BOX 3.1 Public investment dynamics around adverse events

Public investment growth tends to decline sharply during recession years—by about 9 percentage points relative to periods of economic stability, on average, and remains subdued for an additional two years after the initial shock. Public investment also generally contracts after financial crises hit. These effects reflect the diversion of fiscal resources toward immediate stabilization needs, disruptions in financial markets and higher borrowing costs, lower fiscal revenues following contraction in private sector activity.

Introduction

In emerging market and developing economies (EMDEs), public investment weakened significantly after the 2007-09 global financial crisis and the associated recession. Public investment growth in EMDEs decelerated from an average of 10 percent in the 2000s to 5 percent in the 2010s. More generally, during recessions and crises public investment might be expected to weaken, as fiscal revenues decline and governments may prioritize countercyclical public consumption policies over public investment. However, countries with sufficient fiscal space could in principle embark on additional scaling up of public investment as part of a countercyclical fiscal support package. Similarly, natural disasters may damage or destroy infrastructure such as roads and bridges, requiring public investment to rebuild it.

In order to find commonalities in the dynamics of public investment around potentially disruptive events, this box addresses the following question: How does public investment growth evolve around shock events—specifically, recessions, financial crises, and natural disasters?

To this end, this box examines the trajectory of public investment growth around these adverse episodes—during the event and across three-year windows either side of it. The analysis is based on a sample of 117 EMDEs over 1970-2019. Only countries with sufficient data in the windows around events are included in the sample for each event study. The data for public investment growth are from the International Monetary Fund's Investment and Capital Stock Dataset (IMF 2021a). Recession years are defined as years with negative real per capita income growth. Natural disasters data are from the EM-DAT the International Disaster Database. The data for financial crises, including systemic banking crises, debt crises, and currency crises, are from the Systemic Banking Crises Database II (Laeven and Valencia 2020). The mean response for the sample is shown along with the 90-percent confidence bands (figure B3.1.1).

Recessions

During a recession, the adverse macroeconomic effects exerting a downward pressure on investment in general might be partly offset by a boost in government spending, including public investment, in an effort to provide fiscal stimulus to the economy, particularly given that the empirical evidence points at larger output effects of public investment during recessions than expansions. That said, the event study analysis suggests that on average, recessions have an adverse impact on public investment growth, with effects lasting well beyond the shock episode itself. Public investment contracts by 4 percent on average in a recession year—a decline of about 9 percentage points relative to public investment growth in the year before a recession (figure B3.1.1.A). Public investment growth remains lower for two more years after the initial shock. Recessions triggered by financial crises are associated with deeper negative effects, with public investment contracting by about 6 percent in the year of the recession.

Government revenues in recessions decline as a result of lower economic activity. At the same time, during economic downturns, EMDEs often choose to prioritize immediate needs such as macroeconomic stabilization, unemployment relief, and support to firms and households. These measures take precedence over public investment projects. The combination of lower revenue and increased spending often leads to deterioration of fiscal space in the aftermath of recessions, constraining the government's ability to invest in infrastructure.

Financial crises

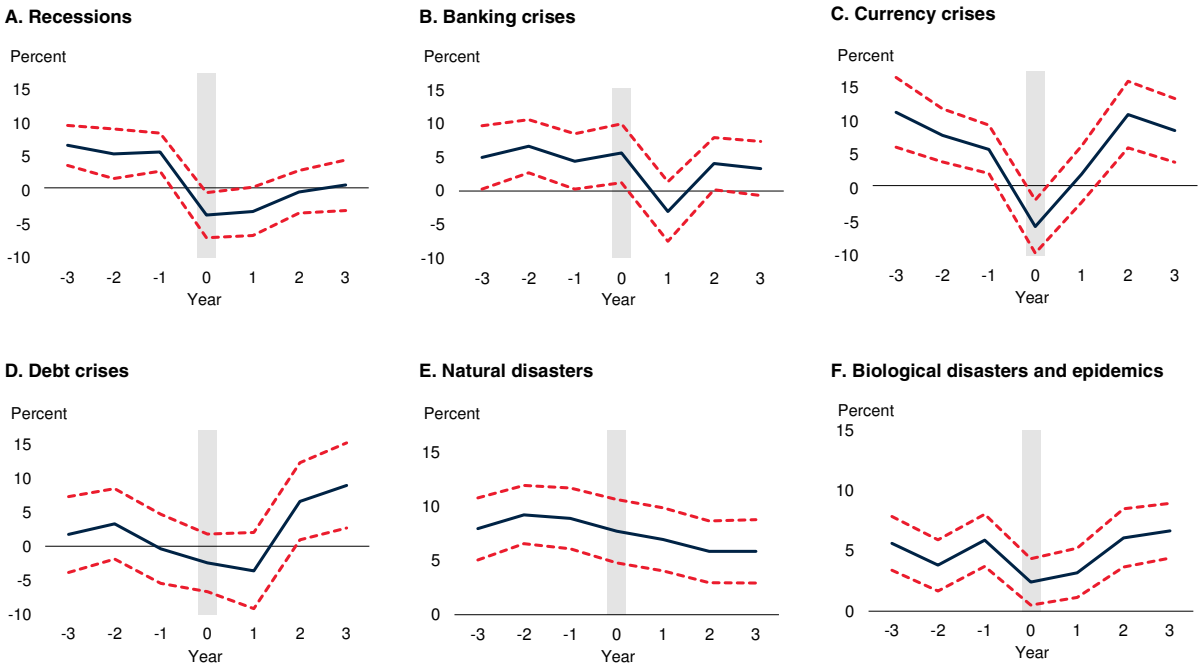
Systemic banking, currency, and debt crises have an adverse impact on public investment growth and are generally followed by quicker public investment

Note: The analysis in this box draws from Adarov et al. (forthcoming).

BOX 3.1 Public investment dynamics around adverse events (*continued*)

FIGURE B3.1.1 Public investment dynamics around adverse events

In recessions, public investment contracts by about 4 percent and remains subdued for additional two years after the initial shock. Currency crises are also associated with a decline of about 6 percent in public investment during the crisis year, while debt and banking crises tend to have the largest impact in the year that follows the crisis—with public investment contracting by 3.5 and 3 percent, respectively. There are no statistically significant changes in public investment growth associated with natural disasters.



Sources: EM-DAT (database); Investment and Capital Stock Dataset (IMF 2021a); Laeven and Valencia (2020); World Bank.
Note: Public investment refers to general government gross fixed capital formation in billions of constant 2017 international dollars. Sample includes 117 EMDEs over the period 1970-2019. Gray areas indicate the event year. Solid lines indicate mean public investment growth, dashed lines indicate 90 percent confidence bands.

recoveries relative to recessions (figures B3.1.1.B-D). Debt and banking crises have the deepest adverse effect in the year that follows the initial shock, with public investment contracting by 3.5 and 3 percent, respectively. Public investment growth declines in the run-up to a debt crisis itself, as markets respond to the deteriorating fiscal position before the crisis actually crystallizes. On average, public investment growth remains in negative territory in the year following a debt crisis—unlike systemic banking crises and currency crises (figure B3.1.1.D).

Like in recessions, governments during financial crises may prioritize short-term measures aimed at macroeconomic stabilization rather than long-term infrastructure investment spending. Furthermore, financial crises can disrupt credit markets, making it more challenging and expensive for governments to borrow, leading to a decline in government investment (Laeven and Valencia 2018; Reinhart and Rogoff 2011).

Currency crises are associated with a sharper drop in public investment than other types of financial crises—a 6 percent contraction on average in the year of the shock. Currency crises, in addition to the adverse effects discussed above, can also lead to a reduction in external financing, as international lenders become concerned about repayment risk demanding higher risk premiums. Currency crises may also increase the cost of imported goods and services needed for public investment projects, making them more expensive to undertake.

BOX 3.1 Public investment dynamics around adverse events (*continued*)

That said, currency and banking crises are associated with faster recoveries of public investment growth, compared with more entrenched adverse effects associated with recessions and debt distress episodes. The latter have more direct and profound adverse effects on the fiscal positions, necessitating cuts or delays in discretionary government spending—including sizable public investment projects—during the shock episodes, as well as lasting impact on the sovereign's creditworthiness, which affects the ability of the government to tap financial markets in the longer run.

Natural disasters

Analysis of the evolution of investment around natural disasters incorporates the years in which geophysical, climatological, and biological disasters (including epidemics) occurred. Whether considering each event type separately, or on aggregate, there are no statistically significant changes in public investment growth (figure B3.1.1.E). Two opposing forces at work might explain this result: while disasters cause physical damage to infrastructure and have a negative impact on public investment, the affected economy may also invest more to recover from the consequences of the disaster. Only in the case of biological disasters does public investment register a slowdown in growth—perhaps as budget resources are diverted to spending on health-related public services and relief to the affected populations—but even this effect is not statistically significant (figure B3.1.1.F).

Conclusion

Negative macroeconomic shocks tend to have adverse effects on the fiscal positions of EMDEs, including expenditure patterns. This translates to lower public investment growth. During recessions, public investment tends to contract, remaining low for an additional two years after the initial shock. In response to systemic banking crises, currency, and debt crises, public investment growth also declines. Although decelerations during currency crises are more severe, investment reductions during debt crises are typically more prolonged, extending up to two years. Thus, while empirical evidence supports the conjecture that scaling up of public investment tends to generate greater output effects in recessions, in practice EMDEs find it challenging to prioritize public investment owing to limited borrowing capacity and restrained fiscal revenues during periods of macroeconomic distress.