Does the PNG government get its fair share from the resource sector?

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Plan for Today

1. Theory
2. Data
3. Policy Implications
   - resources fiscal regime
   - economy-wide

Motivation: why are we looking at this

- Why are we looking at this?
  - PNG
  - Lack of data availability (previous project)

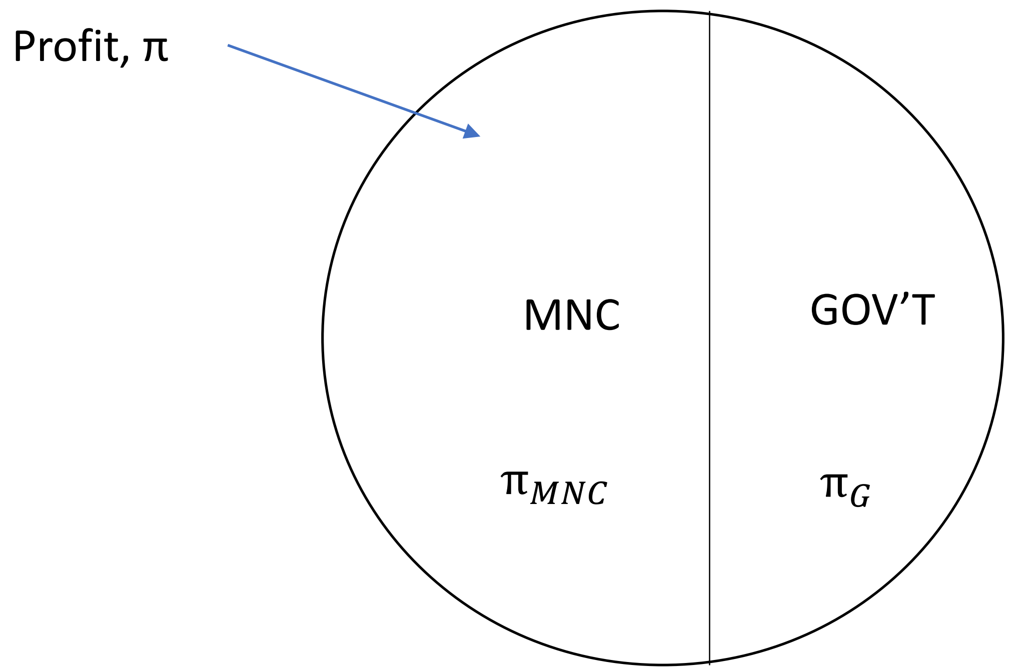
- What are we doing?
  - New database: EITI
  - Theoretical model
  - Empirical analysis (to come): examine government take controlling for
    - factors which influence the bargain between Govt and MNC
    - profit related variables (cost, prices)

1. Theory

1. Bargaining game: Division of gains between two parties

- Two parties: Government, MNC

Dividing profit: you get more, I get less



$$\text{Profit } \pi = \pi_G + \pi_{MNC}$$

Nash bargaining framework

- Total Rents, π

$$\pi = P.Q - C(Q)$$

- P = price of resources
- Q = quantity of resources
- C(Q) = cost of producing given quantity of resources, Q
- In event of bargain, rents are distributed

$$\pi = \pi_G + \pi_{MNC}$$

- π_G: government profit, if bargain takes place
- π_{MNC}: MNC profit, if bargain takes place

Nash bargaining framework

$$B = (\pi_G - \pi_G^*)^{\alpha}(\pi_{MNC} - \pi_{MNC}^*)^{1-\alpha}$$

Solution: Government share = $\frac{\pi_G}{\pi} = \alpha\left[1 - \frac{\pi_{MNC}^*}{\pi}\right]$ + (1-α) $\left[\frac{\pi_G^*}{\pi}\right]$

- Depends on
  - π_G: what government gets if bargain takes place
  - π_G^*: what government gets if bargain breaks down
  - π_{MNC}: what MNC if bargain takes place
  - π_{MNC}^*: what MNC gets if bargain breaks down
  - α: bargaining strength of government, 1-α: bargaining strength of MNC

- Participation Constraints: $\pi_G > \pi_G^*$ $\quad\quad\quad$ $\pi_{MNC} > \pi_{MNC}^*$

Nash bargaining framework

- Government gets better deal if
  - Outside option better: π_G^* higher
  - Bargaining strength, α, higher (less impatient)
- MNC gets better deal if
  - Outside options better: π_{MNC}^* higher
  - Bargaining strength, (1-α), higher

- $\uparrow \pi_G^* \rightarrow$ increase in government share
- $\uparrow \pi_{MNC}^* \rightarrow$ decrease in government share
- $\uparrow \alpha \rightarrow$ increase in government share

Simple example

- Two people, Rachael and Hane, dividing a pizza of size 1
- If they can't agree on a way to split it, it disappears
- Outside option: each has ¼ of a pizza at home
- Each has equal bargaining strength: $\alpha = \frac{1}{2}$, $1\text{-}\alpha = \frac{1}{2}$
- Rachael's share = $\frac{\pi_R}{\pi} = \alpha\left[1 - \frac{\pi_H^*}{\pi}\right] + (1\text{-}\alpha)\left[\frac{\pi_R^*}{\pi}\right]$

$$= \frac{1}{2}\left[1 - \frac{1/4}{1}\right] + \left(\frac{1}{2}\right)\left[\frac{1/4}{1}\right] = \frac{1}{2}$$

- Similarly, Hane's share $= \frac{1}{2}$

Suppose Rachael's bargaining strength increases to $\alpha = \frac{3}{4}$

then Rachael gets 0.625, and Hane 0.375

Suppose Hane has 3/4 of a pizza at home: Rachael gets 0.25 and Hane 0.75

Outside options

What does π_G^* depend on:

- Capacity to do the project yourself – nationalize:
  - if you can't nationalize you get zero, but
- Leave it in the ground
  - Defer exploitation now to future

What does π_{MNC}^* depend on:

- Projects in other countries (profits elsewhere relative to here)
- Fear of break-down in negotiations and another MNC getting project

Bargaining strength

Governments bargaining strength, α, depends on:

- Accountability to people – pressure to push for better deal
  - Increase transparency
    - Higher transparency → push for better deal
- Political risk
  - Increased likelihood of disruption of project → decreases α → MNC better deal
- Corruption
  - decrease α
- Bureaucratic ability
  - Less able bureaucracy → less effective at negotiations → lower α

MNC's bargaining strength (1- α) depend on:

- Number of competitors (even if collaborating)
- Sunk costs (exploration, construction)
  - How heavily invested is mnc?

What does model say about how to bargain?

- Improve your outside options
- Increase your bargaining strength

- $\uparrow \pi_G^*$ → increase in government share
- $\uparrow \pi_{MNC}^*$ → decrease in government share
- $\uparrow \alpha$ → increase in government share

- “We can’t wait too long before our place in the queue slips.”

- Peter Botten, June 2019 (reminder: outside options)

2. Data

Data on resource revenue

This is a cross-country research project.

Motivation: Lack of readily available data on countries’ resource tax revenue

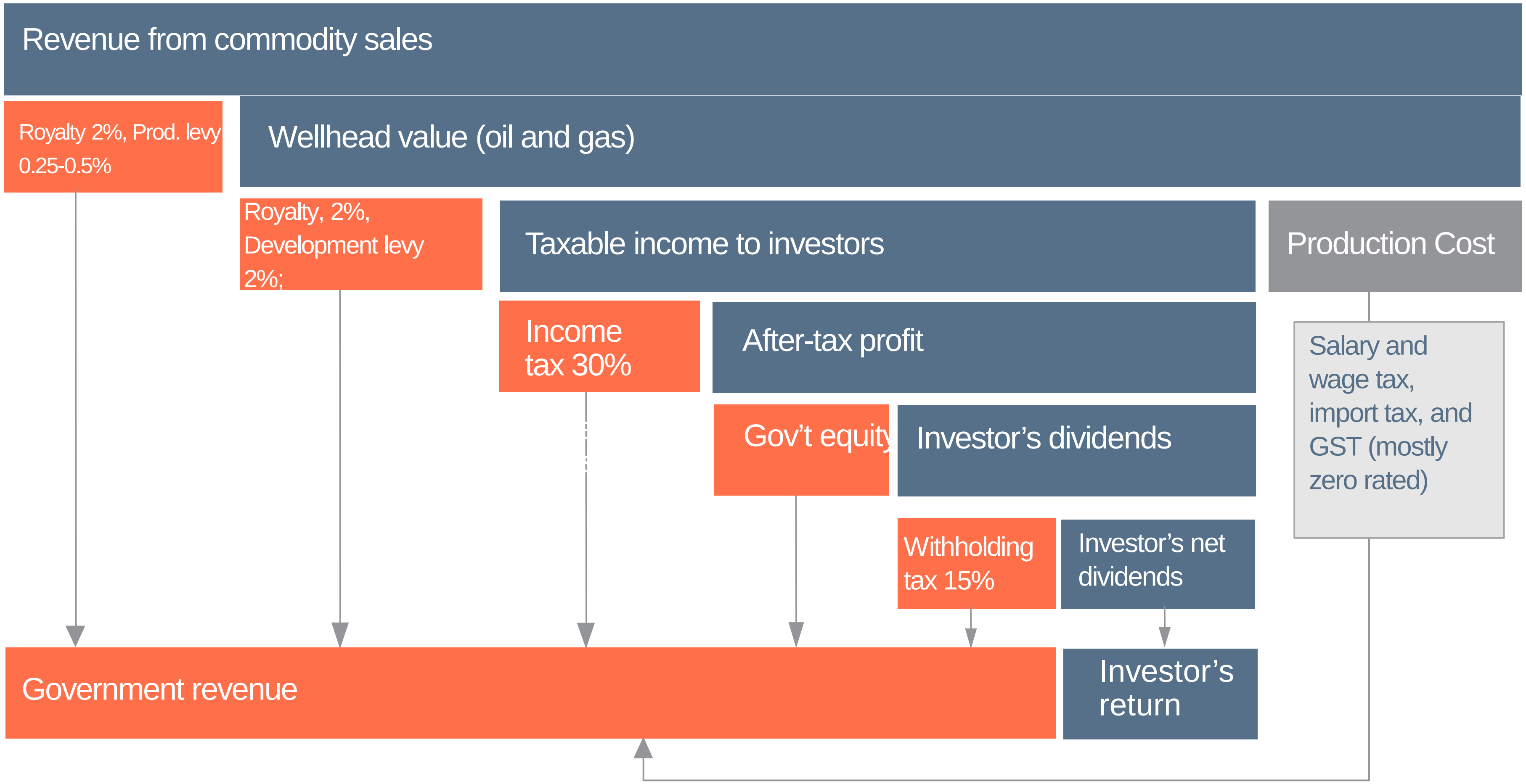
- Recently, International Centre for Tax and Development (ICTD) released a cross-country database on tax revenues, including from resource sector.
- ICTD is mostly based on IMF Article IV reports.
- Reasonably long time series, but numbers typically come from budgets, no breakdown of payments, and not clear if accurate.

Our database

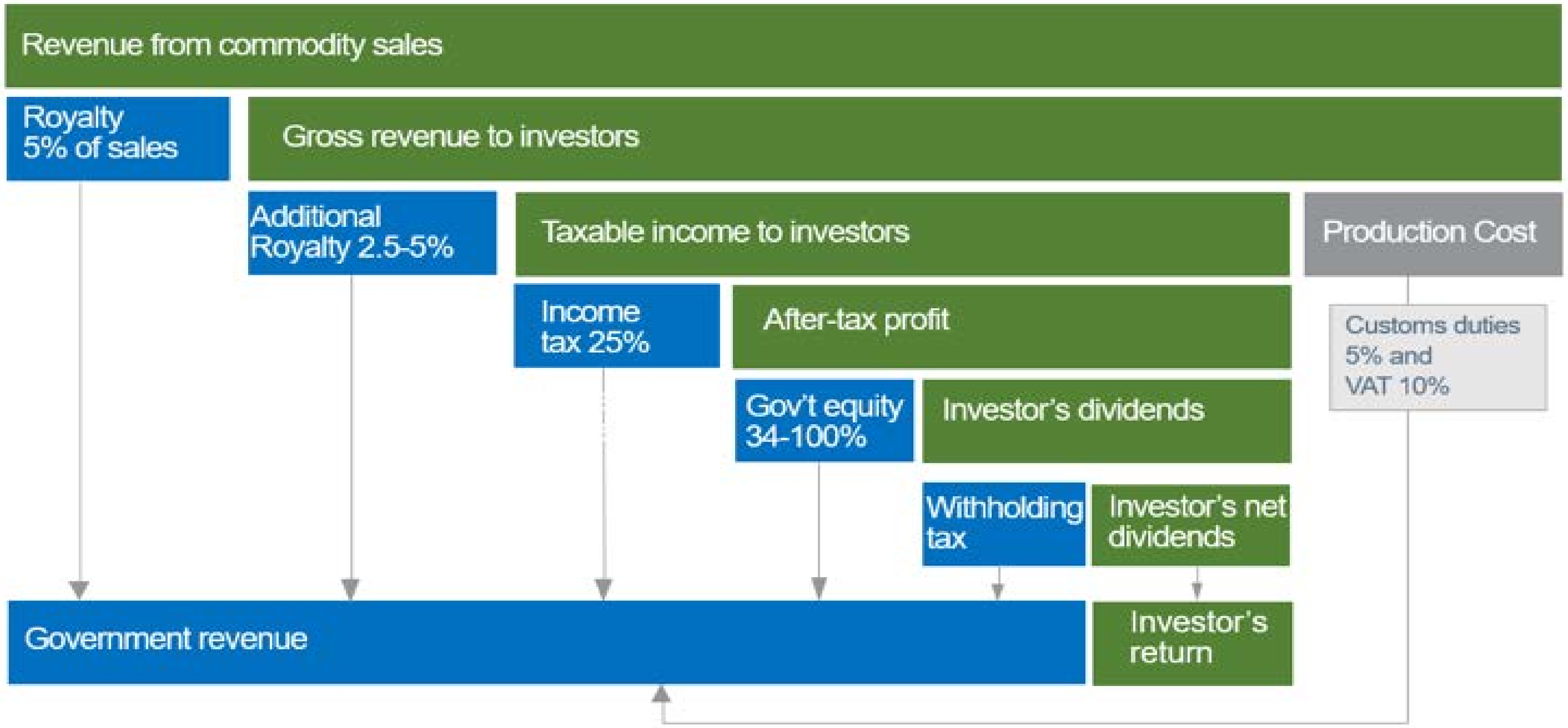
- Based on Extractive Industries Transparency Initiative (EITI) annual reports
- EITI: Formed in 2003, 52 member countries currently, seeks to address governance and transparency issues in resource sector.
- Among others, annual EITI reports publish detailed information on government tax revenues from the extractives sector.
- We collect this information where possible for the 52 member countries plus former ones such as Azerbaijan, Niger, US, and Yemen.
- Sample period 2004-2017
- Data quality often seems questionable in earlier years.
- Best to restrict sample period to 2009-2017.

- We report resource revenues grouped into the following categories:
  - Total resource revenue
  - Corporate income tax (CIT)
  - Royalties
  - Payments associated with state ownership (Equity)
  - Production sharing agreements/contracts (PSA/PSC)
  - Social contributions (incl. salary and wage tax)
- Other payments not reported separately:
  - VAT/GST
  - Bonuses, e.g. signature bonus
  - License fees
  - Dividend or interest withholding tax
  - Import duties
  - Others

PNG's fiscal regime (simplified)



Mongolia: Mining fiscal regime



Source: Namkhaijantsan and Schröder (2019)

EITI’s and our approach

- EITI determines material payments and reporting entities (companies and government agencies)
- EITI sends out templates to companies and government agencies
- Next, payments of reporting companies are compared against government and differences reconciled.
- We use reconciled revenues reported by government.
- In most cases, >95% of revenues are reconciled and remaining differences very small (<1% of total).
- Exceptions are highlighted in the dataset.
- Often judgment calls are needed in terms of payment classification.
- Large variety in terms of reporting style, consistency, and apparent data reliability.

Categorized payments from EITI reports

CIT

- Petroleum Revenue Tax
- Ring Fence Corporation Tax
- Impôt sur les benefices industriels et commerciaux
- Impot sur les societies
- Income tax on equity
- Profit tax
- Corporate income tax
- Excess Profit
- Impuesto a la Renta

Royalties

- oil royalty
- mining royalty
- Taxe d'exploitation petroliere
- Taxe à l'extraction des substances minières
- Ristourne Miniere
- Taxe Spéciale sur les Produits Miniers (TSPM)
- Vente du pétrole de la redevance sur la production par la SHT (chad)
- Regalías Mineras
- Regalías de Hidrocarburos
- Fee for the use of subsurface resources

State Ownership

- Profil Oil Etat
- Puissance Publique
- Dividends
- Dividendes verses a l'etat
- Direct and indirect transfers of SNH

PSA/PSC

- Share of Pre-existing production
- share of contractors own production
- Government Lifting Oil
- Sales Revenue Share

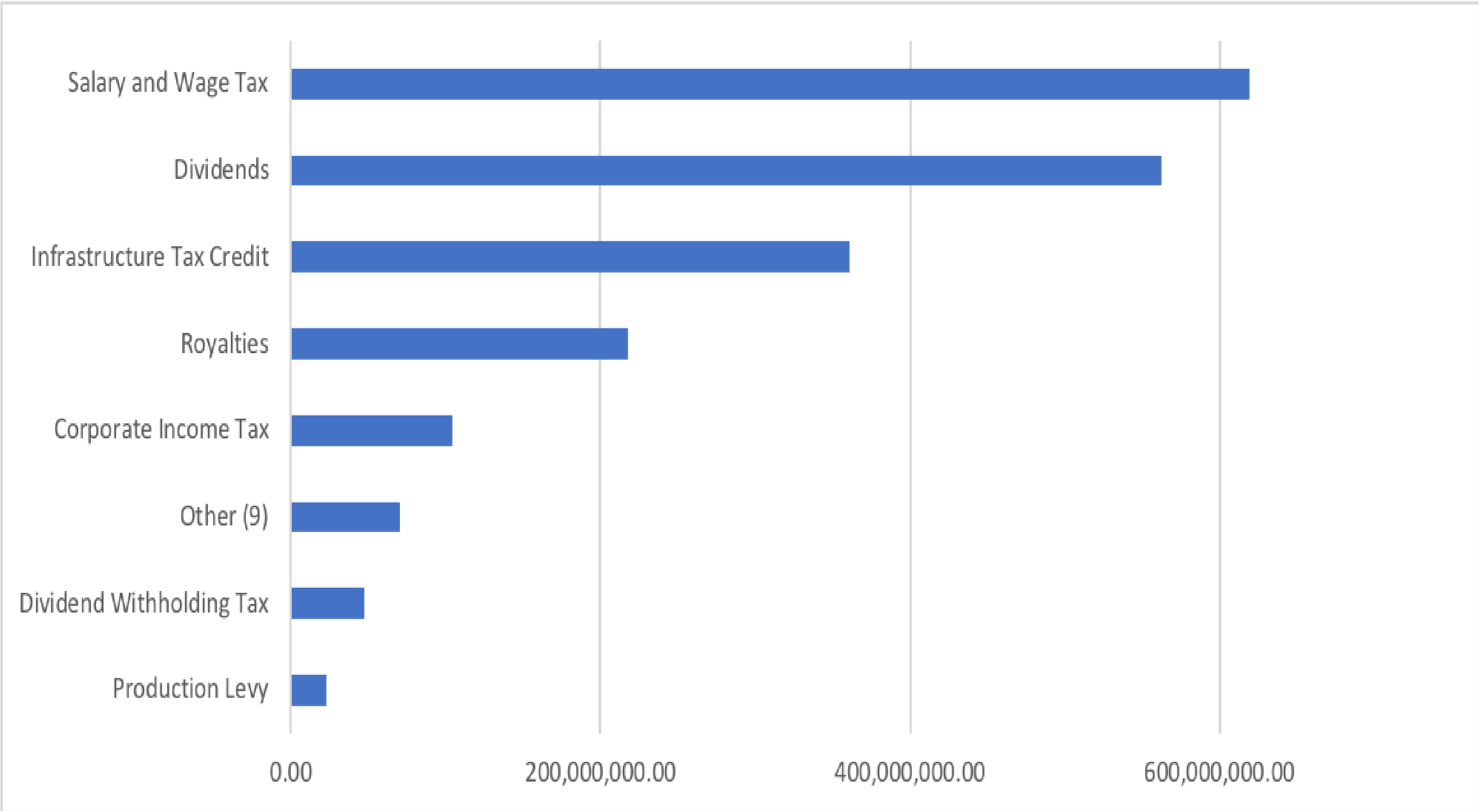
Social Contributions

- Pay as you earn (PAYE)
- ***impôt*** sur le revenu des personnes physiques (IRPP)
- Impot sur les salaires
- Impôt sur les traitements et salaires
- Cotisations sociales
- Payments for social and health insurance and personal income tax
- Payroll Tax

Source: Authors

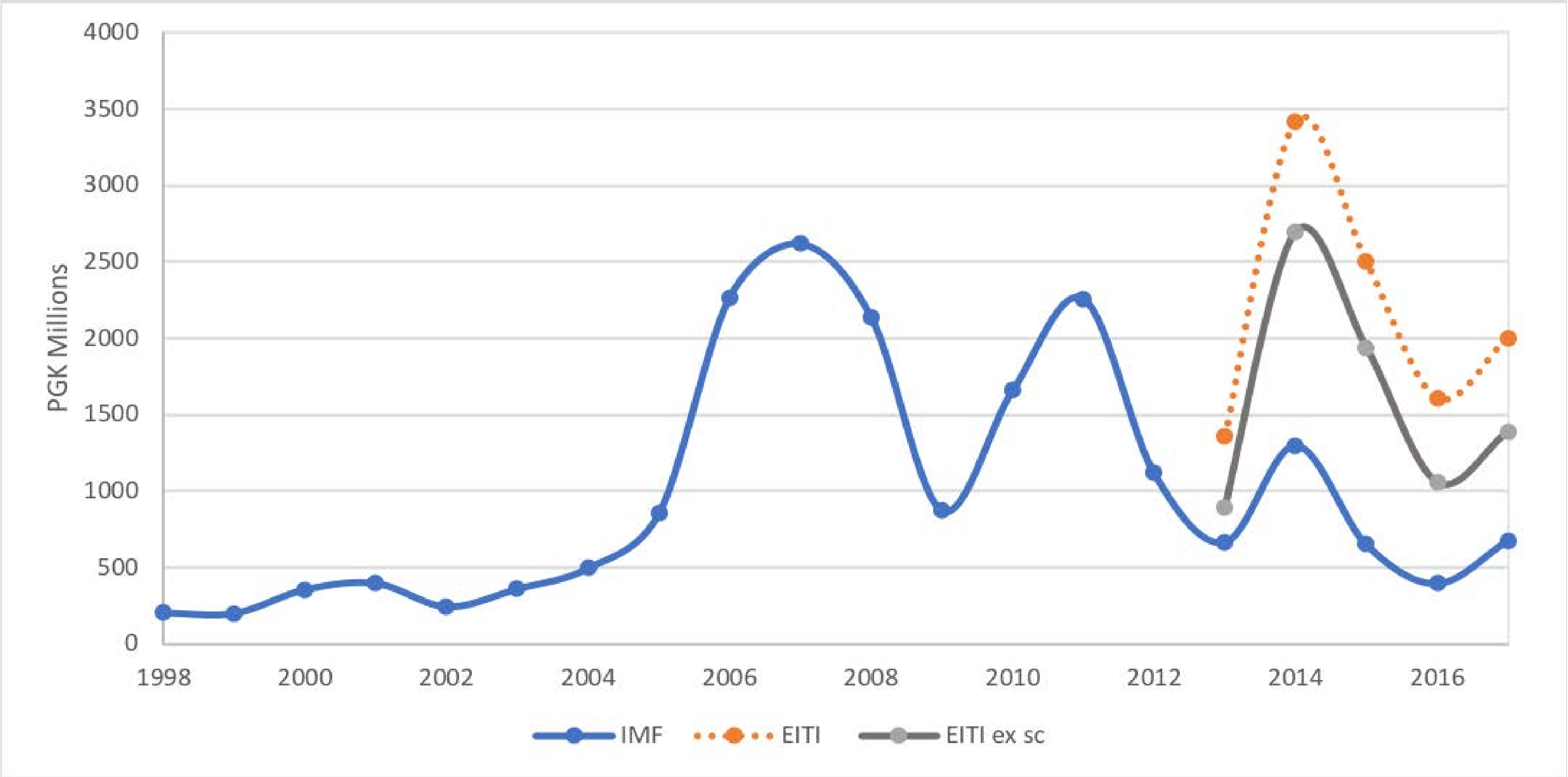
PNG and some international data

Tax revenue from resource sector in 2017



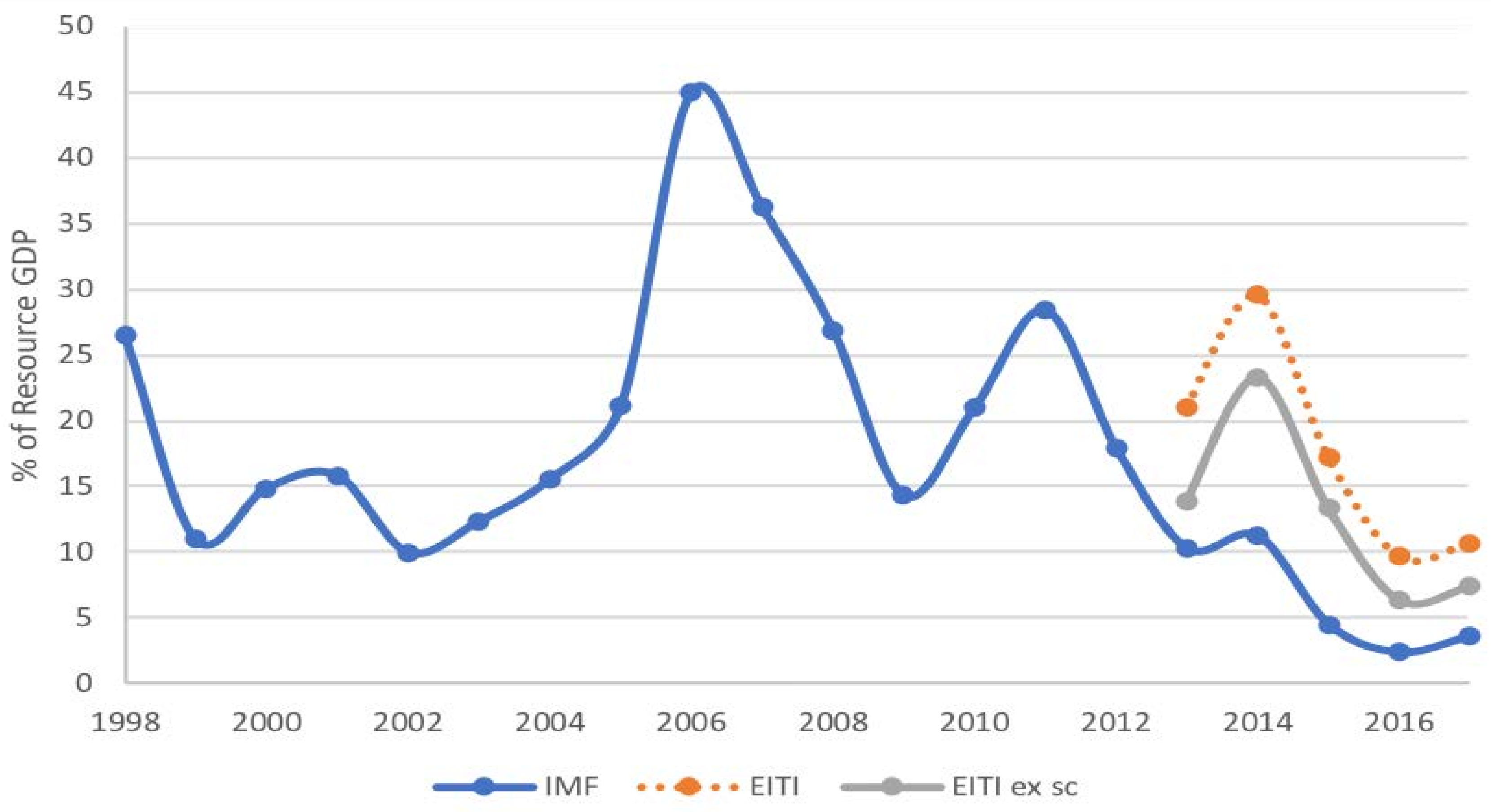
Source: EITI 2017 data

PNG government's total resource revenue



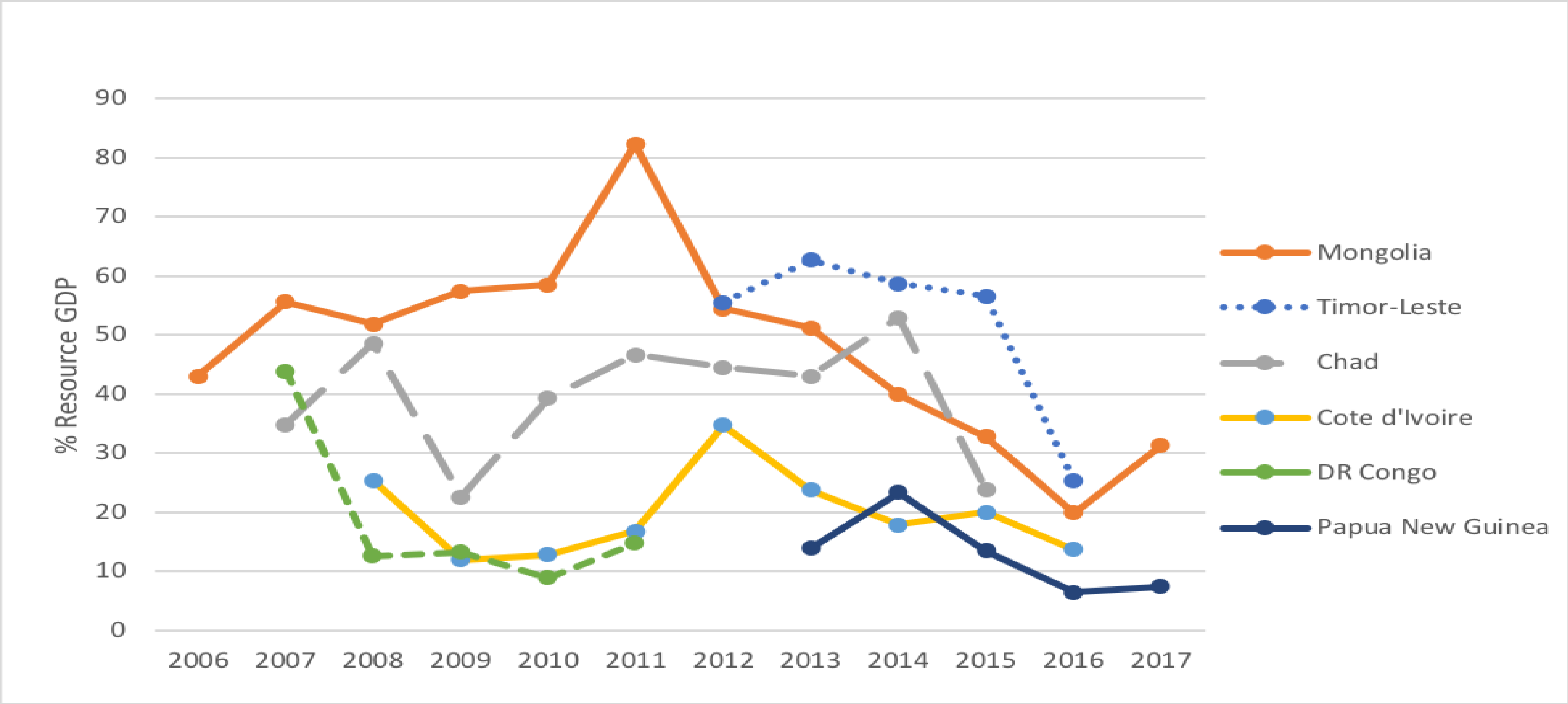
Source: IMF and EITI

Estimate of PNG government’s take (% resource GDP)



Source: Authors

Government take: Int’l comparison



Note: Calculations are based on EITI data excluding social contributions.

Source: Authors

Payment types: International comparison

Country	Corporate Income Tax	Royalties	Gov't Equity	Social Contributions
Papua New Guinea	5%	11%	28%	33%
Mongolia	19%	37%	9%	7%
Timor Leste	14%	58%	0%	16%
Chad	2%	38%	37%	7%
DR Congo	30%	10%	4%	10%
Cote d'Ivoire	3%	16%	57%	8%

Note: Data based on most recent available sample year.
Source: EITI

Does the PNG government get a fair share?

- Two ways to read the data on PNG
  - Low take (even lower than DRC) suggests ”no”
  - However, fall in commodity prices and stage of resource projects in the country can explain the low take in recent years.
- Not possible to reach a definitive conclusion.
- Ongoing research: Regression analysis that controls for determining factors of government take, i.e. bargaining power, commodity prices, costs, stage of resource projects, and others.

- Overall, data suggests there is back-load in fiscal take from resource projects.
- This is not “fair” or “unfair”, but a suboptimal outcome for any developing country.

3. Policy recommendations: Fiscal regime

- PNG is a developing country which means funds for crucial spending such as infrastructure, health and education are needed today rather than tomorrow.

Therefore, avoid deals with MNCs that lead to extreme back-load of fiscal take.

Some options for generating more upfront payments from future resource projects:

- Reduce incentives (loss carry forward arrangements, tax concessions, treating royalties as advance income tax, etc.).
- Reconsider zero rating GST. Many resource rich countries derive significant revenue through GST. It is also relatively easy to administer.
- Relying more on royalties on sales. They have other advantages
    - More stable than income tax and other payments
    - Relatively easy to administer

- General: There seems no mechanism for gov’t to benefit from exceptionally high commodity prices (e.g. additional royalty, excess profit tax)

- As our model suggests, achieving such outcomes depends on relative bargaining power and every party has outside options.

Policy recommendations: Economy-wide

- Better macro policy: change mindset: “need the next resource projects to save us”
- Less dependence on resources sector for:
  - Growth
  - Revenue
  - Foreign exchange
- Better policies in non-resource sector
  - Agriculture, tourism
- Improve your outside options → increase π_G^*
- Less dependence also decreases impatience → increase α

- Lower political risk and reduce corruption → increase α

- Stable political regime
  - Lower political risk → increases α

- Stable policies towards MNCs
  - Encourage entry of MNCs → more competition → reduces MNCs bargaining strength → increases α

- Remember: leaving it in the ground for future exploitation is a valid option

Policy recommendations: Economy-wide (ctd)

- Developing Countries
  - rates of return in investment in education, health, infrastructure are high
  - Limited ability to borrow against future tax revenue
- Impatience: exploit resource now
- But institutional capacity to spend it is low
  - if do it now, save it now and spend it later
  - do it later