TA: Preparing for fossil-fuel subsidy reforms

India, Indonesia and Thailand

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Objectives of the study

1. Quantify subsidies
2. Estimate reform impacts
    a) Households and industry sectors
    b) Energy system
    c) GHG emissions and the macro-economy
3. Evaluate safety nets

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Countries covered

India

Indonesia

Thailand

A range of country circumstances

Variety of subsidies and reform approaches

Majority of electricity derived from fossil fuels

- India – 67%
- Indonesia – 86%
- Thailand – 93%

Scope of subsidies

- Consumption
  - All fossil fuels – oil, coal and natural gas
  - Electricity
- One area of upstream fossil-fuel supply chain
  - Coal (India)
  - Electricity (Indonesia)
  - Natural gas for vehicles (Thailand)

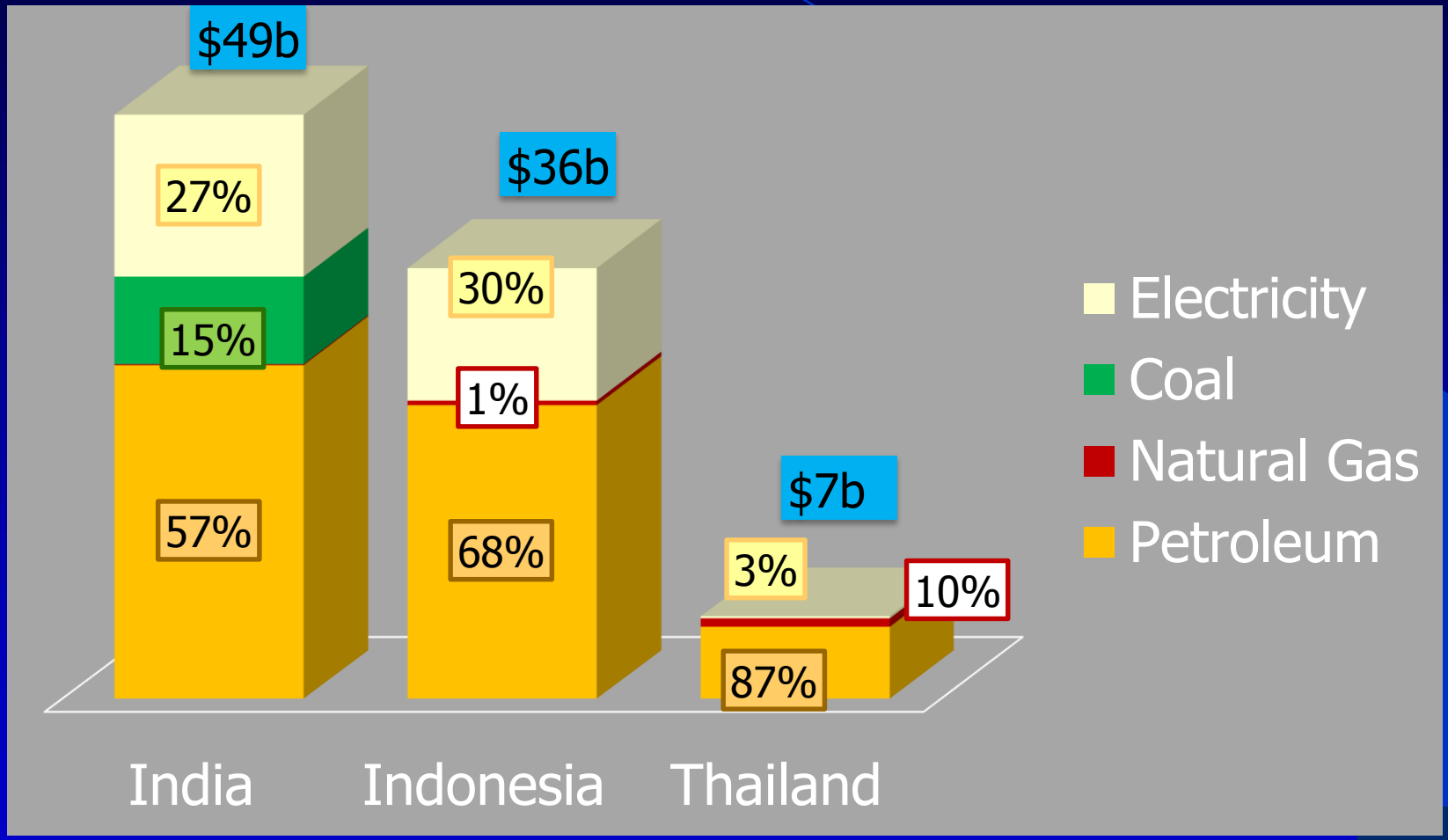
Comprehensive Inventory of Consumer Subsidies

- Direct spending
- Revenue forgone: Tax holidays, duty exemptions
- Losses from state-owned energy companies
- Goods, services provision at below market rates
- Credit support

Estimates of Consumer Subsidies

	US$ billion	% of GDP	US$ per capita
India (FY 2011-12)	49	2.7	41
Indonesia (2012)	36	4.1	147
Thailand (2012)	7	1.9	109

Breakdown of Consumer Subsidies



Total subsidies (US$ mil)

Energy type	India FY 2011-12	Indonesia 2012	Thailand 2012
Consumer	48,782	36,003	6,975
Producer	208	208	46

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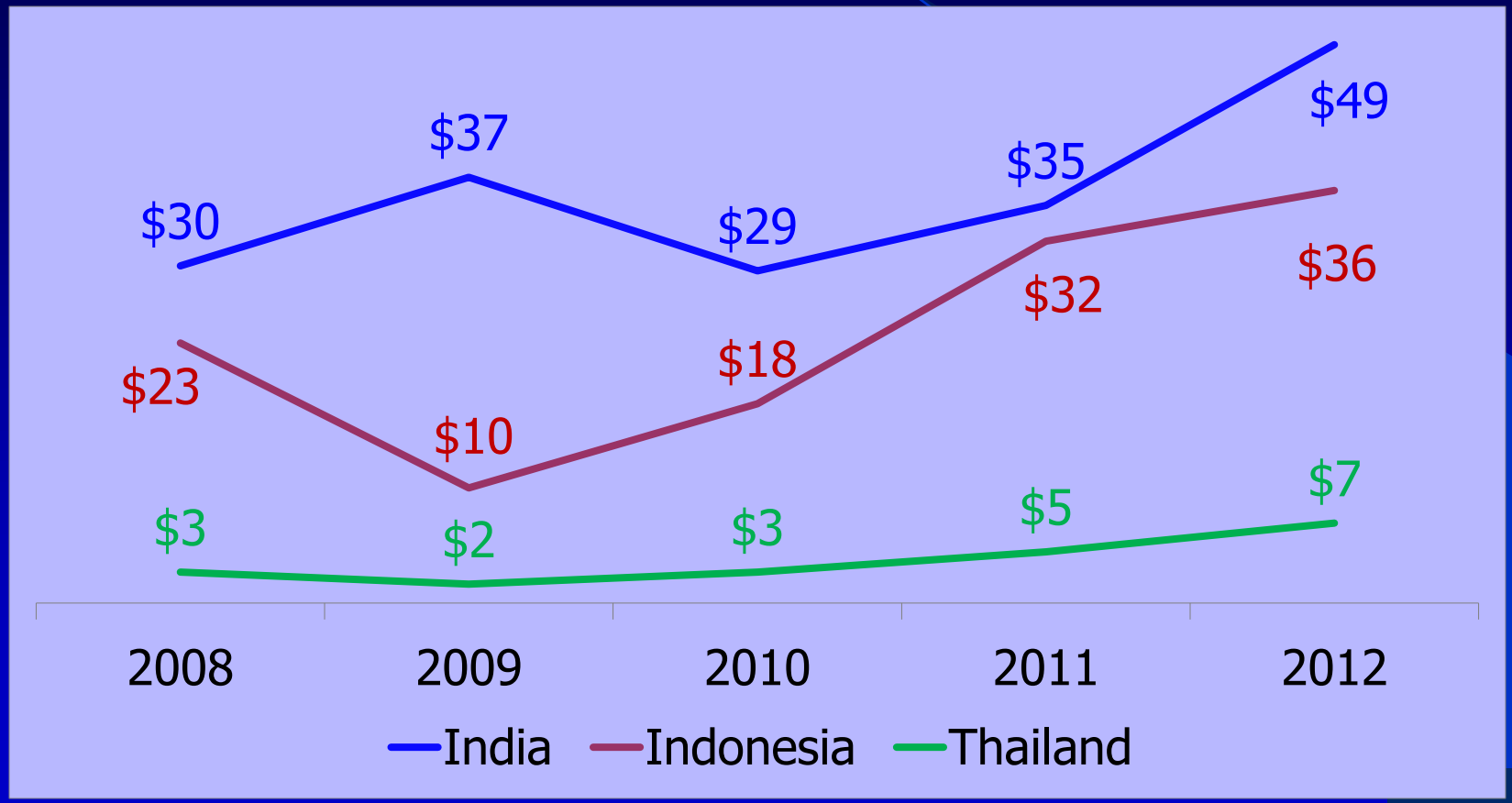
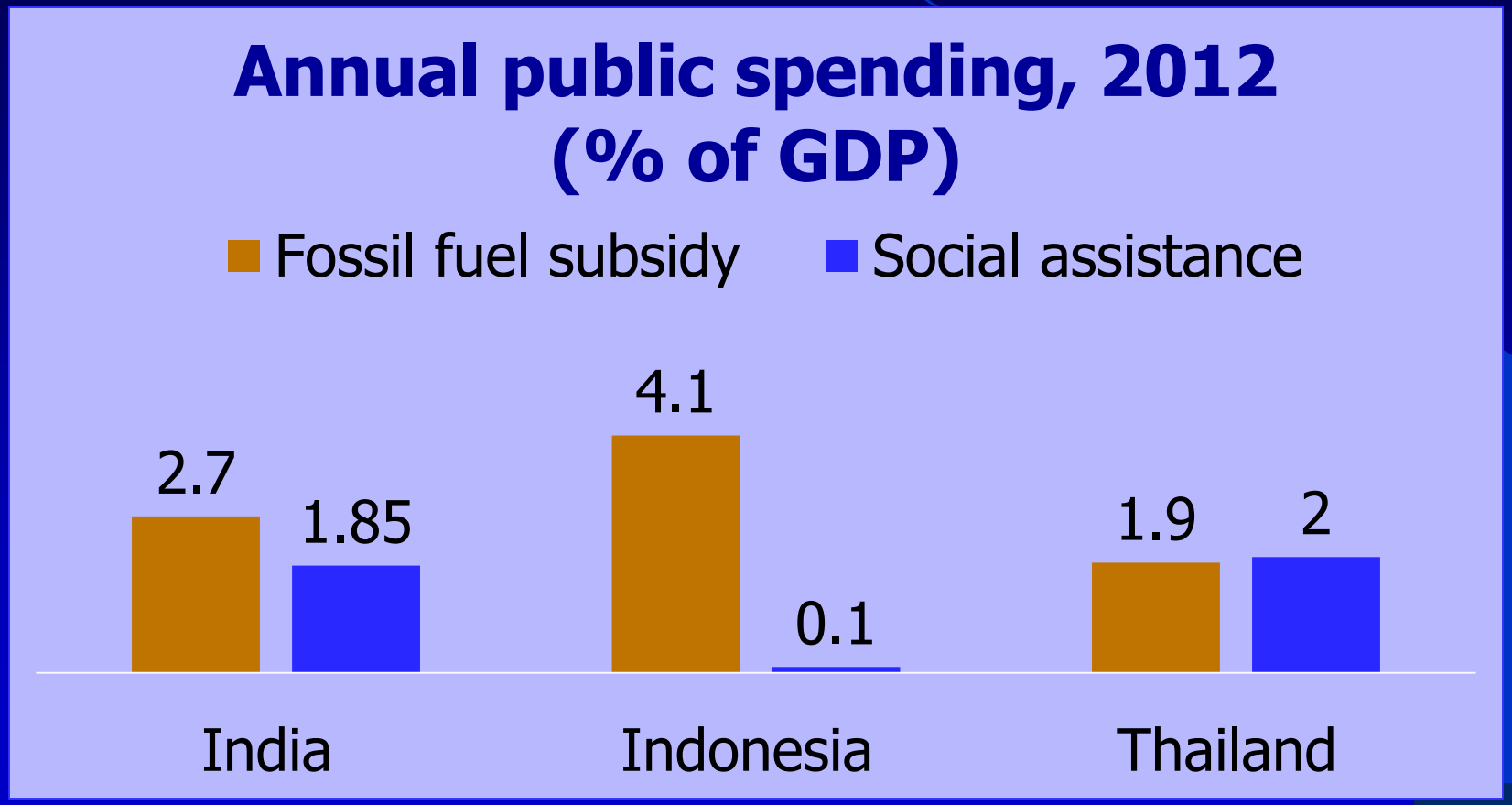
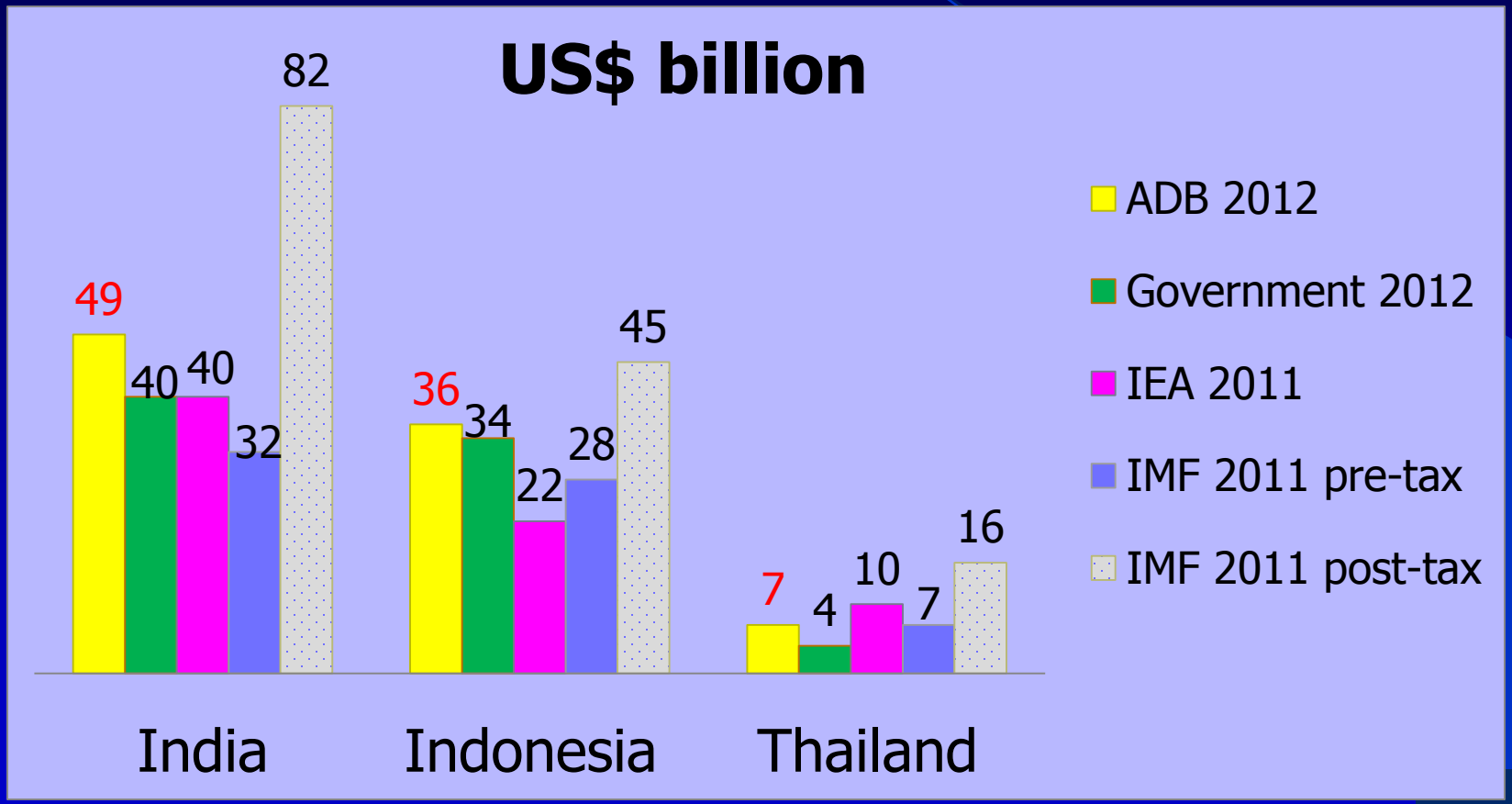
… are rising (US$ billion)



… and eating into other development priorities



ADB subsidy estimates exceed most others



Models to analyze reform impacts

1. **SAM** (Social Accounting Matrix) – I-O model
   Households and industry sectors
2. **MARKAL**– MARKet ALlocation Model
   Energy system
3. **CGE** – Computable General Equilibrium
   E3MG – energy-environment-economy
   GHG emissions and macro-economy

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Analysis of Reforms

No single model can give all the answers but consistent patterns emerge

1. Negative economic impacts if public expenditure is reduced

- Subsidy reduction without reallocation of savings
  - reduces consumer demand
  - lowers GDP, production, incomes, employment
  - increases inflation

➢ Safety nets are important to protect the poor

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2. Reallocation of savings offsets negative impacts of reform

- Fully compensating all households shows consistently positive results
  - neutralizes negative employment, income, growth effects; mitigates inflationary impact
  - wealthier households stimulate demand
  - compensation protects the poor from higher prices

➢ Reallocation is fundamental to allay govt fears

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3. In the long run, higher energy prices

(a) reduce energy demand & emissions;

Projections to 2030	India	Indonesia	Thailand
Final energy consumption	-0.6%	-0.8%	-1.5%
Emissions	-1.3 to -1.8%	-5.1 to -9.3%	2.8%

- Interventions are necessary to ensure energy poverty is not entrenched

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(b) impact energy intensive sectors;

- For all countries, most affected sectors are
  - Agriculture
  - Industry
  - Residential sector
- Transport is also affected in Thailand but impact on transport is limited in
  - India due to low demand elasticity
  - Indonesia due to fuel switching

➢ Encourage renewable, clean energy investment

(c) … but improve the energy mix

- Higher prices stimulate users to switch fuels
  - India: ↓ coal and oil use
  - Indonesia: ↓ coal, natural gas, petroleum, ↑ biomass
  - Thailand: ↓ natural gas, petroleum, ↑ biomass, electricity

➢ Interventions required to improve access to cleaner fuels

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To sum up, subsidy reforms

- improve overall economic efficiency and equity
- reduce fiscal vulnerability
- discourage energy overuse and reduce the need for rationing
- spur investment in clean energy

Policy implications

- Inject subsidy savings back into the economy
- Build on government programs to cover the poor
- Ensure availability and access to cleaner fuels
- Encourage renewable energy investments

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For More Information

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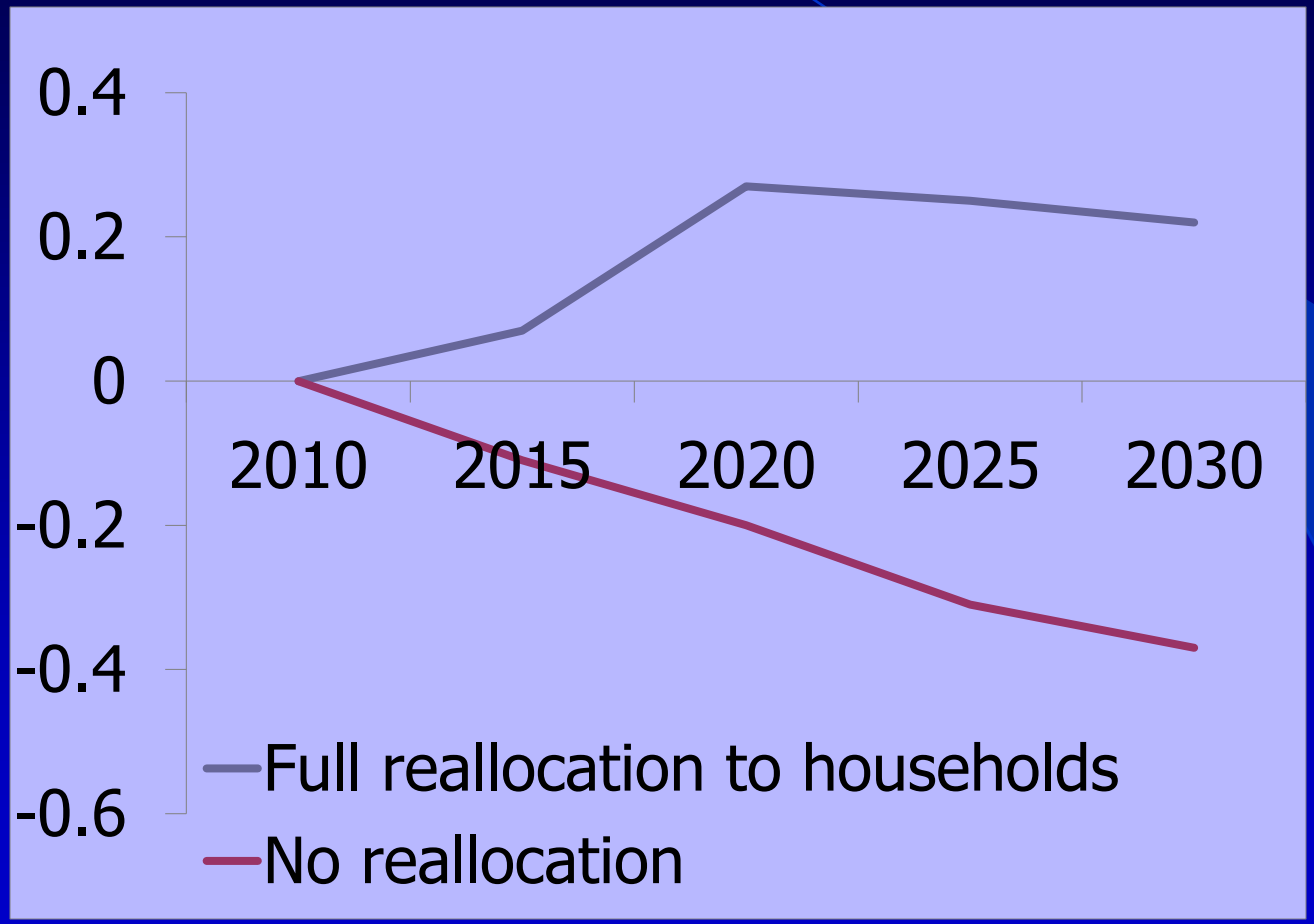
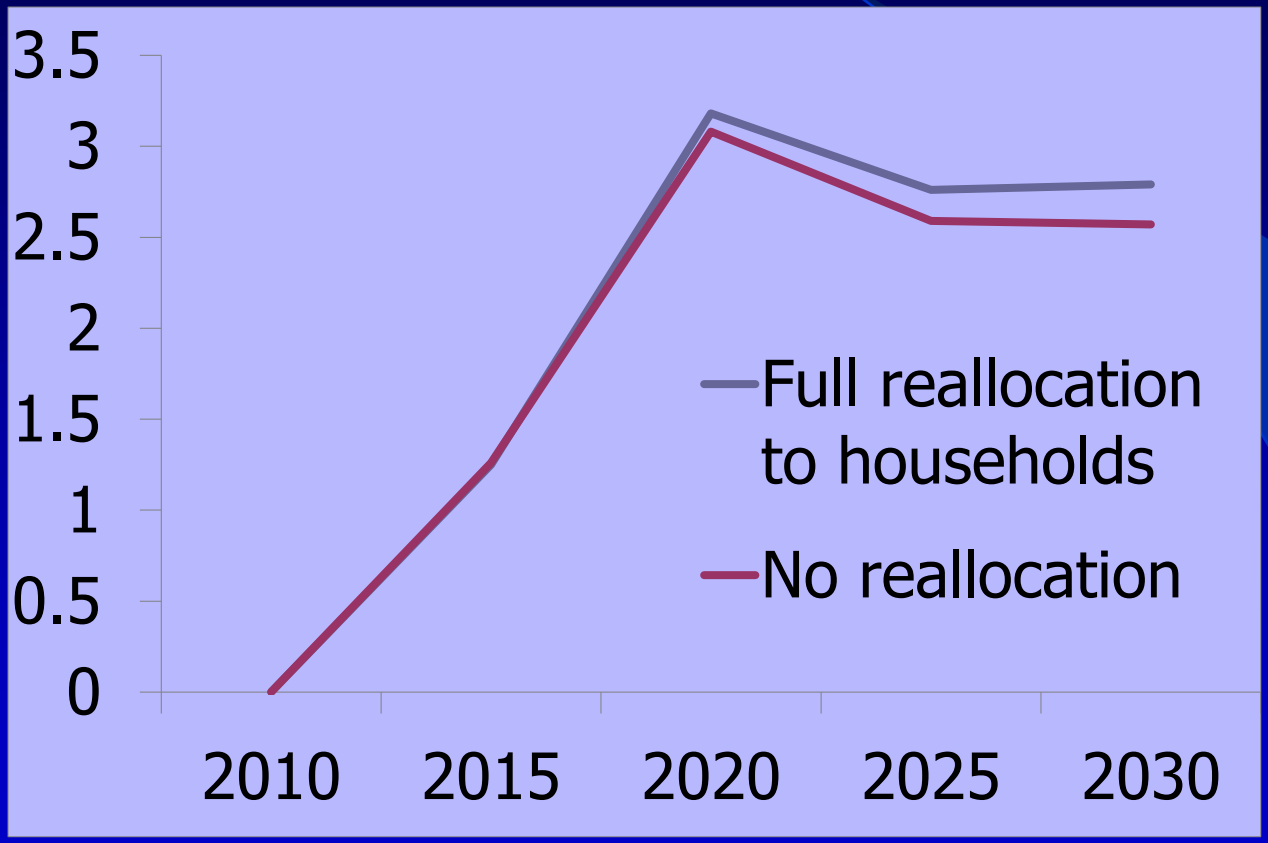
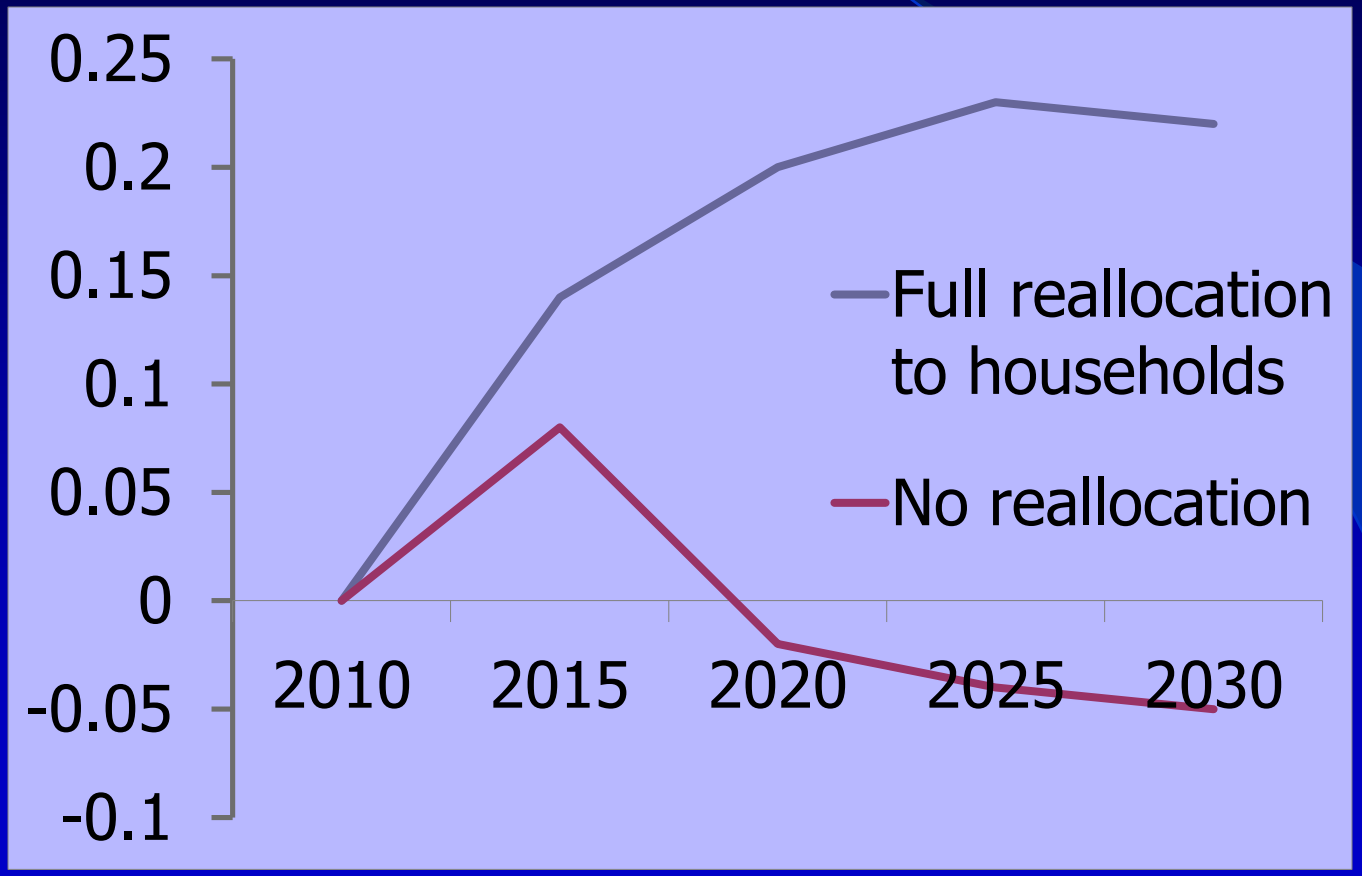
Indonesia: Projected Impact on GDP
(% relative to baseline)



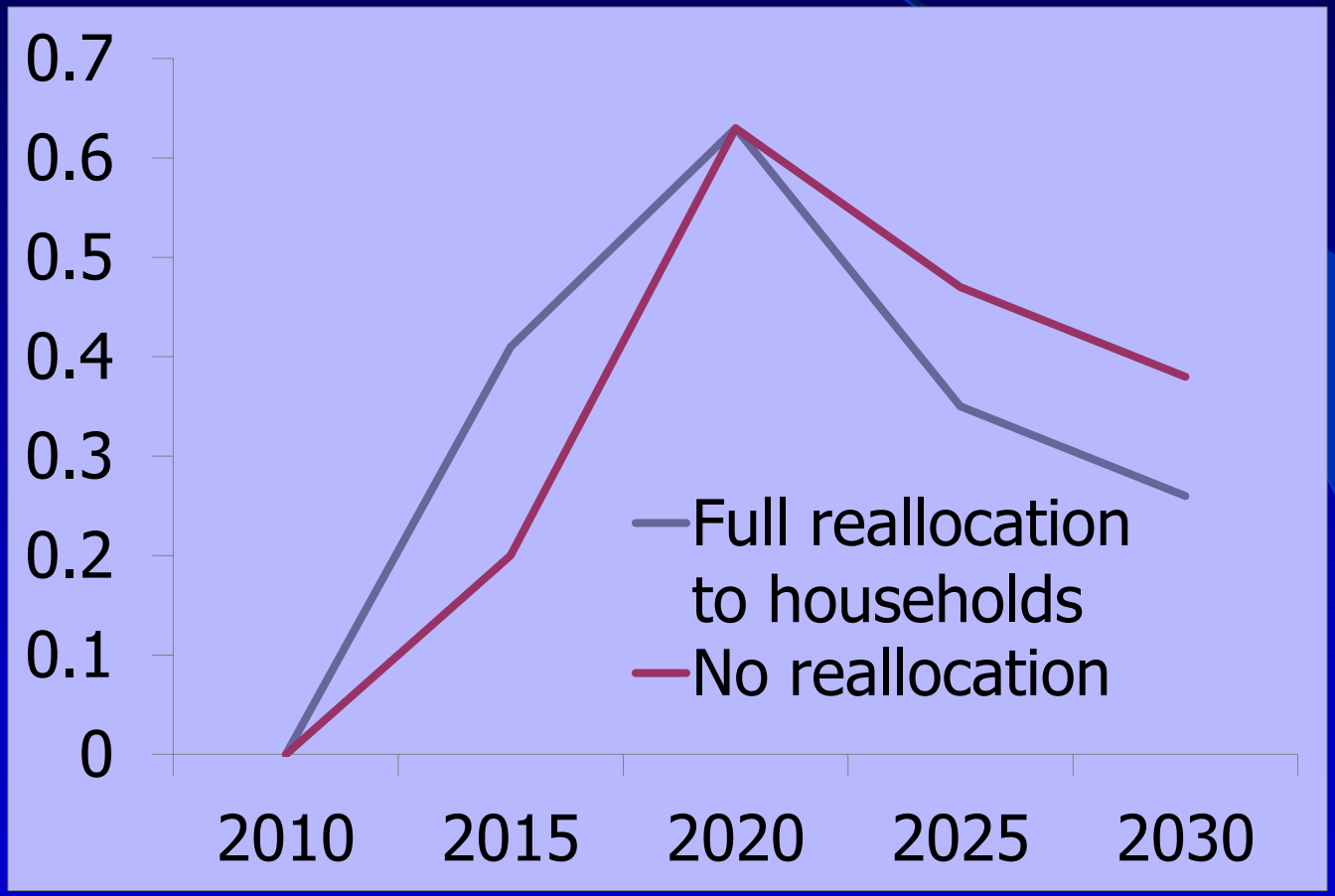
Indonesia: Projected Impact on Consumer Price Inflation (% relative to baseline)



India: Projected Impact on GDP
(% change relative to baseline)



India: Projected Impact on CPI
(% change relative to baseline)



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