PIM Conference Korea - Jim Brumby - Talking points

Sharpening the public investment narrative for developing countries

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- **Slide 1: Title slide**

It is a great pleasure to join in this celebration: the 20-year anniversary of the prefeasibility study being introduced into Korea. Korea's ongoing development path in these 20 years, with an average growth rate of a little above four percent, has been the envy of many countries the world over – and for sure, the PIM reforms played an important role in Korea's journey.

This event will provide a perfect opportunity to consider aspects of Korea's path; how the environment for PIM has contributed and adapted and how it may need to adapt more going forward. Many countries look to learn from Korea's achievements.

As with all anniversaries, this event provides an opportunity to reflect both specifically and generally. Today I would like to reflect on how developing and emerging market countries can square the circle of substantial needs to invest in infrastructure for meeting the SDGs with the very limited budget space that they typically have. A recent World Bank study—Beyond the Gap—finds that spending needs for infrastructure could range anywhere from 2 percent to 8 percent of GDP per year by 2030**.** How can countries meet this need?

- **Slide 2: How Much Fiscal Space for Government Investment?**

Rapidly rising debt levels are a key constraint on countries' capacity to invest in public infrastructure. Public debt levels have continued to rise over the past ten years in Low-Income Developing Countries (LIDCs) and Emerging Markets and Middle-Income Economies (EMDEs). For example, Government formal debt

as a percentage of gross domestic product in sub-Saharan Africa has doubled in the past decade, heading back toward the level it reached in 2000, before HIPC relief erased much of this debt. Of the 54 countries on the continent, 20 are near or at distressed levels and face difficulties honoring their obligations. Increased reliance on commercial bonds has raised servicing costs, diverting funds that could be spent on new roads or schools. Nigeria spends about the same amount every year on repaying debt as it does on infrastructure.

But investment in infrastructure is essentially different from many other types of government spending, in two obvious ways. Improvements in public infrastructure provide a long-term boost to economic growth, which means that debt obligations associated with infrastructure spending may be recouped over time in the form of higher revenue-- partially or even fully; and investment does lead to asset creation, special assets that have a public purpose, even when there may be substantial private benefit. A specific case of this mechanism is accessed in public-private partnerships where user fees provide a financial return for the investor.

And the cost of borrowing has declined in recent years. Lower interest rates mean that investment is less costly, and more modest revenue may recoup the cost over time.

But, developing countries and emerging markets are often not-well placed to bank on this financial return on investment. Poor governance and weak investment management capacity tend to lower efficiency and quality of infrastructure spending. This brings down the potential financial benefit. Political economy challenges and mistakes in growth and investment strategies are also frequently mentioned as reasons to keep public investment in check. The IMF estimates the waste (inefficient) of government investment at 40% on average for

low-income countries 27% in emerging markets, against 13% in advanced economies. Such levels of inefficiency cast doubt on whether government investment results in high-quality capital.

To make progress on the question about to what extent government investment is self-financing, a careful investigation of the empirical evidence is needed. While low interest rates and the presence of profitable investments support a more nuanced view on the fiscal space for public investment, the low quality of public investment spending, suboptimal public investment management practices, and other factors point in the opposite direction.

- **Slide 3: Tax and Investment: A Horse and Cart Story**

Another way to frame the question is to ask whether the level of revenues constrains the space for government spending on infrastructure, or whether government investment drives revenues. In other words, which is the cart and which is horse—how do you get the order of cart and horse right?

Horses typically don't do well when it comes to pushing carts.

The link from tax revenue to investment is direct: this captures the basic issue of fiscal space. The link from investment to revenue is more indirect: how many, and what kind of infrastructure assets are being created, what is the impact on growth, and then what is the impact on tax revenue? Let's take these steps one by one.

- **Slide 4: LIDC Surprise: Infrastructure Asset Creation……**

We start with the first link in the chain from government investment to revenues: the relation between investment spending and infrastructure assets.

You can follow where we are in the cycle from which link is highlighted in the red in the top right corner of the slide.

Government investment leads to the accumulation of productive capital.

The chart to the right displays public investment efficiency scores by income groups. Efficiency scores are calculated from government investment transformed into government capital stock using the perpetual inventory method (input) and World Economic Forum (WEF) quality infrastructure indicators (output). The chart shows the resulting data as box plots, with the line in the box denoting the median and the vertical 'stretch' showing dispersion. The data reveals what could be considered a surprising result: emerging markets score worse than low-income countries when it comes to their ability to translate government investment into quality infrastructure.

This may be an element of a middle-income trap, with emerging markets scoring generally below both other country groups! Conversely, low-income countries are not far behind advanced countries in terms of investment spending efficiency.

This result can be explained by the relatively small volume of infrastructure assets in low-income countries. Due to decreasing returns to scale, more modest infrastructure boosts the marginal impact of capital investment. On average, this characteristic offsets the impact of lower investment spending efficiency in low-income countries.

Another factor to consider is crowding-in, or out, of private investment. This is shown in the bottom half of the slide. Crowding-in happens when private investors come in when government puts in place economically important (or public purpose) assets such as roads and ports. Crowding out happens when

investment drives up public deficits and debt and private investment retreats as interest rates rise.

Again, low-income countries show a good result. In low-income countries, total investment, which includes private investment and is shown by the grey bar, rises by much more than government investment, shown by the yellow bar. The larger crowding-in of private investment in poorer countries is driven by the initially lower volume of capital stock, and the decreasing-returns-to-scale mechanism—just as the larger effect of government investment on government infrastructure.

- **Slide 5: … Despite Worse Governance**

We find these positive results for the link between investment spending and creation of capital for low-income countries, on average, despite their generally worse governance outcomes. But that does not mean governance does not matter. This chart shows a strong positive correlation between better governance performance (proxied by the WGI Government Effectiveness indicator) and the efficiency score of government investment. So, while low-income countries score generally well on producing quality infrastructure assets with given investment spending, they could do better—and achieve even more.

- **Slide 6: Positive Growth Effect of Capital**

Increases in quality physical capital translate into economic growth. The approach for linking infrastructure to economic growth is straightforward and now traditional in economics. The slide shows the standard capital accounting model, where the marginal effect of increased capital equals α. The consensus estimate in the economic growth literature for the capital elasticity of output is 0.35. In other words, a 10% increase in the capital stock is believed to translate into an output growth of 3.5%.

The twist that we apply here is accounting for differences in the efficiency of investment. Since we have no good measure of government capital stock, we add annual investment overtime and deduct depreciation. This perpetual inventory method of estimating the government capital stock does not account for differences in the efficiency of investment: but we know that the same dollars do not generate the same valued assets over time and in different countries. We use our earlier estimates of investment efficiency to makes this correction. So, the total physical capital stock in an economy equals the sum of government investment over time, adjusted for deprecation and multiplied by the efficiency score of investment spending, and the stock of non-government physical capital, including private capital and public-private partnerships as well as the stock in state-owned enterprises and other non-government public bodies. (Which even though many of these may be public purpose assets, by convention they treated in this manner.) As you will recall, investment efficiency is higher in low-income countries than emerging markets, but lower than in advanced economies. So while the marginal effect of an increase in the capital stock is the same across all cases—0.35—it is still lowest in emerging markets because of the larger efficiency adjustment of the government capital stock.

- **Slide 7: Greater Tax Buoyancy Helps EMDEs**

Now we turn to the impact of economic growth, generated by boosting infrastructure, on revenues. Here the story is less favorable to low-income countries. Their tax/GDP ratios have gone up modestly over the last decade. This has translated in a steadily increasing average buoyancy over the period—now, the estimated effect for low-income countries of a one percent increase in output is a 1.3 percent increase in the tax take. This value was 1 in 1990 when tax/GDP ratios were flat.

But tax-to-GDP ratios in low-income countries are, on average, still well below those in emerging markets. This is shown in the lower chart. So, even though low-income countries are doing better, they still get less revenue-bang-for-their-economic-growth-buck because tax/GDP ratios do not rise further.

- **Slide 8: Adding It All Up**

We now add up all segments of the chain, from government investment to tax revenue. Taking estimates of the effects at every step of the cycle (government investment to capital stock to economic development to taxes), it is possible to calculate the reduced form impact of government infrastructure on tax revenue. The model developed is multi-year. Government investment happens in year 0. The impact on the capital stock develops over several years: in the initial year, the government capital stock increases by the investment minus the loss due to inefficiency; then the effect of the initial investment on the capital stock goes down as the stock depreciates which is assumed at a rate of 10% annually. The effect on tax therefore happens over time: for as long as the capital stock and GDP are (significantly) raised because of the investment. The financial bottom line is thus captured as an NPV of the additional stream of government revenue associated with government investment with an assumed discount rate of 10%. The NPV of the investment increase is measured over a fixed time period. Ten years is shown here but the results are not that different for five years or longer time periods.

What is shown in the charts is the NPV of additional revenue expressed as a share of GDP associated with government investment of 1% of GDP. If the present value of revenues exceeds 1% of GDP, then the public investment is completely 'earned back' through larger revenue. In other words, the 'investment has financed itself'. This can be calculated for each country and country group according to

development level, capital stock size, governance, oil endowments, FCV status and region.

Country groupings of interest are shown in the bottom-left chart.

Consistent with the decreasing-returns-to-scale narrative, the level of the capital stock matters a lot. Governance does too, but to a lesser extent. Whether a country is oil rich or fragile also matters a lot, for the worse. Low-income countries do a lot better than emerging markets and even advanced economies in turning government investment dollars into additional revenue dollars. The South Asia region gains the most tax from government investment; Sub-Saharan Africa is closely behind—and Latin American and the Caribbean scores zero tax increase from government investment. East Asia and Pacific countries are, on average, in the middle.

Overall, no country group shown fully recoups its government investment. This suggests that counting on a financial return on government investment is not wise. Some money may come back, but not enough to think that government investment is a free lunch.

But looking at specific countries, we see that in some cases there may be a free lunch. Data suggest that Mozambique may earn back its initial investment in the form of higher revenue—and climbes to 130% of the initial investment after 10 years! India, Cote d'Ivoire and Nicaragua also recoup their investments through higher tax revenue.

On the other hand, Chad scores at the bottom of the countries listed here. Small investments result in big changes in the capital stock, leading to high economic growth (1% of GDP invested leads to 1.31% growth). Unfortunately, its

tax system does not capture much of that increased activity (tax-to-GDP is about 6-7%). All links in the chain are strong, except for the last (the tax) one.

Over time such favorable factors that boost the revenue return to government investment in countries such as Mozambique will recede, and it will become more important to raise governance, spending efficiency, and collect a larger share of GDP in taxes. We see this illustrated for the case of Korea. The revenue return on government investment is not as high in Korea as in many lower-income countries. The relatively high capital stock brings down the impact of new investment, despite high investment efficiency due to strong PIM, and good revenue performance.

- **Slide 9: Take Aways: The Horse and the Cart?**

Government revenue creates space for investment—and investment boosts revenue. Depending on specific circumstances, the effect of investment on revenue can, in exceptional cases, be large enough to fund the investment. Then investment can lead tax. In most cases, there is some effect of investment on tax, but not enough to recoup the initial investment. Then tax is the horse that needs to pull the investment cart.

We have investigated the aspects that drive the relationship between government investment and revenue:

- The size of the impact differs a lot on the size of the initial capital stock
- Crowding-in/out of private investment is also key
- As is revenue performance and buoyancy (tax/GDP)
- Governance and spending efficiency matter, but can be offset by other factors

Low-income countries tend to do well, but weak tax systems can handicap the revenue response to investment. This is mostly due to the low level of capital stock in these countries, which drives up returns to scale in both government investment and crowding in of private investment. We need to keep a focus on building buoyancy into tax reforms for low tax taking countries, so that a virtuous fiscal space cycle can be derived from public investment. This may need looking again at progressivity and the manner in which tax systems are more rather than less elastic to increasing incomes.

This does not mean that PIM and governance are any less important that we have thought they were. Factors that boost the revenue effect of government investment in low-income countries are typically transitory. As they invest in infrastructure, the edge from low capital stocks will fade, and ensuring that every dollar is well spent and tax systems respond appropriately to economic gains become more important. To optimize present gains, and sustain them in the future, progress with PIM, remains key. At the same time, we should consider on a case-by-case basis how much policy and reform effort is needed now to underpin and in effect, finance investment spending. In some cases, suboptimal government investment comes at relatively low cost and may not jeopardize fiscal discipline. Such low-income countries may be able to make quicker gains on meeting the Sustainable Development Goals. The gains will be even quicker and stronger if reform actions are picked up, so that the potential gains are not left on the table.

Slide 10: The Bank agenda

Our focus on PIM is not as well aged as the Korean focus on PIM. But we became aware that in many cases, concentrating too heavily on MTEFs undervalued the contribution from PIM. Over the past dozen years, we have tried

to address that. PIM strengthening actions comprise a substantial share of our conditionality in our overall lending, about 7%.

The Bank also invests in countries' tax systems in support of reforms to raise revenue effort. Engagement in this area is very substantial, with about $1.8 billion in active Bank loans for tax purposes. Tax advice, technical assistance and loans reaches some 100 countries. In our country work, we leverage partnerships with other organizations, including the IMF, OECD and UN in the Platform for Collaboration on Tax, as well as Regional Tax Organizations such as SGATAR, and stakeholders in civil society and business.

Fiscal sustainability is a great concern for the Bank and its client countries. World Bank loans are carefully assessed for whether they don't contribute to unsustainable debt situations. Transparency is key for ensuring countries take debt sustainability into account in decisions that affect the budget. Tools such as the PPP Fiscal Risk Assessment Model help governments assess the potential impact of indirect obligations from public-private partnerships.

Korea has set an example for other countries on how good management of public investment, the budget system, and revenue can bring about transformational change and development. Korea has shown how a sustained pattern of savings and investments has enormous pay-off in the long run. Our relationship with KDI helps us to understand these lessons and draw on them for advice to our client countries.

Sharpening the public investment narrative for developing countries

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WORLD BANK GROUP
Equitable Growth, Finance & Institutions

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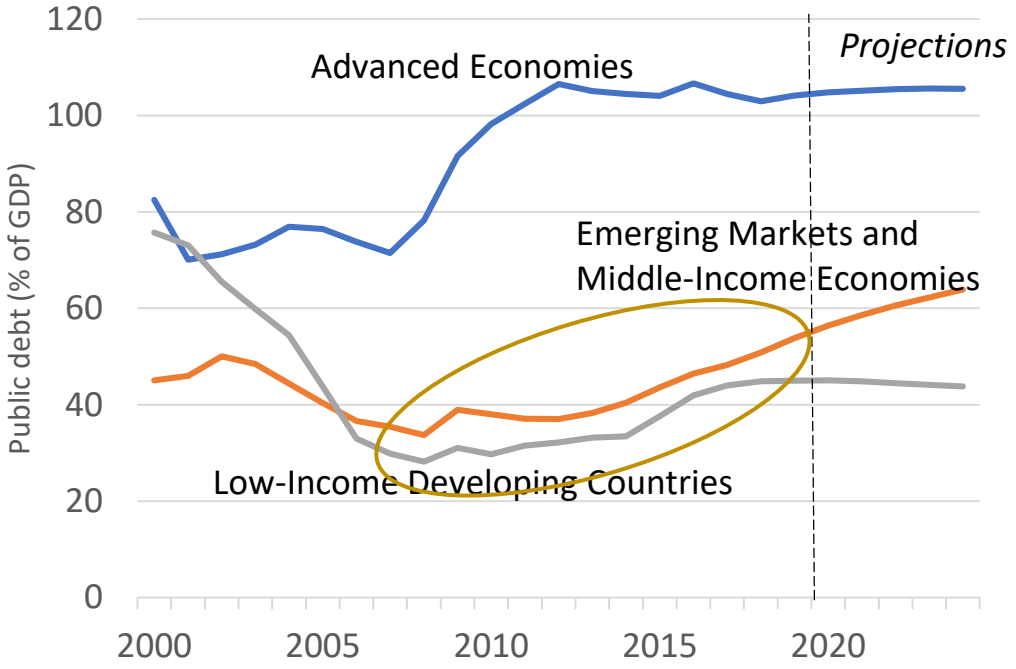
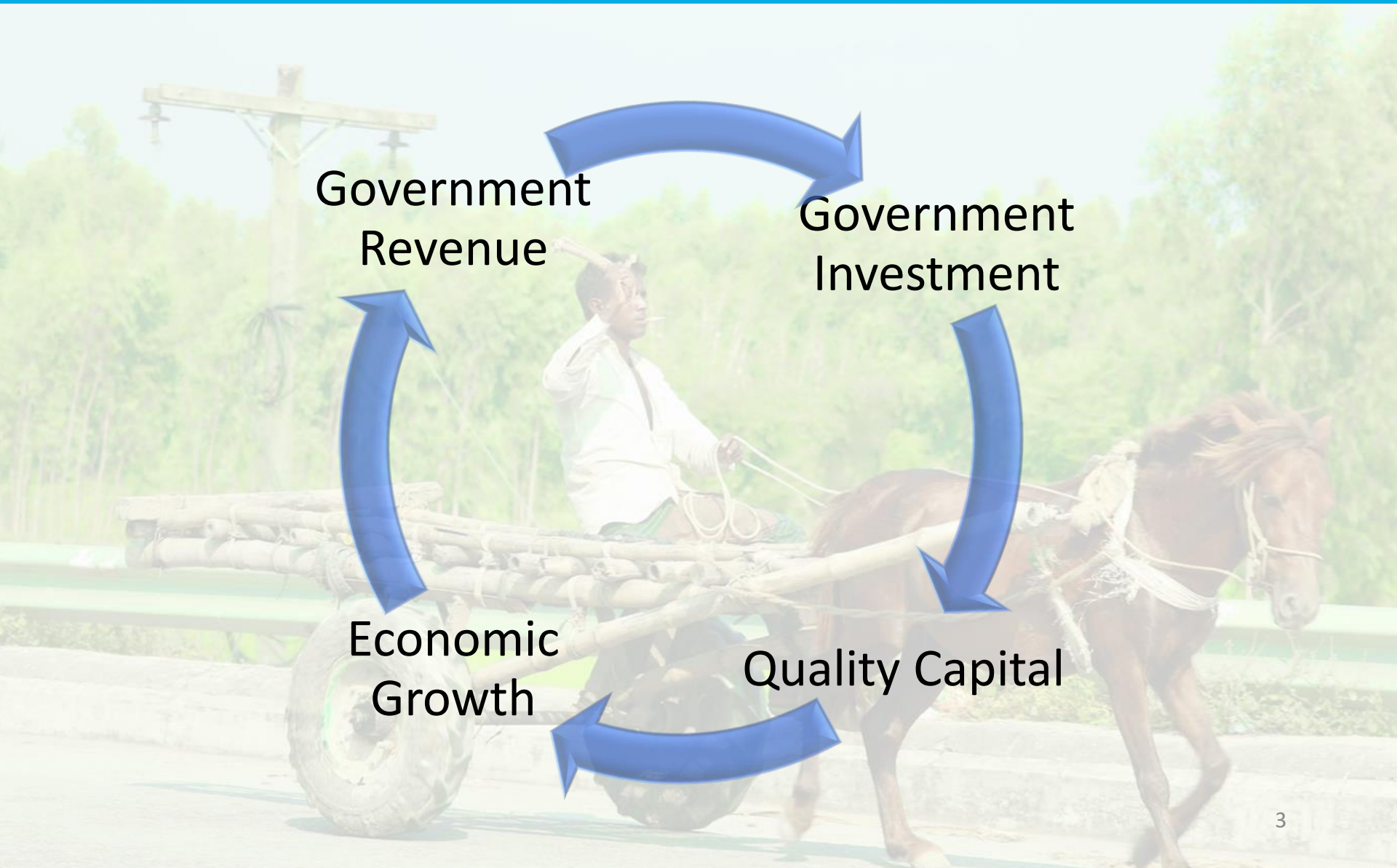
How Much Fiscal Space for Government Investment?

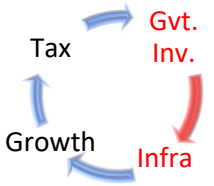
- Not much: increase in gross public debt in LIDC/EMDEs since the global financial crisis severely restricts fiscal space
- But interest rates have declined around the world: more space for 'good spending'?
- On the other hand, investment spending is often deficient due to weak PIM.
- So how can we think about this…..?



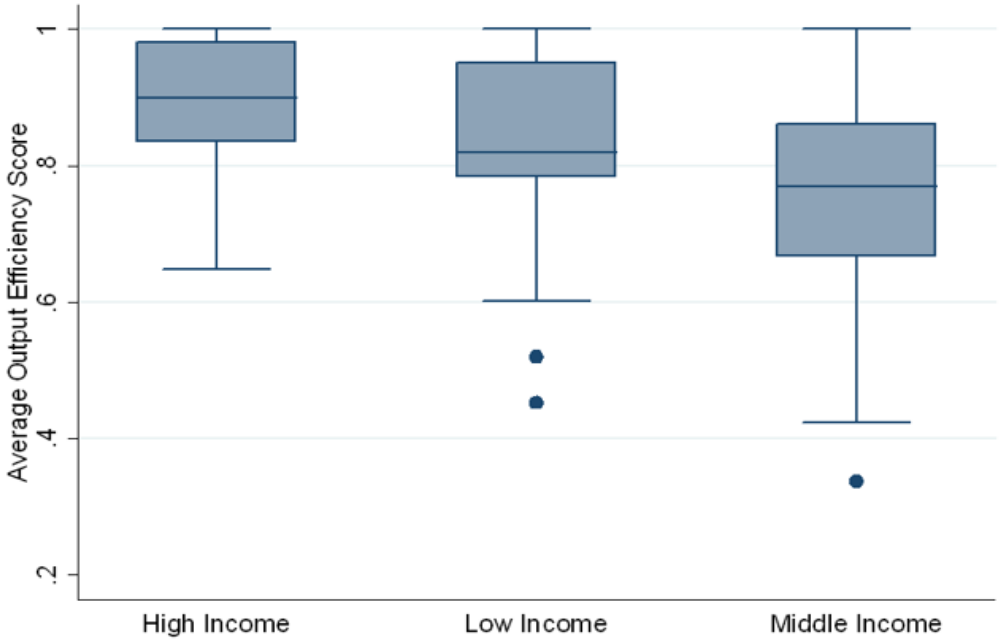
Tax and Investment: A Horse and Cart Story



LIDC Surprises: Infrastructure Asset Creation…

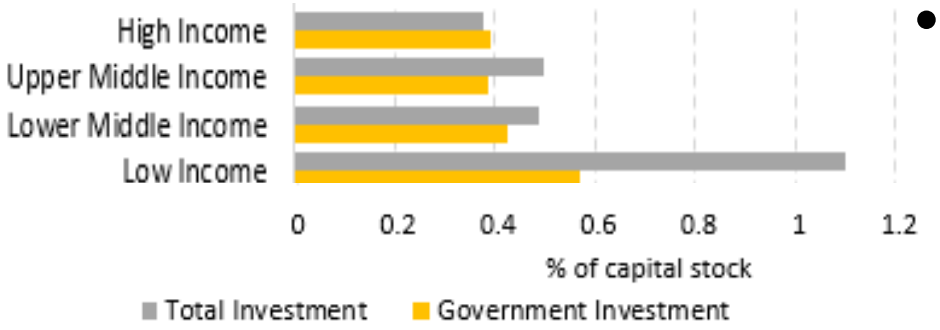


- Government investment dollars lead to better quality public infrastructure in LIDCs than EMDEs (and not much below AEs)



Source: IMF Investment and Capital Stock Dataset, 2019; WEF 2018

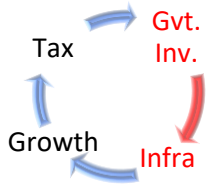
Effect of a 1%-GDP point increase in gvt. investment on total (private and public) investment



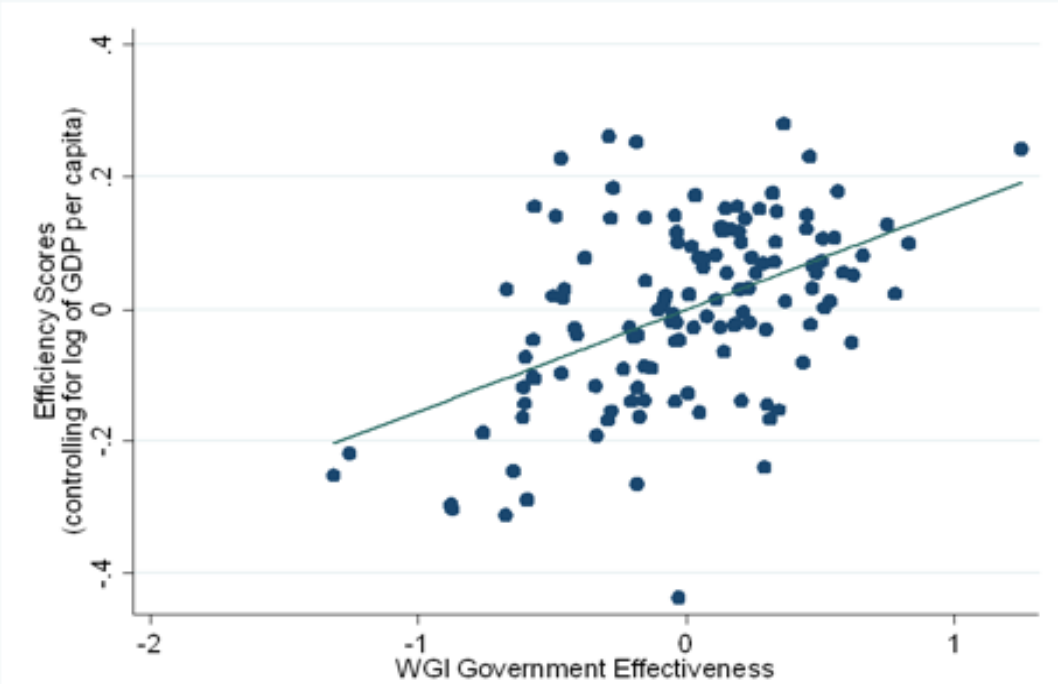
Source: IMF Investment and Capital Stock Dataset, 2019

- Crowd-in effect of government investment is substantially smaller in AEs and EMDEs than in LIDCs

…Despite Worse Governance

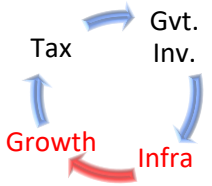


- Governance, which is low on average in LIDCs, drags down LIDCs' infrastructure capital efficiency, but not enough to offset the favorable effects of low initial capital stock and crowding-in



Source: IMF Investment and Capital Stock Dataset, 2019; WEF 2018; World Bank's World Governance Indicators (WGI)

Positive Growth Effect of Capital



Traditional growth accounting framework (with a twist):

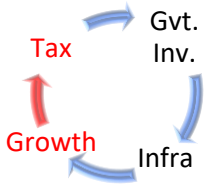
$$(1) \quad Y_t = A_t \, K_t^{\alpha} \, L_t^{1-\alpha}$$

$$(2) \quad \frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1-\alpha)\frac{\Delta L}{L}$$

Capital-elasticity of output $\alpha = 0.35$

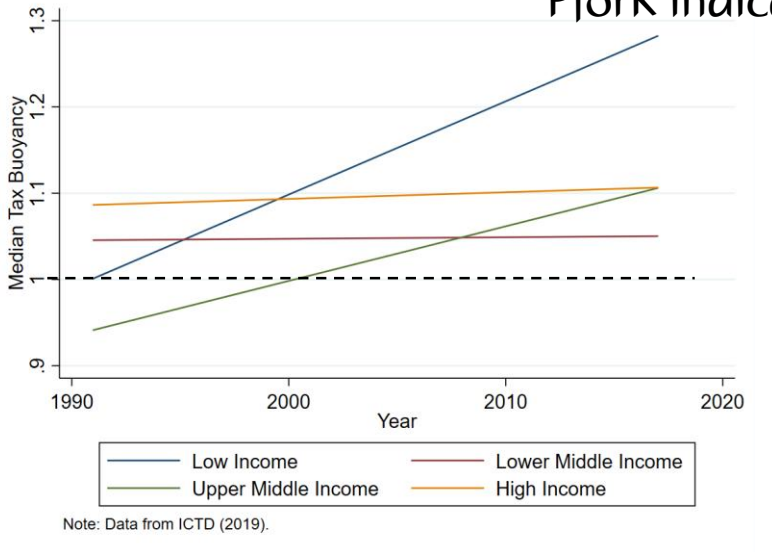
$$(3) \quad K = \sum_t I\,(gvt.) \times eff.score + K\,(non\ gvt.)$$

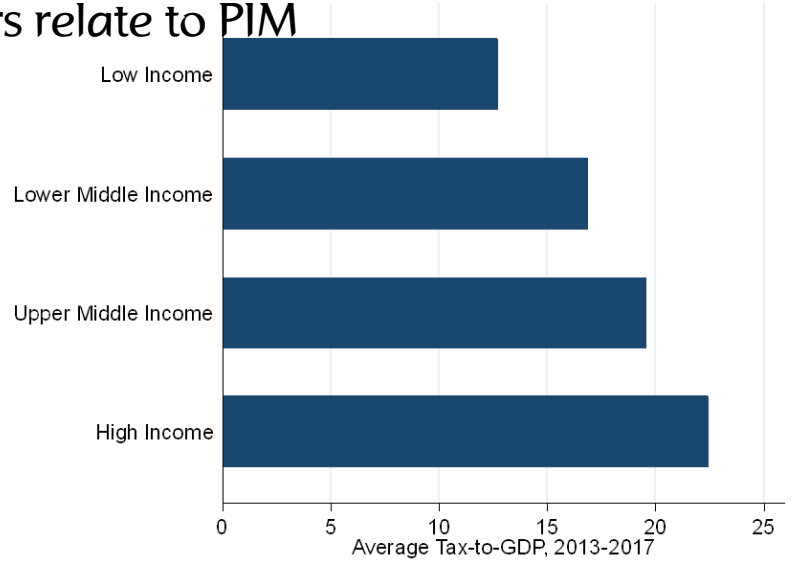
Greater Tax Buoyancy Helps EMDEs



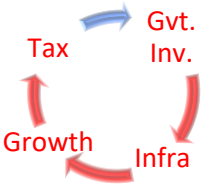
- The impact of economic growth and development on tax revenue has gone up in LIDCs, and now exceeds buoyancy in EMDEs and AEs
- Tax revenue as a share of GDP is lower in LIDCs, however

About 7% of all prior actions and PforR indicators relate to PIM





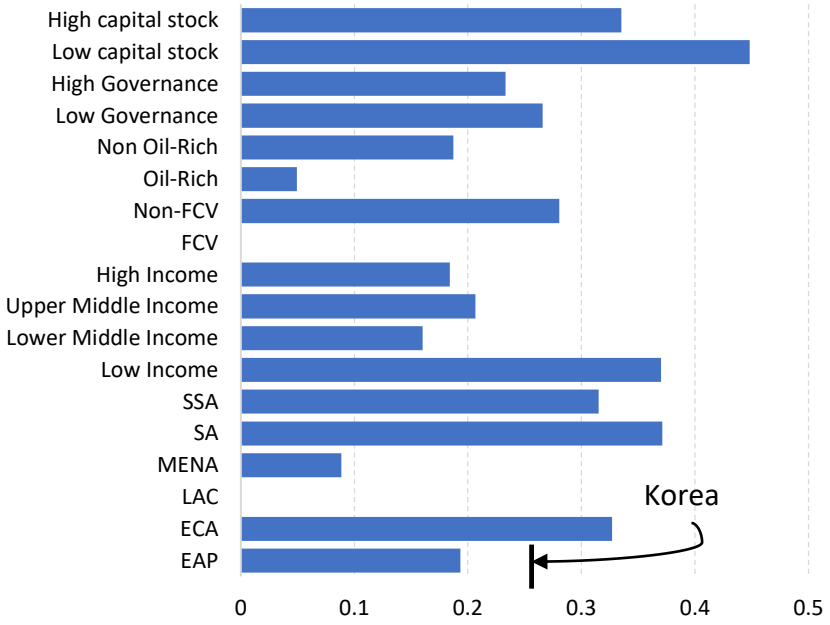
Adding It All Up



Government investment (% of GDP) → Change in the capital stock → Economic growth → Growth in government revenue

Effect of government investment of 1% of GDP on tax-to-GDP

10-year NPV (Tax to baseline GDP)



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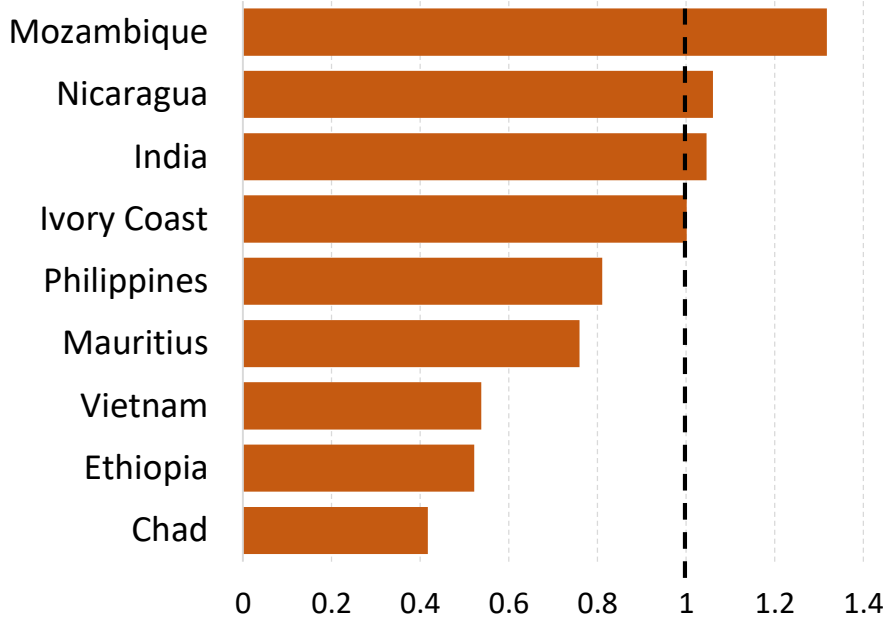
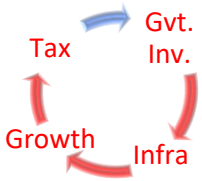


Take Aways: Fiscal Space and Investment



- Government revenue creates space for investment—and investment boosts revenue
- The size of the impact depends a lot on the size of the initial capital stock
  - Crowding-in/out of private investment is also key
  - As is revenue performance and buoyancy
  - Governance and spending efficiency matter, but can be offset by other factors
- LIDCs tend to do well, but weak tax systems can handicap the revenue response to investment
- PIM and governance remain critical—but need to be set in a broader context in the consideration of fiscal space for investment and infrastructure needs

Public Policy Implications and World Bank Agenda

- The World Bank Group is active in this space through:
  - Better planning, execution and accounting of public investments
    - Analytical work, such as via support from KDI for work on MTEFs and PIM
    - About 7% of all prior actions and PforR indicators relate to PIM
  - Modernization and strengthening of tax policy and administration
    - At country level, currently engaged in about 100 countries
    - At global level to ensure developing country voice amid cacophony
  - Initiatives on public debt transparency; tools, e.g. PFRAM
  - Support operationally to the MFD agenda
  - SOE management of assets and tariffs; SOE portfolio accounts for 12% of WB Investment and Policy operations
- KDI and Korea have a lot to offer