The Effect of Fiscal Policy on Growth in the Short and Long Run

Steven Pennings (World Bank)*

XXVIII Cycle of Economic Lectures, Bank of Guatemala

11 June 2019

*Email: spennings@worldbank.org. Disclaimer: The views expressed here are the author's and are not necessarily those of the World Bank, its executive directors or the countries they represent.

Outline

- Part 1: Fiscal Policy → SHORT run growth: Fiscal Multipliers & Stimulus
- Part 2: Fiscal Policy → LONG run growth: Public Investment
- Questions:
  - What is the effect of fiscal policy on short run or long run growth?
  - Is the effect any different in developing/emerging economies vs high income?
  - Why? What are the mechanisms?
- Focus on expenditure side (not taxation)

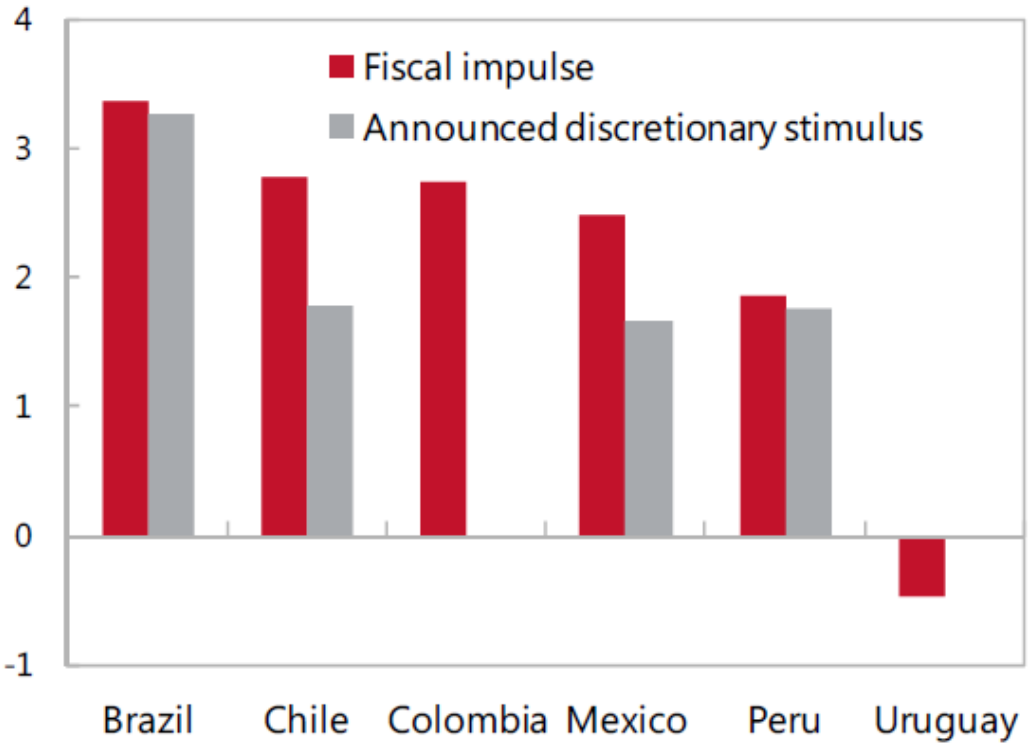
Part 1: Fiscal Policy → SHORT Run Growth: Fiscal Multipliers & Fiscal Stimulus

Motivation

- Historically emerging mkts cut spending in recessions → **procyclical** fiscal policy
- Now: many have **countercyclical** policy
  - Spend in recession to boost economy
- Example: ≈ 2-3ppts GDP discretionary fiscal stimulus in LAC countries in 2009
  - Public investment (CHL,MEX, PER)
  - Targeted transfers (BRA,CHL,MEX)
    - Eg 0.2ppts GDP low income families
  - Dev bank financing (BRA) & Tax relief
- Do these policies increase SR growth?
  - Depends on size of fiscal multiplier $\mathcal{M}$

Figure 3. LA6: Fiscal Impulse and Announced Discretionary Stimulus in 2009[1/]

(Percentage points of GDP)



Source: Celaun et al 2015 "Fiscal Policy in Latin America: Lessons and Legacies of the Financial Crisis" IMF SDN/15/06

What is the Fiscal Multiplier ($\mathcal{M}$)?

- Defined as \$$\mathcal{M}$ increase in GDP for extra \$1 in government spending
  - If $\mathcal{M}$=0, then GDP doesn't change, G just replaces other GDP components (Barro 2009 WSJ)
  - If 0< $\mathcal{M}$<1, then GDP goes up but other components shrink (consumption, investment etc)
  - If $\mathcal{M}$ >1 then government spending "crowds in" other components of GDP
    - Romer and Bernstein (2009) $\mathcal{M}$≈1.5 applied to the 2009 US ARRA stimulus package (≈5% US GDP)
- Motivated through the demand side (Keynesian) not supply side
- Size of multiplier controversial in high income economies
  - Ramey (2011): $\mathcal{M}$≈0.8−1.5 in US - but still active area of research
  - Zero Lower Bound on nominal interest rates could increase multiplier
  - Distortionary taxation, composition can reduce multiplier
  - Multiplier maybe larger if "slack" in economy
    - Yes: Auerbach & Gorodnichenko (2012 AEJEP); No: Ramey & Zubairy (2017 JPE)
- But that is for the US, what about for developing countries?

Multipliers in developing countries (Ilzetzki, Mendoza and Vegh 2013)?

- Around $\mathcal{M}$ =0.5 in high income countries, but zero (or negative) in developing countries
- If so, that would undermine the effectiveness of fiscal stimulus. Why different multipliers?

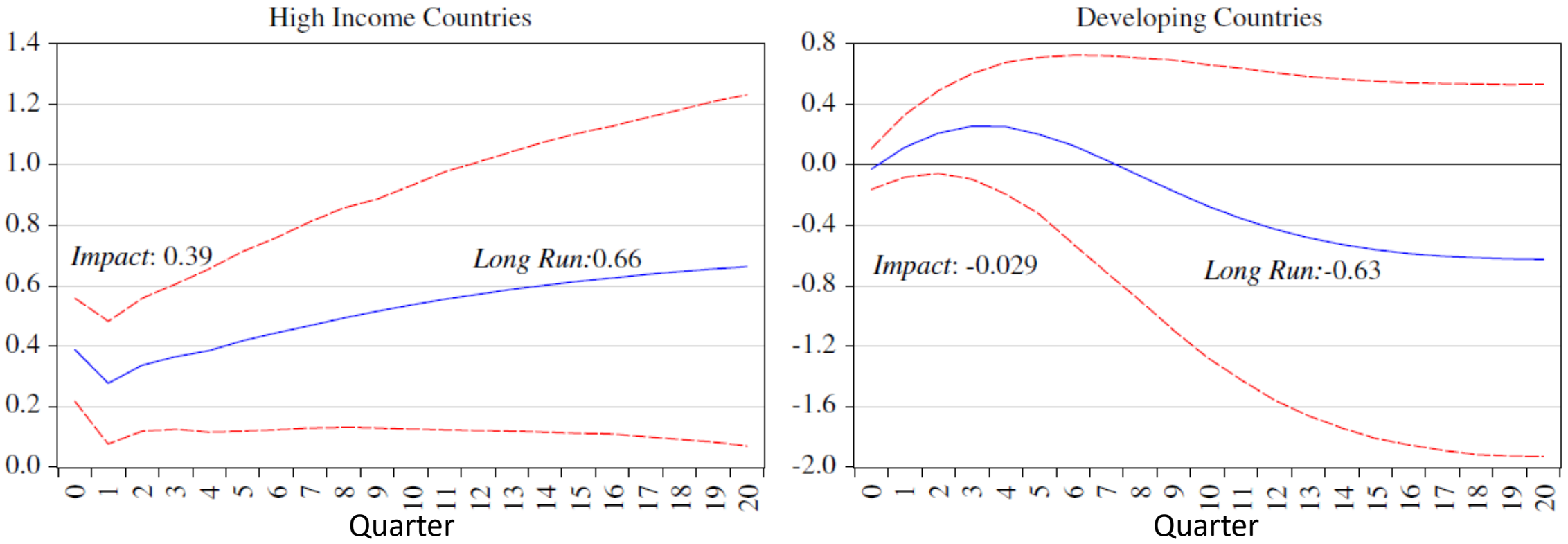
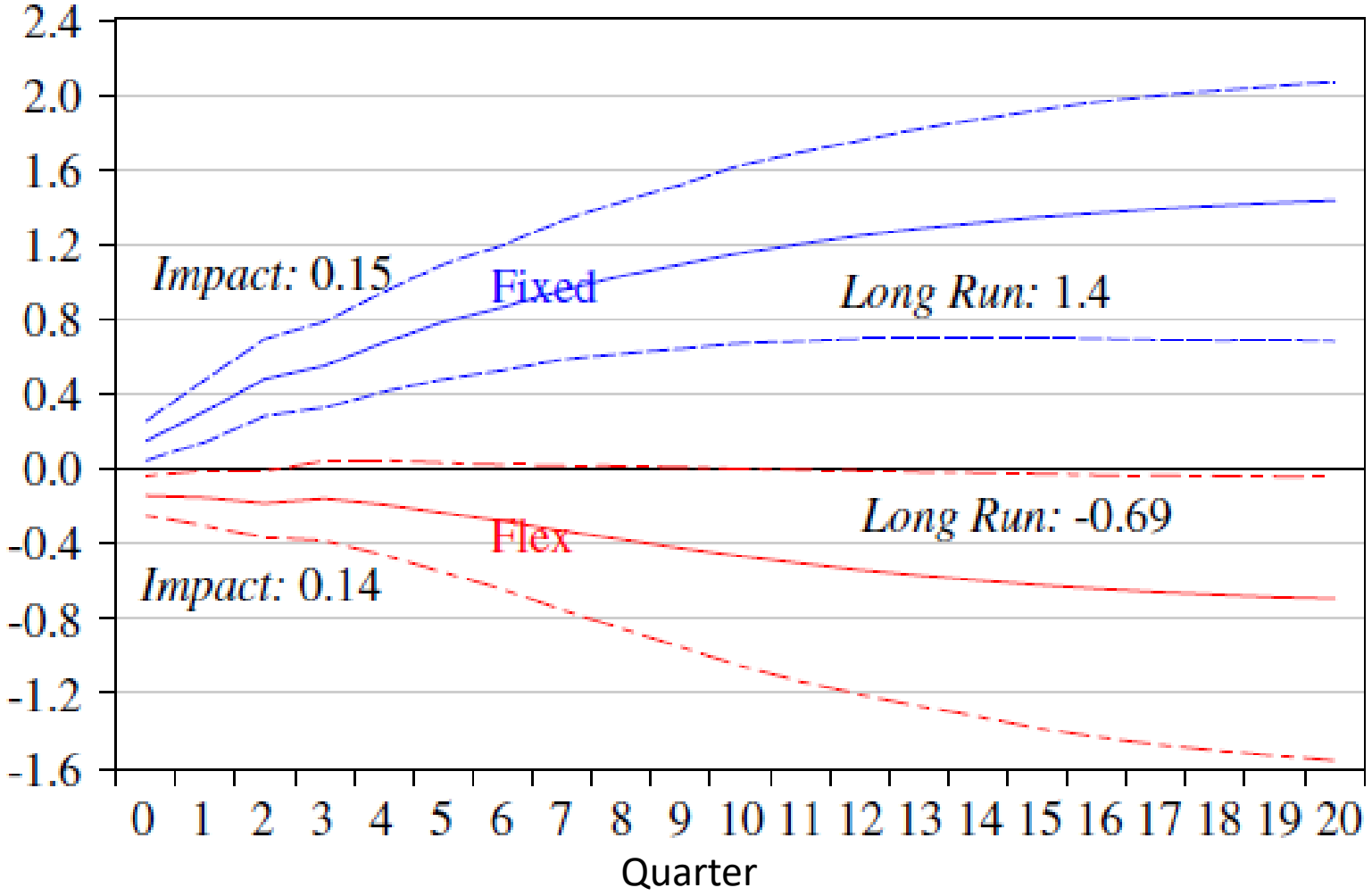


Fig. 3. Cumulative multiplier: high-income and developing countries. Ratio of the cumulative increase in the net present value of GDP and the cumulative increase in the net present value of government consumption, triggered by a shock to government consumption. Dotted lines represent 90% confidence intervals based on Monte Carlo simulations.

Source: Ilzetzki, Mendoza and Vegh (2013) "How big (small?) are fiscal multipliers?" *Journal of Monetary Economics*

Why different multipliers ($\mathcal{M}$)? Exchange Rate Regime?

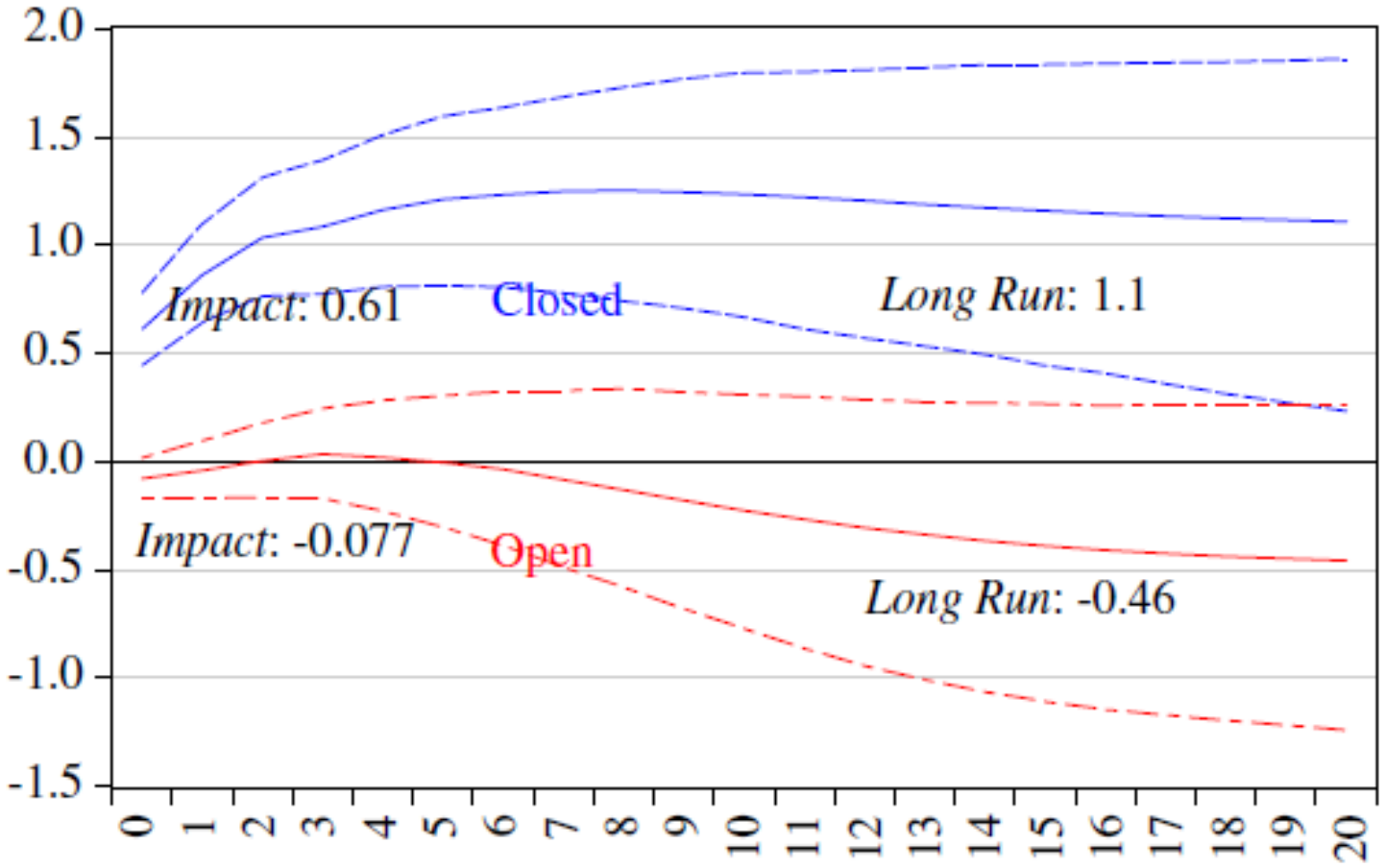
- Countries with fixed ERs likely to have larger $\mathcal{M}$
- Flexible ER: $\mathcal{M} \leq 0$
  - Appreciates ER. Increases imports, reduce exports.
- Fixed ER: $\mathcal{M} > 1$ after 2yrs
  - ER can't move, so higher demand affects quantities
- Developing countries more fixed ER historically
  - Would make $\mathcal{M}$ larger!



Source: Ilzetzki, Mendoza and Vegh (2013) "How big (small?) are fiscal multipliers?" *Journal of Monetary Economics*

Why different multipliers ($\mathcal{M}$)? Trade Openness?

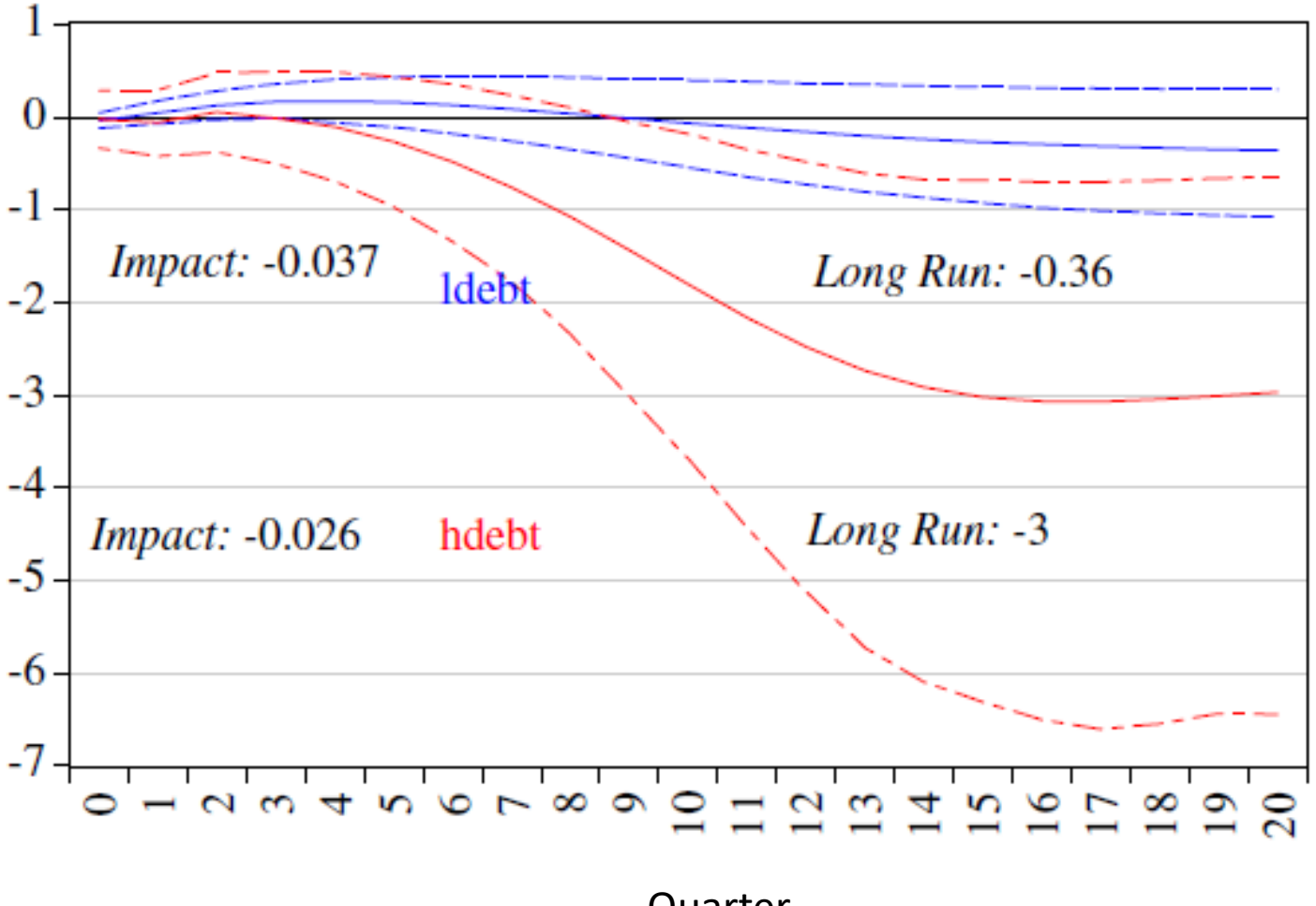
- Closed economies have larger multipliers
- Open economy: $\mathcal{M} \approx 0$
  - Increase in govt spending "leaks" out to imports
- Closed economy: $\mathcal{M} \approx 1$
  - Increase in govt spending boosts demand for locally produced goods.
- Many developing countries more open than US
- Spillovers introduce role for policy coordination



Threshold: (IM+EX)/Y=60% Source: Ilzetzki, Mendoza and Vegh (2013) "How big (small?) are fiscal multipliers?" *Journal of Monetary Economics.*

Why different multipliers ($\mathcal{M}$)? Debt?

- High debt economies have negative multipliers.
- Huidrom et al (2019 JME) similar results, but less stark.
  - If ↑govt spending & high debt
    - → ↑risk of sovereign default
    - → ↑ interest rates
    - → ↓ private inv and cons
- Debt traditional problem for developing countries.
  - Low tax revenues
  - Borrow in foreign currency

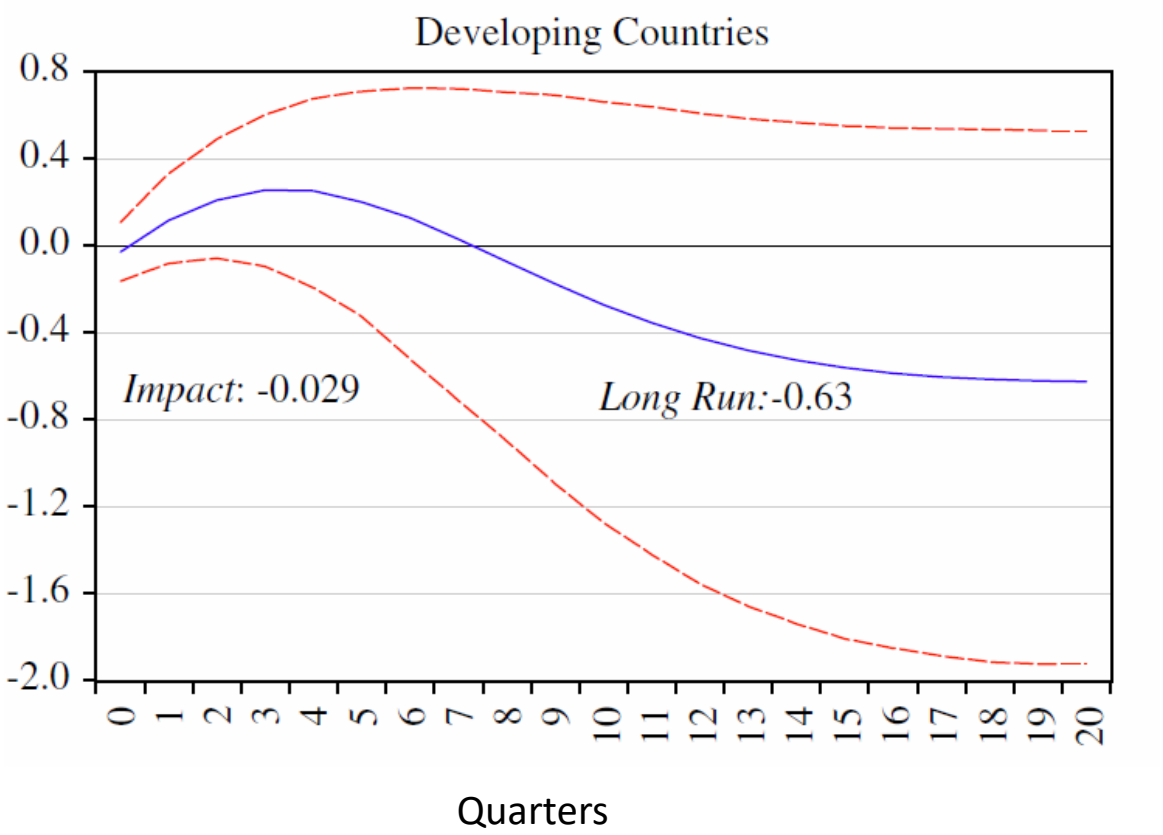


Threshold: debt/Y=60% Source: Ilzetzki, Mendoza and Vegh (2013) "How big (small?) are fiscal multipliers?" *Journal of Monetary Economics.*

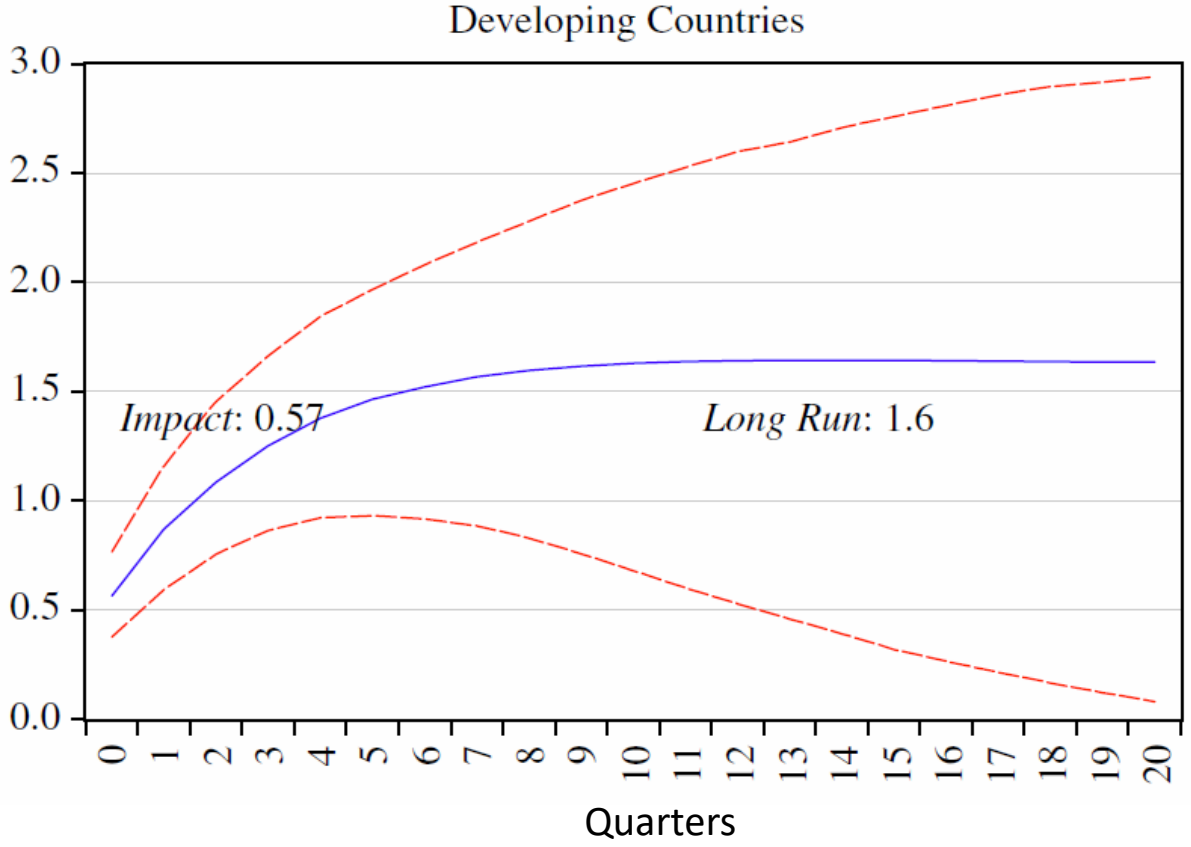
Why different multipliers ($\mathcal{M}$)? Spending type (public inv)

- Ilzetzki et al: Public Investment has larger multipliers in developing countries

Shock to government **consumption** $\mathcal{M} \leq 0$



Shock to government **investment** $\mathcal{M} \geq$**1**



Source: Ilzetzki, Mendoza and Vegh (2013) "How big (small?) are fiscal multipliers?" *Journal of Monetary Economics*

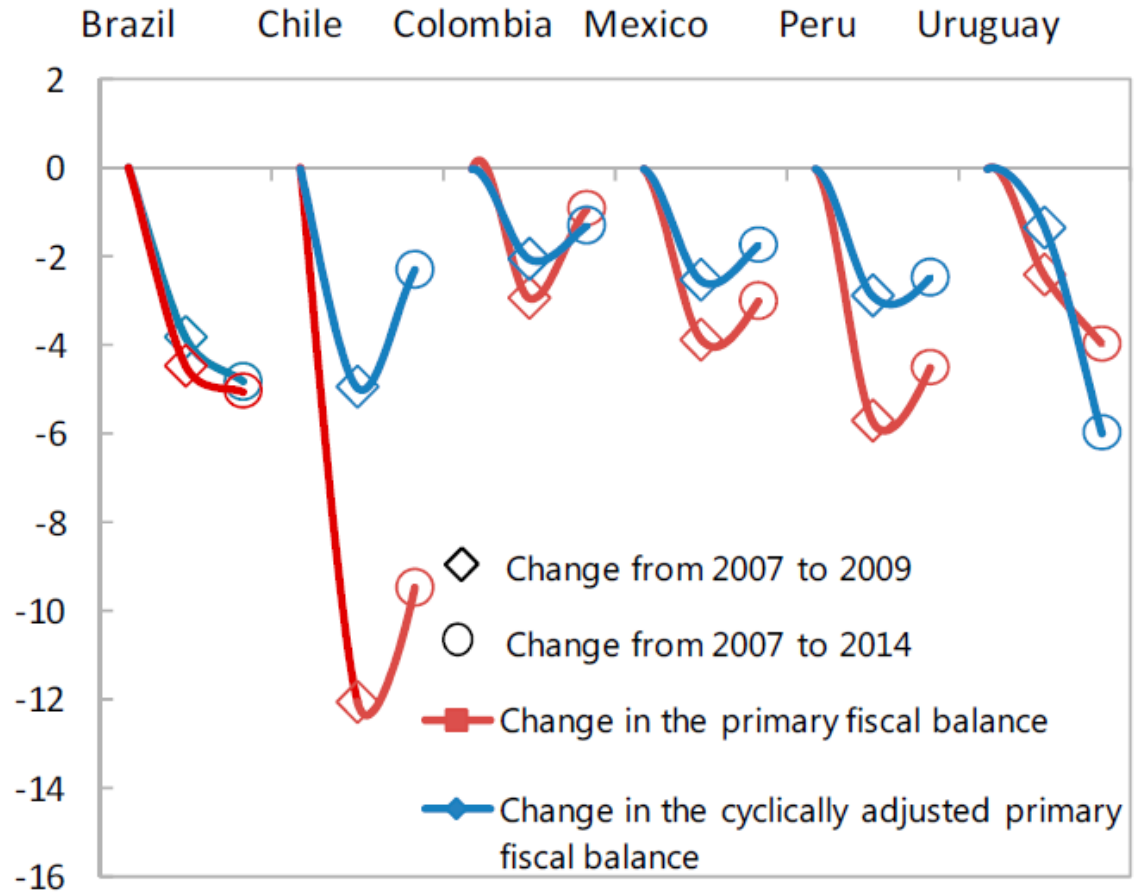
Why different multipliers ($\mathcal{M}$)

- Ilzetzki et al (2013):
  - Govt spending shocks in developing countries more volatile (less persistent)
- Opposite problem in Latin America after 2009: "temporary" stimulus becomes permanent
- Governments unable to unwind the fiscal stimulus
- IMF: leads to increase in debt, and weakening of fiscal institutions.

Persistence of fiscal shock

Figure 8. LA6: Change in the Fiscal Balances from 2007—14

(Percentage points of GDP)



Source: Celaun et al 2015 " Fiscal Policy in Latin America: Lessons and Legacies of the Financial Crisis" IMF SDN/15/06

Practical Considerations: Implementation Delays

- Takes time to put together a stimulus package, then have to implement it.
  - Stimulus package can be implemented after the recession is finished!
  - Then much of effect is delayed in impulse responses shown in Ilzetzki et al (2013)

- Delays worse for public investment projects [Leeper et al 2010 JME]

  "I think we can get a lot of work done fast; [the projects] are shovel ready, [we can] get the money out the door." --- Barack Obama Dec 2008 (before stimulus)*

  "The problem is…that spending it takes a long time, because there's really… no such thing as shovel-ready projects --- Barack Obama Oct 2010 (after stimulus)*

- "[there is a] belief that the lags in implementing fiscal policy were typically too long to be useful for combating recessions" Ramey (2011) *Journal of Econ. Literature*

*Source: New York Times https://thecaucus.blogs.nytimes.com/2010/10/15/obama-lesson-shovel-ready-not-so-ready/

Summary: Who might fiscal stimulus work best for?

- Countries with fixed exchange rates
  - If have flexible ER, monetary policy might be more effective (if not at the ZLB)
- Countries with low debt burdens
- Countries that are relatively closed
- When the recession is expected to be protracted and deep
  - Otherwise recession might be over before stimulus takes effect

- Also practical considerations speed and equity:

	Public Investment	**Govt. Cons.**	**Transfers**
Multipliers $\mathcal{M}$	Highest	Medium	Smaller (?)
Speed	Slowest	Medium	Fast
Equity/transparency	Mixed; subject to corruption	Mixed	Can be pro-poor Transparent

Most important…avoid procyclical spending cuts

- School children need to go to school – recession or not.
- Infrastructure needs to be built

- Procyclical fiscal policy: cuts essential spending if tax revenues fall in recession
  - Easterly and Serven (2003): cuts to public inv. in 1980s LAC reduced LR growth
  - US stimulus package try stop layoff of teachers, policemen, doctors in US states.

- Automatic stabilizers provide some smoothing benefits, though modest*
  - Automatic stabilizers: in recessions fewer taxes, more transfers (eg Unemp. Benefits)
  - Smaller in developing countries due to smaller government as share of GDP

*Source: Auerbach and Feenberg (2009) "The Significance of Federal Taxes as Automatic Stabilizers" *J. of Economic Perspectives*

Part 2: What is the effect of public investment on LONG RUN growth?

- Simulations using the World Bank Long Term Growth Model (LTGM)
- Long run supply side effects only (productive capacity)
  - NOT short run Keynesian demand effects

Public investment (I_t^G) and Long Run Growth

- One of the most important roles of government is to provide essential infrastructure.
- 650 million people without safe drinking water; 1.2 billion are without electricity*

- What effect does Public Invest. have on growth? Empirical estimates from zero to large

- Answer this question using the Long Term Growth Model – Public Capital Extension**
  - Based on celebrated Solow-Swan Model, but adapted for growth analysis in developing countries
  - Capital divided into public and private, and public capital is adjusted for quality.
  - Simple Excel-based model, downloadable at www.worldbank.org/LTGM

- Production function

$$Y_t = A_t\left(\theta_t K_t^{Gm}\right)^{\phi}\left(K_t^P\right)^{1-\beta-\phi}\left(h_t L_t\right)^{\beta}$$

GDP — Y_t
TFP — A_t
Quality Public K — $\theta_t K_t^{Gm}$
Quantity Public K — ϕ
Private Capital — K_t^P
Human Capital — h_t
Labor — L_t

*Source: http://www.worldbank.org/en/news/feature/2016/04/16/spending-more-and-better-essential-to-tackling-the-infrastructure-gap

** Devadas and Pennings (2018) "Assessing the Effect of Public Capital on Growth: An Extension of the World Bank Long-Term Growth Model"

What drives the effect of public investment on growth?

$$g_{y,t+1} \approx OTHER\_TERMS + \phi \left[\frac{\theta_t^N}{\theta_t} \quad \frac{1}{K_t^{Gm}/Y_t} \right] \frac{I_t^G}{Y_t}$$

GDP growth

Usefulness

Quality of New Public Inv relative to stock

Public capital to output ratio

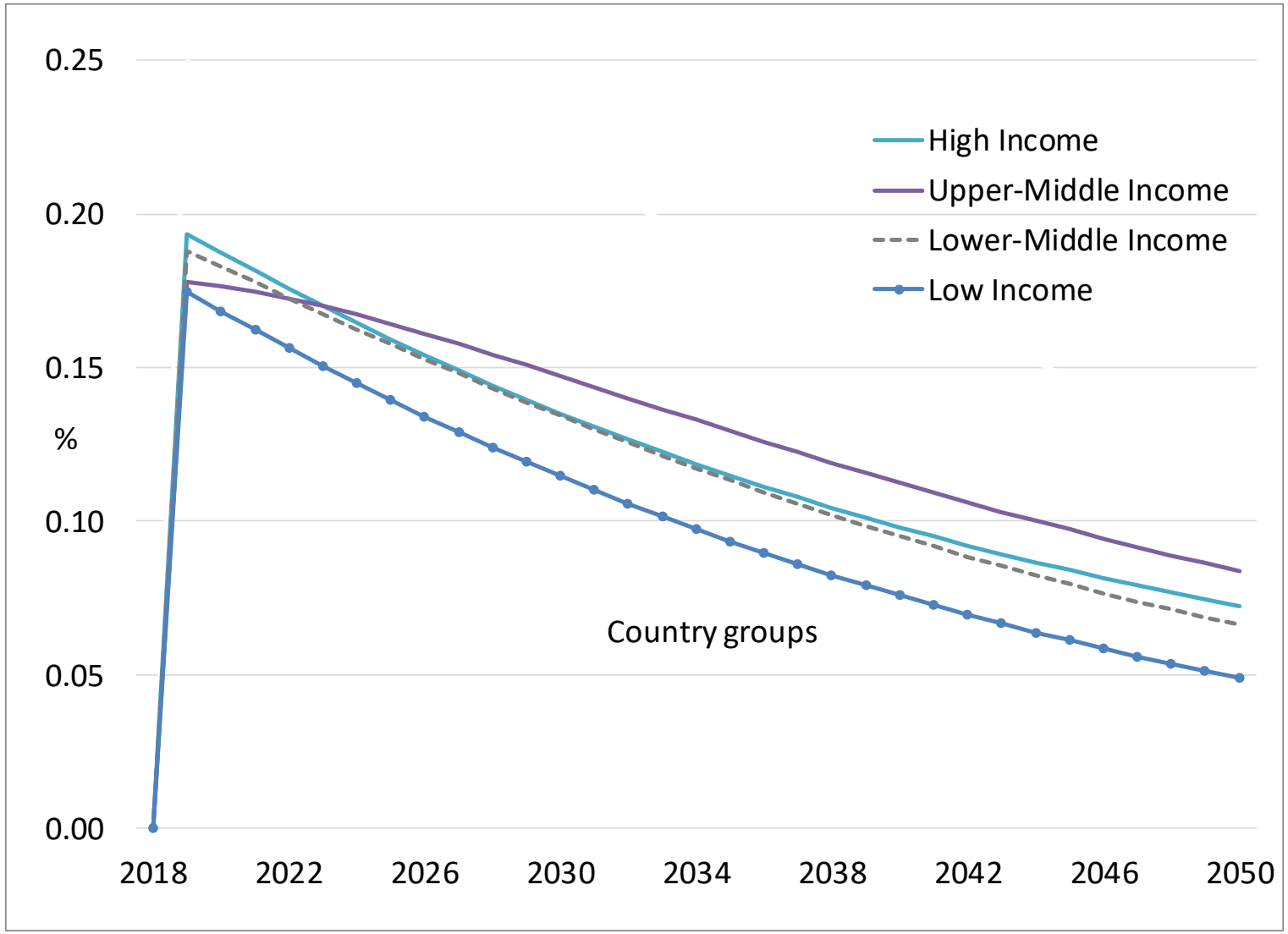
Public Investment (share of GDP)

Larger effect of public investment on growth if:

- Shortage of public capital *relative to GDP* (K_t^{Gm}/Y_t) [most important]
- Public capital more useful (ϕ) e.g. essential infrastructure
- New public investment higher quality than existing public K (θ_t^N/θ_t)
  - For example, lower corruption increases the quality of road construction

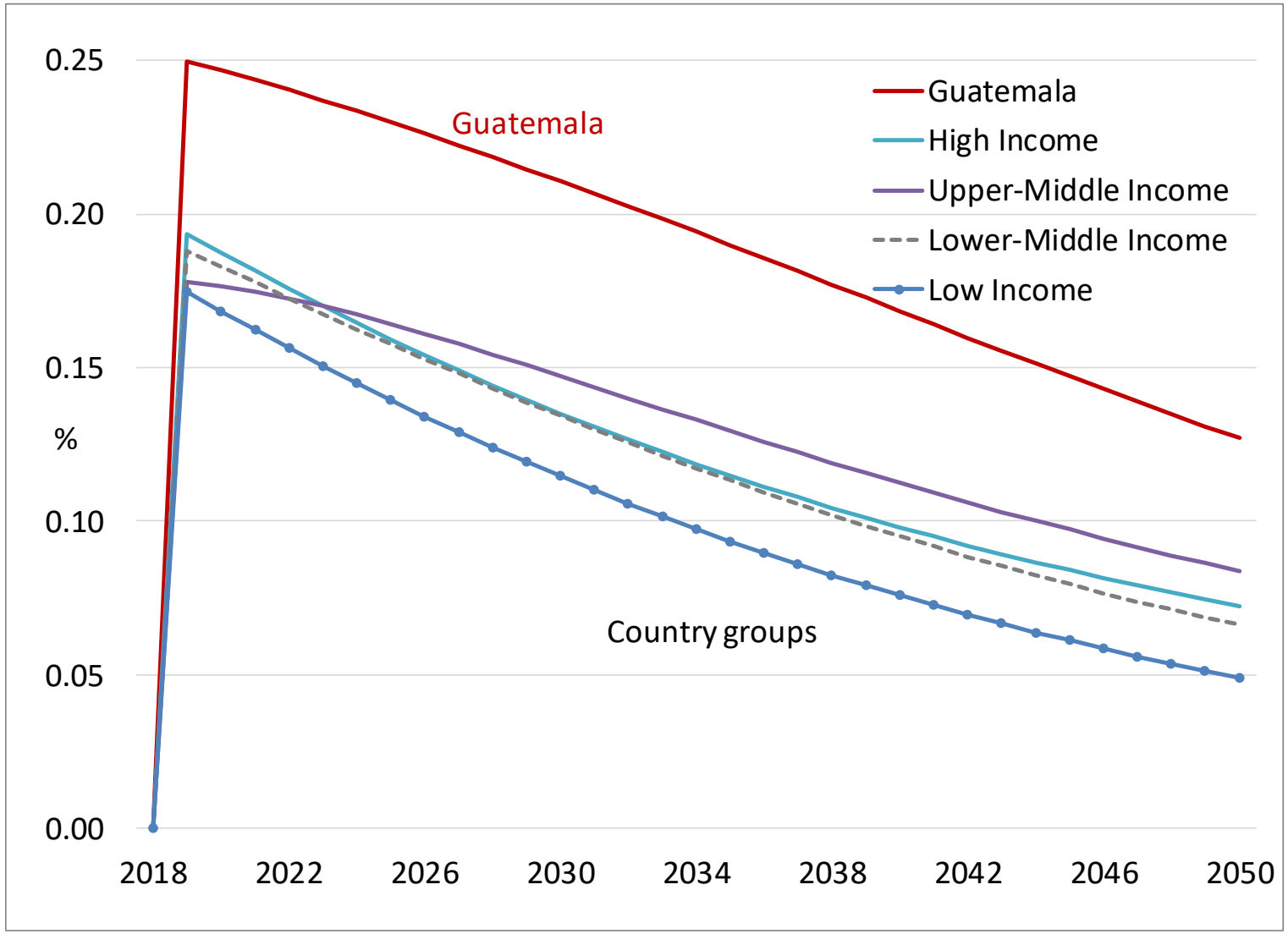
Effect of Permanent 1ppt GDP ↑Public Investment on Growth

- Similar effect growth in developing and high income countries:
  - Initial boost ≈0.18ppts
  - Effect falls over time. By 2050: 0.08ppts. Diminishing returns.
  - Why similar? K_t^{Gm}/Y_t ≈0.9



Effect of Permanent 1ppt GDP ↑Public Investment on Growth

- Similar effect growth in developing and high income countries:
  - Initially boost ≈0.18ppts
  - Effect falls over time. By 2050: 0.08ppts. Diminishing returns.
  - Why? Similar K_t^{Gm}/Y_t ≈0.9
- Highest return to public investment in Guatemala
  - Boost growth ≈0.25ppts
  - Guatemala short of public capital rel. GDP (K_t^{Gm}/Y_t ≤0.7)
  - Years of low public investment



Thank You!