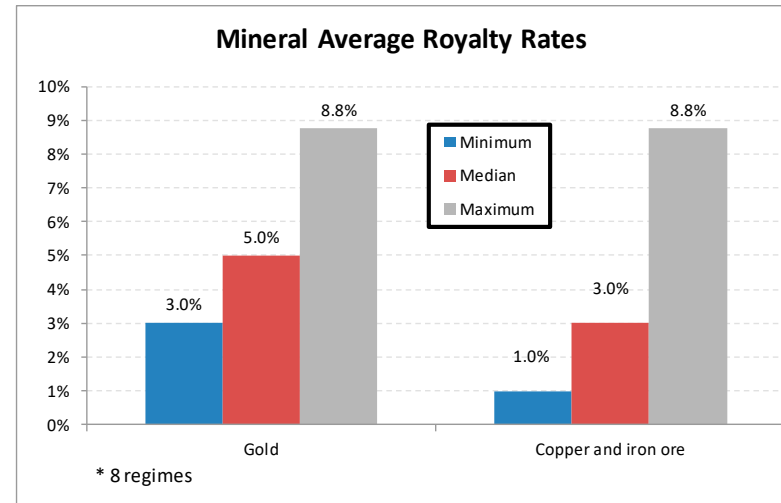
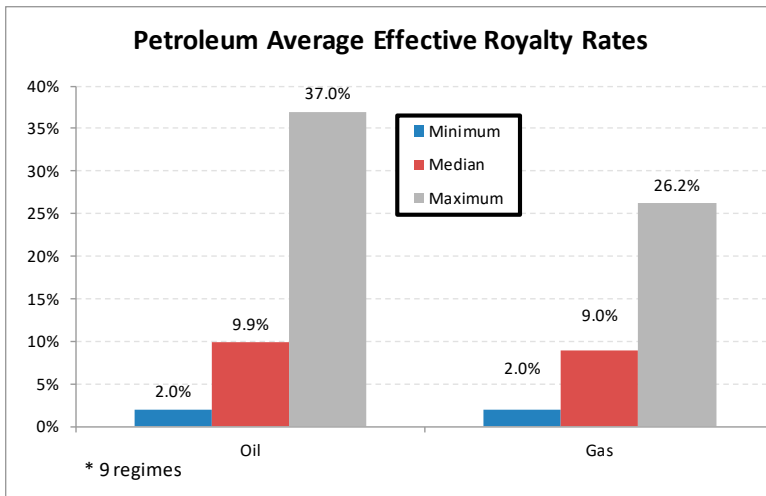
# The region's fiscal regimes are diverse

- Participating countries use a mix of PSC, Tax/Royalty and Hybrid regimes for petroleum, while Tax/Royalty systems are predominant in mining:



TAX STRUCTURES - MINING		
	Amount	Percentage of Total
Tax/Royalty	10	100.0%
State participation	6	60.0%
Sliding scale royalty	3	30.0%
APT	3	30.0%

- Effective royalty rates also vary across countries and sectors:



# ... however some fiscal instruments are prevalent across countries

- Petroleum:
  - Tax/Royalty systems with an additional profit tax (APT) are concentrated in the Gulf of Guinea: Guinea-Bissau, Ghana, Niger and Senegal
  - While production sharing fiscal regimes are common in the rest of countries
- Mining
  - All countries surveyed have Tax/Royalty regimes, and only one has an additional profit tax
- Under both mining and petroleum, state participation is predominant (free equity is common in mining, while carried state participation is more common in petroleum)

# **EVALUATING FISCAL REGIMES**



# 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



# Indicators commonly used in fiscal regime analysis

## Average Effective Tax Rate

- Government revenues as a share of pre-tax net cash flow
- At various discount rates

## Marginal Effective Tax Rate

- Proportion of pre-tax return taken in tax, for a 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

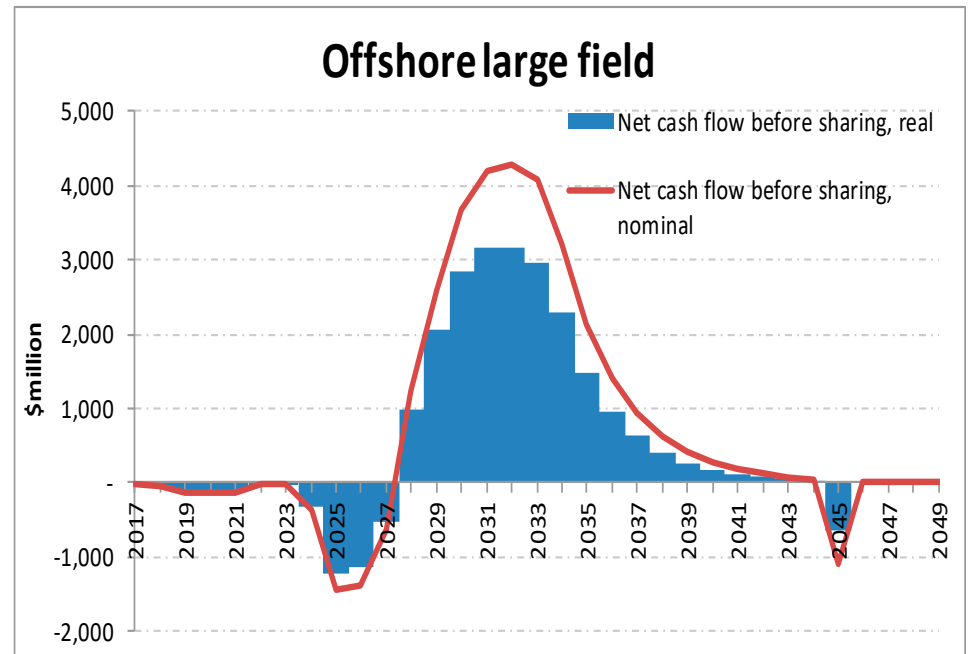
## Breakeven Price

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

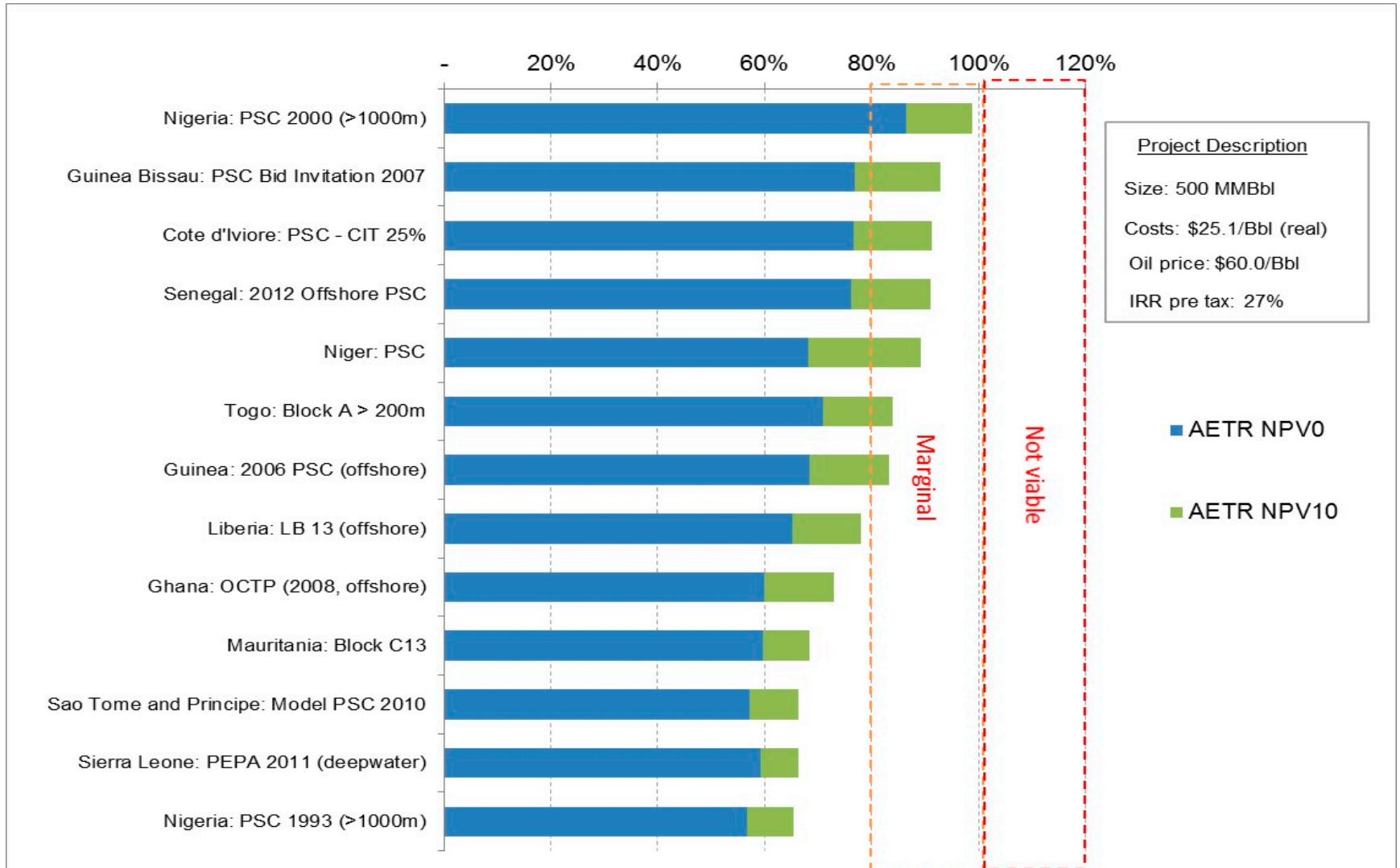
# Illustrative project economics

## Offshore large field

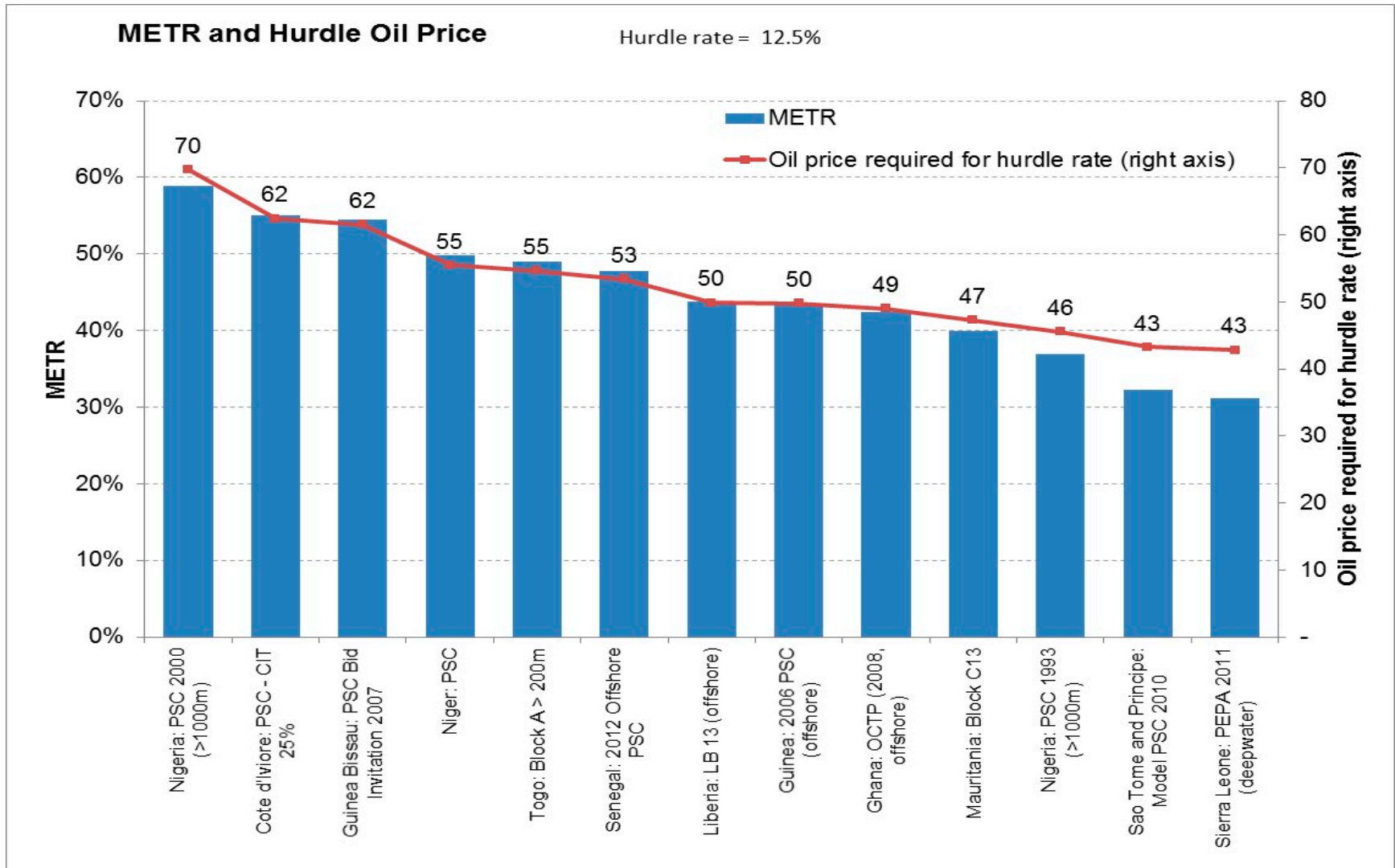
Production oil	500	MMbbl
Years	18	
<i>Constant 2017 dollars</i>	\$ million	\$/Bbl
Exploration costs	450	0.9
Development costs	2,486	5.0
Development drilling	2,227	4.5
Operating costs	6,754	13.5
Decommissioning	628	1.3
	<hr/>	
	12,545	25.1



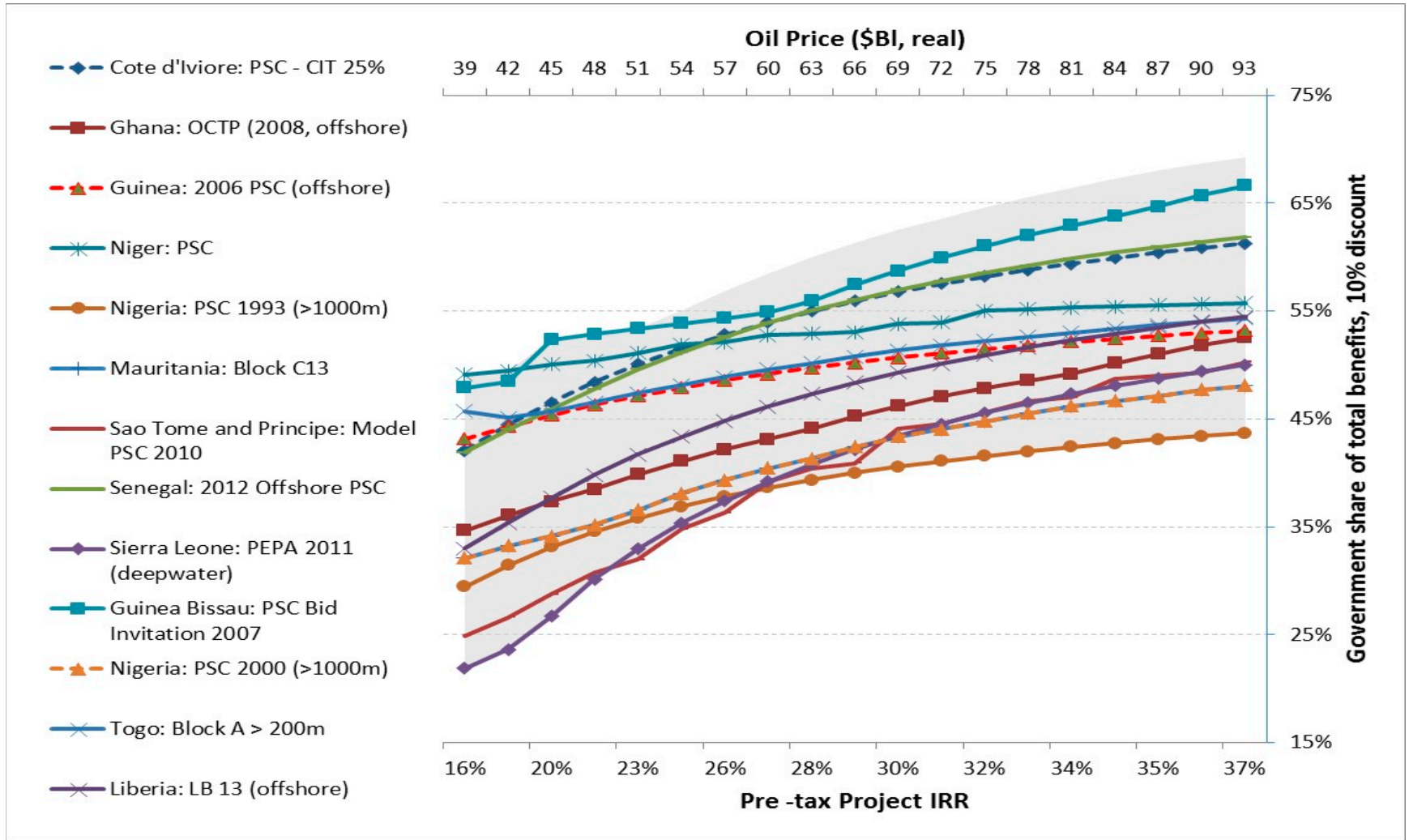
# Government take (AETR)



# Breakeven price and METR



# Progressivity



**QUESTIONS?**

# To learn more...

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

