This Time Is (Mostly) Different: Global Effects of U.S. Anti-Inflationary Policies in the 1980s vs. 2020s

Drishan Banerjee* Galina Hale† Harrison Shieh‡

[click here for latest draft]

October 2026

Abstract

Post-pandemic inflation raised fears that U.S. monetary tightening would trigger a repeat of the 1982 global recession and sudden stop in capital flows. Yet as of 2026 no global recession has followed. We establish three stylized facts distinguishing the 1980s from the 2020s, beyond the shift to flexible exchange rates: monetary policy effectiveness, fiscal space, and external vulnerabilities. We rationalize them in a Mundell-Fleming framework augmented with a fiscal space constraint, which predicts a central role for fiscal space in transmitting foreign currency risk-free rate increases. Cross-country evidence confirms that fiscal space shapes economic performance post-tightening.

JEL codes: F42, F34

Keywords: monetary policy spillovers, fiscal space, external debt, emerging markets

*UC Santa Cruz. drbanerj@ucsc.edu.

†UC Santa Cruz, NBER, CEPR. gbhale@ucsc.edu.

‡Vassar College. hshieh@vassar.edu. We are grateful to Barry Eichengreen, Maurice Obstfeld, Rajeswari Sengupta, Emile Marin and the participants of the Western Economics Association International meeting in San Francisco, 2025, for valuable suggestions. All errors are ours.

1 Introduction

The COVID-19 pandemic triggered an unprecedented global supply shock that severely affected global supply chains and production networks (Baldwin et al. 2022) as well as rapid reduction in aggregate demand and widespread loss of income. In response, several advanced economies deployed fiscal stimulus packages to stabilize the economic fallout. Some of the fiscal stimulus, when combined with the supply shock, contributed to rapid rise in inflation globally, once pent-up demand was released as lockdown regulations were lifted (Hale et al. 2025, Jordà and Nechio 2023). In the face of mounting inflationary pressures, the delayed response of central banks across the world, and especially of the Federal Reserve, raised questions about the credibility of their inflation targeting framework (Reis 2022). However, once interest rate hikes commenced, the pace of monetary tightening led to concerns of a "hard landing" and the resulting global recession. Yet, these concerns did not prove valid — by and large, the global economy avoided the hard landing. While many explanations for this outcome have been offered, it is not yet clear which explanations played the key roles in practice.[1] We assess the relative importance of different mechanisms by relying on historical comparison with anti-inflation policies and their effects in the early 1980s.

Rapid increase in inflation globally in the early 2020s and resulting global increase in monetary policy rates evoked parallels with the recessions during 1980-1982 following Paul Volcker's aggressive monetary tightening intended to halt rising inflation, with interest rates reaching unprecedented highs. The severe recession in the United States and a sudden stop in capital flows to emerging markets ultimately lead to a widespread debt crisis in Latin America (Reinhart and Rogoff 2009) and global recession. Since the 1980s, global debt ratios increased dramatically, making the increase in interest rates even more costly.[2] However, despite the substantial and rapid increase in the U.S. interest rates in 2022, we did not observe an outcome similar to the 1980s: the global economy, and especially emerging markets, experienced less severe downturns in the 2020s than during the debt crisis of 1980s. We gather stylized facts for the 1980s and 2020s for advanced and emerging economies, and provide a simple small open economy framework that rationalizes the differences we observe for emerging economies between *then* (1980s) and *now* (2020s).

We begin by studying patterns in the time series of the variables that might be affecting the global transmission of the U.S. monetary policy, the nature of inflation itself, and the effectiveness of monetary policy in the U.S. and around the world. We then analyze fiscal factors that might affect countries' abilities to cushion the contractionary effects of tighter monetary policy.

[1] There is an emerging literature that argues that the structural improvements and increased policy credibility emerging economies have built up over the years. Ahmed and Zlate (2014), Aizenman et al. (2024), Hardy et al. (2024), Kamin and Vakil (2025), Kalemli-Özcan and Unsal (2024) help explain the recent emerging markets' resilience during the most recent tightening cycle. There is also evidence that emerging economies' central banks preemptively tightened their monetary policy before the Fed, which may also have contributed to their resilience (Huertas 2022, Davis and Sagnanert 2023, Evdokimova et al. 2023).

[2] Nouriel Roubini wrote in *The Looming Stagflationary Debt Crisis* (July 1, 2021): "When former Fed Chair Paul Volcker hiked rates to tackle inflation in 1980-82, the result was a severe double-dip recession in the United States and a debt crisis and lost decade for Latin America. But now that global debt ratios are almost three times higher than in the early 1970s, any anti-inflationary policy would lead to a depression, rather than a severe recession. Under these conditions, central banks will be damned if they do and damned if they don't, and many governments will be semi-insolvent and thus unable to bail out banks, corporations, and households."

Finally, we analyze vulnerabilities of the economies to external shocks.

Based on observed trends in the data, we present three stylized facts regarding the difference between 1980s and 2020s: First, a smaller increase in the U.S. real policy rate was needed to control inflation, other countries were more prepared for a rapid increase in the federal funds rate in the 2020s compared to 1980s, and emerging markets' monetary policies were more effective in 2020s. Second, in the 2020s there was more fiscal space in most countries to cushion the impact of tighter monetary policy than in 1980s, which is reflected in lower costs of debt despite substantially larger debt ratios. Third, while exposure to external shocks increased both through trade and through finance channels, vulnerability declined due to higher reserves and lower share of U.S. dollar denominated liabilities in external balance sheets.

We incorporate these stylized facts into a traditional Mundell-Fleming framework (Mundell 1963, Fleming 1962), which we augment with a fiscal space constraint. The model shows that when fiscal space is limited and exchange rate policies constrain monetary policy—as was the case in the 1980s—a rapid increase in the foreign currency risk-free rate leads not only to monetary tightening via UIP, but also to fiscal consolidation, as rising interest rates increased the debt burden in the absence of fiscal space. As a result, a severe decline in output is the only possible outcome. In contrast, when the fiscal space constraint is relaxed and monetary policy becomes independent due to flexible exchange rates—a situation more common in the 2020s—fiscal policy and external accounts can accommodate most of the monetary tightening and soften the blow to aggregate output.

We test the prediction regarding the importance of fiscal space by examining cross-country differences in both episodes. Given that we are comparing two short historical episodes for a limited set of countries, traditional statistical analysis is not particularly powerful. Thus, we focus our analysis on scatter plots, supplemented by a simple cross-section regression, conducted separately for advanced and emerging economies in each of the two time periods. We find that in both episodes, countries with smaller ratios of debt to GDP, external debt to GDP, and foreign currency external debt to GDP experienced less economic decline than countries with higher debt ratios. This relationship is important for emerging economies in both time periods, but is weaker for advanced economies in the 2020s than in the 1980s, indicating that fiscal space has become less binding for advanced economies over time. These findings are consistent with the predictions of our theoretical framework.

Several studies have examined the conditions under which U.S. monetary policy spillovers affect emerging markets. Both the underlying nature of U.S. monetary policy shocks and the macro-financial fundamentals of emerging markets at the time of the shocks play a central role in shaping their exposure and response. With respect to the origin of shocks, rate hikes driven by inflationary pressures, as opposed to those stemming from stronger growth, tend to generate more disruptive spillovers to emerging markets (Arora and Cerisola (2000), Hoek et al. (2022)). The type of monetary policy shock also matters. Unconventional monetary policy is found to have stronger global spillovers than conventional policy, largely due to its impact on global liquidity, the risk-taking channel, and on a country's domestic financial conditions (Ahmed and Zlate 2014, Chen et al. 2014, Tillmann 2016). On the "pull factor" side, country-specific characteristics such as trade and financial openness, exchange rate regimes, position

in global value chains, global risk appetite, and "Original Sin" emerge as key determinants (Eichengreen et al. 2003, Ahmed and Zlate 2014, Georgiadis 2016, Albagli et al. 2019, Kalemli-Özcan 2019, Di Giovanni and Hale 2022). While these studies provide important insights, most of them focus on monetary policy spillovers prior to the pandemic and a full explanation of emerging markets' resilience remains elusive.

An important factor in our analysis is the nature of the shock itself. Recent studies highlight that post-pandemic inflation was fueled by a combination of supply bottlenecks, capacity constraints, and fiscal stimulus-driven pent-up demand (Di Giovanni et al. 2023, Giannone and Primiceri 2024, Hale et al. 2025). The response to the shock by emerging economies' central banks also evolved over time. Since Taylor (1993), much work has been done examining monetary policy trade-offs between inflation and output, with particular emphasis on the recent post-pandemic inflation surge, where central banks faced heightened pressures to engineer "soft landings" that minimized output loss associated with aggressive responses to inflation. This highlights the role of central bank credibility in improving the efficacy of monetary policy transmission and reducing the amount of inflation-output trade-off required to meet the central bank's statutory goals.[3] Monetary policy has also become more credible, so we examine the effects of increased central bank credibility on emerging markets' resilience, a hypothesis put forth by Bernanke and Blanchard (2024) and Hardy et al. (2024). Emerging markets are also more likely to follow the Fed's lead in policy decision making, due to US monetary policy shocks driving unwanted exchange rate fluctuations (Pelin and Mendoza-Fernández 2025). During the rapid increase in global inflation during the early 2020s, several emerging economies' central banks raised policy rates preemptively ahead of the Federal Reserve, reflecting stronger domestic monetary frameworks and enhanced credibility in maintaining price stability amid global tightening (Huertas 2022, Davis and Sagnanert 2023, Evdokimova et al. 2023, Mendoza-Fernández et al. 2026).

There is also a concern about how emerging economies, while more resilient, remain structurally vulnerable as a result of rising US interest rates and larger fiscal deficits (Eichengreen et al. 2021). Importantly, our analysis highlights several structural changes that may have strengthened emerging economies' capacity to absorb external shocks such as evolution of the financial system, building fiscal space, and shifts in the currency composition of external balance sheets (Benetrix et al. 2019, Bolhuis et al. 2025). Historically, the business cycles of emerging markets have exhibited high consumption volatility, countercyclical current accounts, and "sudden stops", driven by shocks to trend growth (Aguiar and Gopinath (2007)). This is further exacerbated by the tendency of these emerging markets to enact procyclical policies during both crisis and non-crisis periods, ultimately reinforcing the business cycle (Kaminsky et al. (2005)). In recent years, however, emerging markets have begun to move away from procyclical (and in some cases move towards countercyclical) fiscal policy thanks to increased institutional quality; resulting in lower volatility in output (Frankel et al. (2013), Frankel (2011)). We interpret this evolution in fiscal policy as a component in the increasing fiscal space of emerging markets in recent years, allowing for more room to maneuver dur-

[3] See, among, others, Clarida et al. (1999), Bernanke and Mishkin (1997), Gürkaynak et al. (2010), Bernanke and Blanchard (2023), Bundick et al. (2024), and Kalemli-Özcan and Unsal (2024)

ing shocks. Our analysis explicitly builds in fiscal constraints in both periods, allowing us to examine the effect of fiscal space on explaining emerging markets' resilience in the 2020s.

The rest of the paper is organized as follows. Section 2 examines the underlying trends in both periods and presents our three stylized facts. In Section 3, we then show that these stylized facts can be rationalized using slight modifications to a standard Mundell-Fleming type IS-LM-BP model. We test model predictions in Section 4 and Section 5 concludes.

2 Data Sources, Trends, and Stylized Facts

Our goal is to collect data for as many countries and potentially important factors as possible for the years surrounding the 1982 episode and the 2022 episode. We collect data on economic performance, inflation, monetary policy, as well as domestic and external country-specific fundamentals. Our final set of countries includes 10 advanced (excluding the U.S.) and 11 emerging economies, listed in Appendix Table A.1.

2.1 Outcome measure: Economic performance

We measure economic outcomes by year-on-year per capita GDP growth. The data comes from the Global Financial Database.[4] For the regression analysis we use the average per capita real growth rates in 1983-1985 and 2022-2023 to capture the effects right after the two tightening episodes. Figure 1 shows the distribution of the real GDP growth across countries in 1983 and 2023. We can see that in the recent episode only a few countries experienced negative GDP growth in the year following the tightening of the U.S. monetary policy compared to the 1980s, with the mean in 2023 more than 2 percentage points higher than in 1983.[5]

2.2 Stylized Fact 1: More effective monetary policy

One way to measure monetary policy effectiveness ex-post is to examine a required increase in real policy rate to bring down inflation. When adjusted for inflation, we can see that the U.S. monetary policy rate rose much more sharply in 1982 compared to 2022 (Figure 2), which means that the shock to financial markets was not as large in the recent episode. The real rate rose around 14.5 percentage points between its pre-tightening level and post tightening peak in the 1980s while in the recent episode, the difference was 10.5 percentage points. Additionally, the level of peak real rate required to bring down inflation was much lower in the 2020s at 2.19% compared to 9.55% in the 1980s. We include real 10-year U.S. Treasury rate due to unconventional monetary policy in the 2020s episode that could have affected the long-term rates. We can see that the long-term rates increase was even smaller in the recent episode compared to the increase in the Fed Funds Rate, 8 percentage points compared to 10.5. Very likely,

[4] We use Real per-capita GDP numbers from the Global Financial Database (GFD) in constant national currency (base years vary by country — e.g., 2017 for the United States, 2010 for most others). Because growth rates of a constant-price per-capita series are invariant to the base year and currency unit, they are directly comparable across countries and across our two episodes. Our outcome variable is the annual percent change in real per-capita GDP; population is handled within GFD rather than by us. We use annual data through 2023.

[5] We exclude from the chart as well as from the calculation of the mean Bolivia (extremely negative growth in the 1980s) and China (positive outlier).

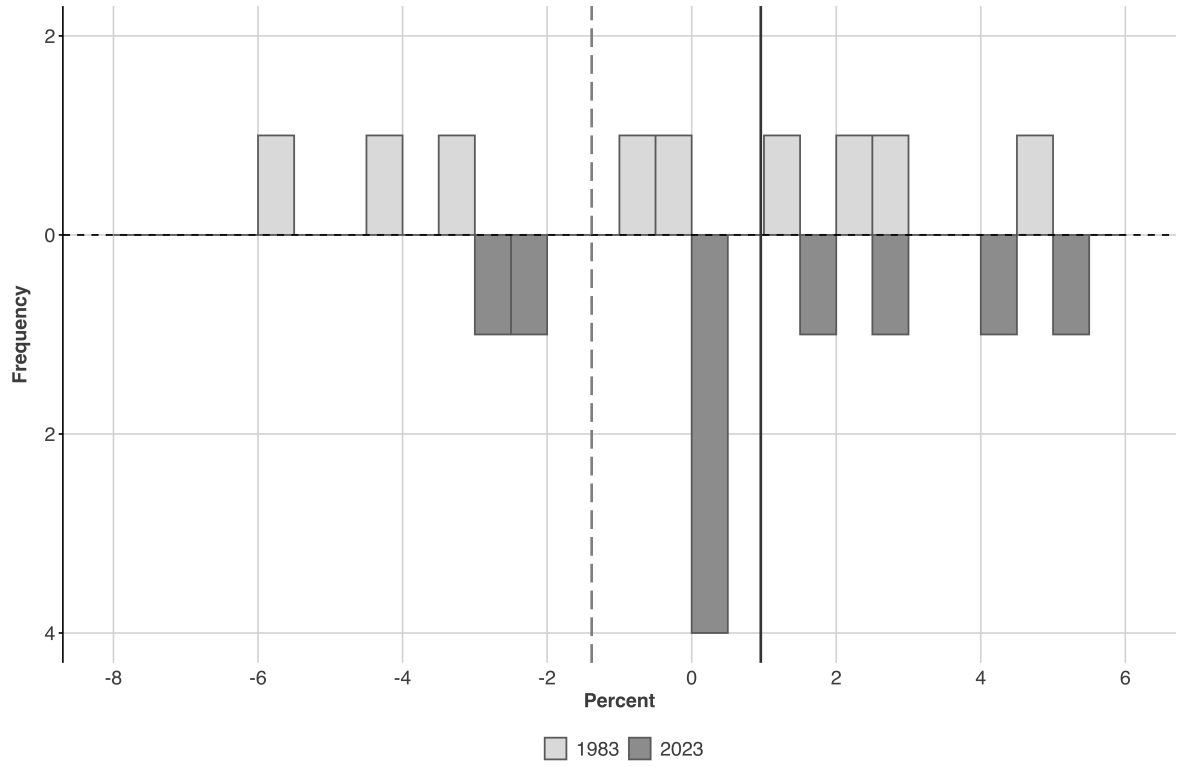


Figure 1: Real GDP Per Capita Growth, percent per year

Notes: Distribution of Real GDP per capita growth across countries in 1982-83 or 2022-23 (exc. Bolivia and China). Dashed vertical line is the 1982-1983 sample mean and solid vertical line is the 2022-2023 sample mean. Source: Global Financial Database. Countries are listed in Table A.1.

this difference is due to better anchored inflationary expectations in the U.S., which means that a smaller increase in the real policy rate was needed to control inflation in the 2020s than in the 1980s. Figure A.2 shows that in 2022 expected inflation rose modestly, mainly at the 1-year horizon, while 5- and 30-year expectations barely moved. We treat inflation expectations as anchored if long-horizon (5- to 30-year) expected inflation stays stable and largely insensitive to swings in current inflation and unanchored if long-horizon expectations drift up with realized inflation. The inflation expectations series begins in 1982, towards the end of the Volcker disinflation period and even so, it opens with 5- and 30- year expected inflation at elevated levels converging down over the decade indicative of the re-anchoring that followed.

To measure the monetary-policy stance in other countries, we use each country's short term policy rate. We use the central bank policy rate where available, and the closest money-market rate, the interbank or overnight call rate otherwise. These data are collected from the FRED and the IMF. We combine these data with the exchange rates vis-à-vis U.S. dollar from the Global Financial Database. To get an idea of the monetary policy timing in other countries relative to the U.S., we compute *ex-post* UIP premia for each country vis-à-vis the U.S. as the differential between their annual average overnight deposit rates, adjusted for their annual average currency depreciation against the U.S. dollar, and the average U.S. Federal Funds Rate for that year. This gives us a measure of required monetary policy tightening that would keep interest rate differential unchanged given the realized currency depreciation. If a country is

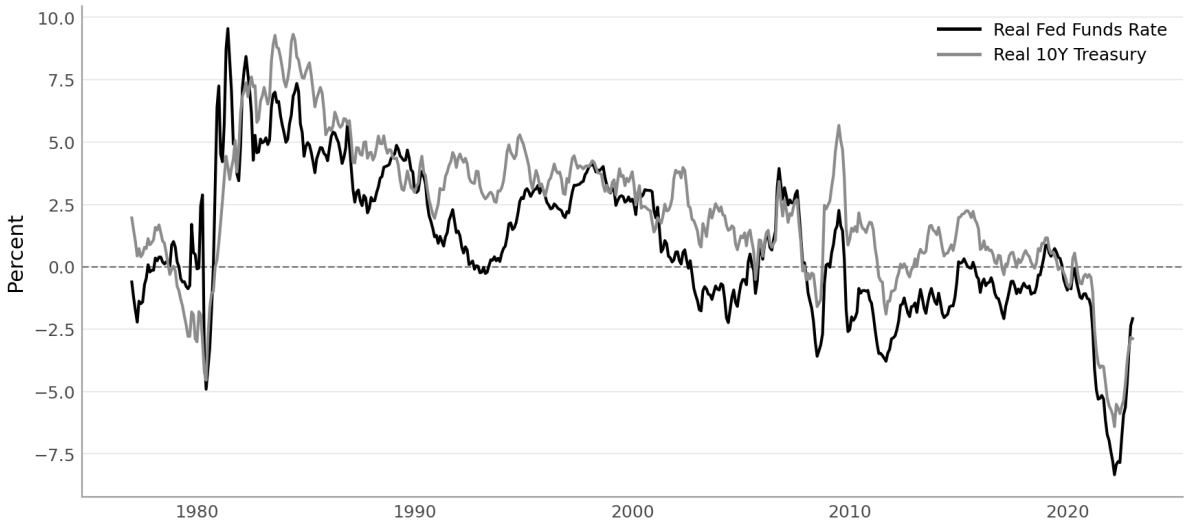


Figure 2: Real U.S. Effective Federal Funds Rate and 10-year Treasury Rate

Notes: Real Federal Funds Rate and the Real 10Y Treasury Yield between 1977 and 2023. Real Federal Funds Rate and Real Yields are constructed ex post as the nominal rate less realized year-over-year CPI inflation: $r_t^{FFR} = i_t^{FFR} - \pi_t$ and $r_t^{10Y} = i_t^{10Y} - \pi_t$, where π_t is annual CPI inflation. Source: Federal Reserve Economic Data.

well aligned with the stance of U.S. monetary policy then the *ex-post* UIP premia deviations should be close to 0. The wedge indicates differences in monetary policy stance at a given time.

Figure 3 shows the distribution of the *ex-post* UIP premia across countries in five-year intervals over time. We can see that the premium is negative for all countries in our sample in 1982 and switches to positive in 1983. This means that U.S. monetary policy tightening preceded the tightening in other countries. Moreover, the tightening in other countries overshot the U.S. level by 1983. In the recent episode the deviations are smaller and far less dispersed indicating that monetary policy was much more closely aligned with the U.S.. Moreover, in the early 2020s, many emerging markets preempted the U.S. interest rate hikes by starting to raise their interest rates by as much as six months earlier. This means that capital flow responses to interest rate differentials were likely more extreme in the 1980s than in the 2020s.

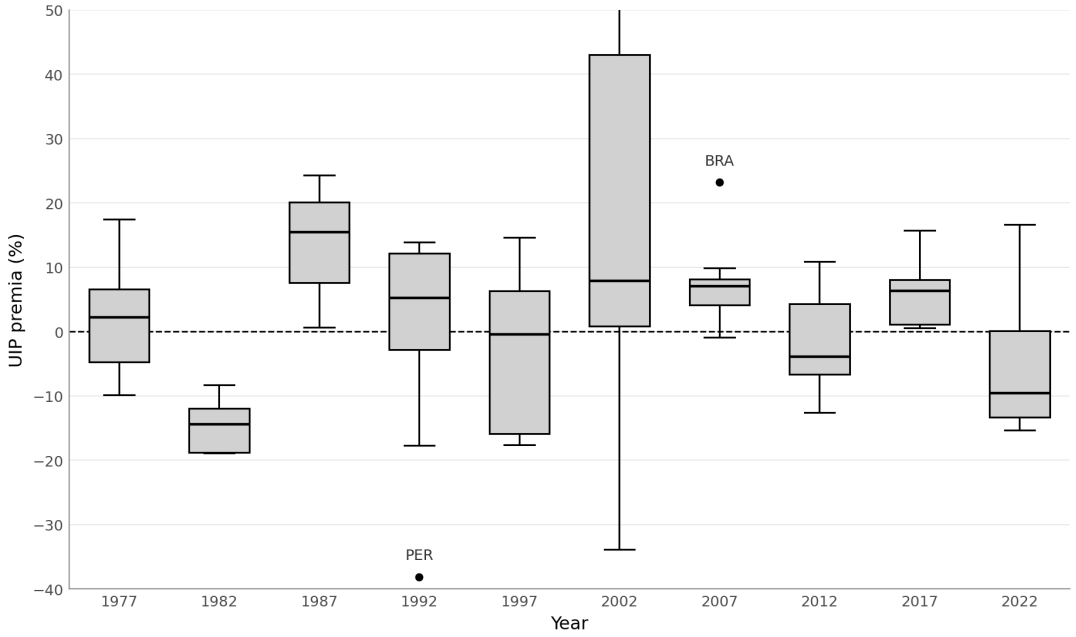


Figure 3: UIP Premia between 1977 and 2022

Notes: UIP Premia boxplot by year. UIP Premia calculated as $r_t - r_t^{US} - E_{t,t-1}$, where r_t is each country's annual average overnight deposit rate for year t, r_t^{US} is the average U.S. Federal Funds Rate for year t, and $E_{t,t-1}$ is the average annual currency depreciation against the U.S. dollar between year t and $t-1$. Source: Global Financial Database, Federal Reserve Economic Data and Authors' calculations

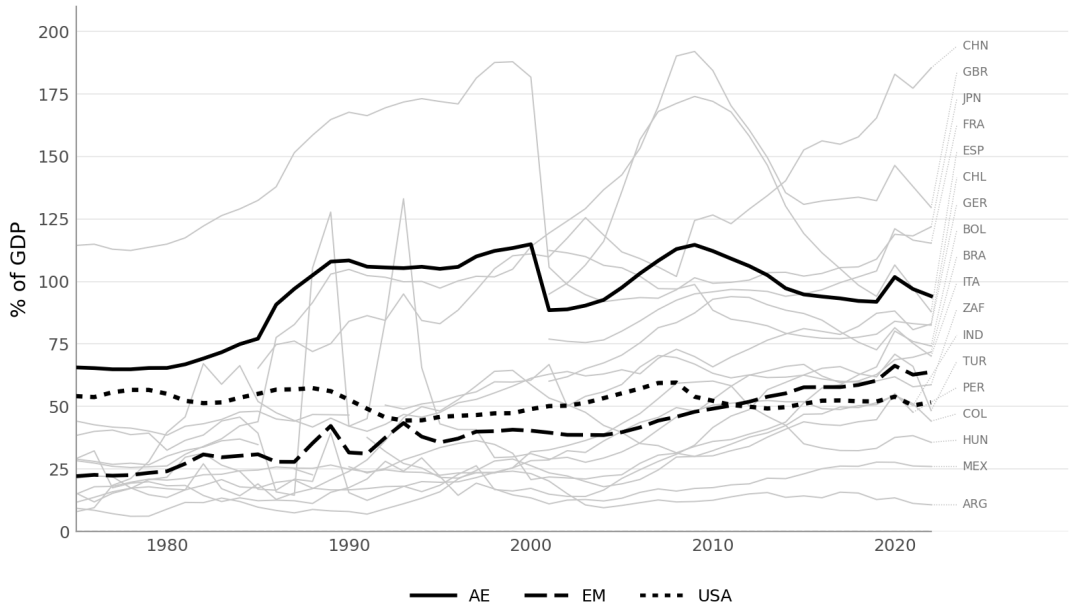


Figure 4: Domestic Credit to the Private Sector as Percentage of GDP

Notes: Domestic Credit issued to the private sector as a share of GDP between 1975 and 2022. A.E. includes all advanced economies inclusive of the U.S. while E.M. includes emerging markets. Source: World Bank, World Development Indicators.

Finally, the effectiveness of monetary policy crucially depends on financial sector development. We proxy for financial development with domestic credit to private sector by banks, ob-

tained from World Bank's World Development Indicators. Figure 4 plots the ratio of domestic credit to the private sector by banks to GDP for all countries, as well as averages for advanced and emerging economies. We can see that for emerging economies there was a steady growth in domestic credit, likely reflecting growing financial development, which would make monetary policy more effective in emerging economies. We further corroborate this pattern with the IMF's Financial Development Index, a broad composite of the the depth, access and efficiency of financial institutions and markets. Figure 5 shows the same steady growth for emerging market economies as well as advanced economies, more than doubling between the early 1980s and the 2020s confirming the deepening seen in the credit data on a broader measure.

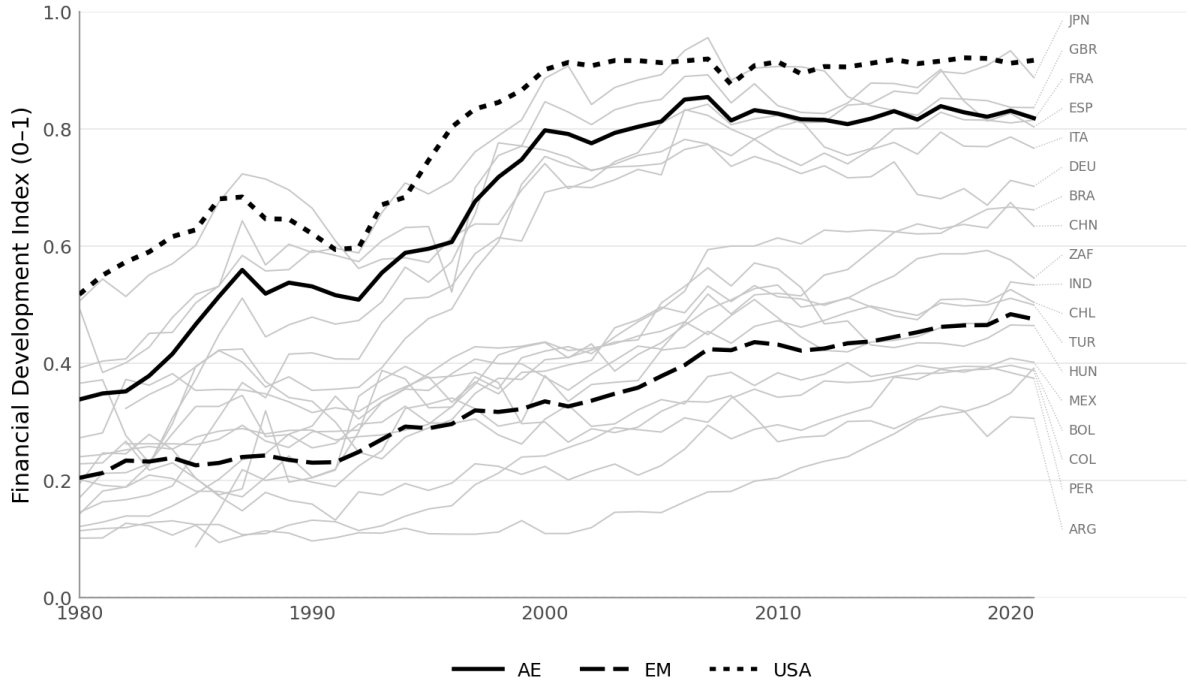


Figure 5: IMF Financial Development Index

Notes: IMF Financial Development Index (0-1 scale), a broad composite of the depth, access, and efficiency of financial institutions and markets, between 1980 and 2021. A.E. includes all advanced economies inclusive of the U.S. while E.M. includes emerging markets. Source: International Monetary Fund, Financial Development Index Database.

Stylized Fact 1: Monetary policy coordination and effectiveness. *The real U.S. policy rate increase in the 2020s was substantially smaller than in the 1980s while other countries were more prepared for a rapid increase in the U.S. rates in the 2020s compared to 1980s; there was less, if any, increase in UIP premia, and emerging markets' monetary policy was more effective due to higher level of financial development.*

2.3 Stylized Fact 2: More fiscal space

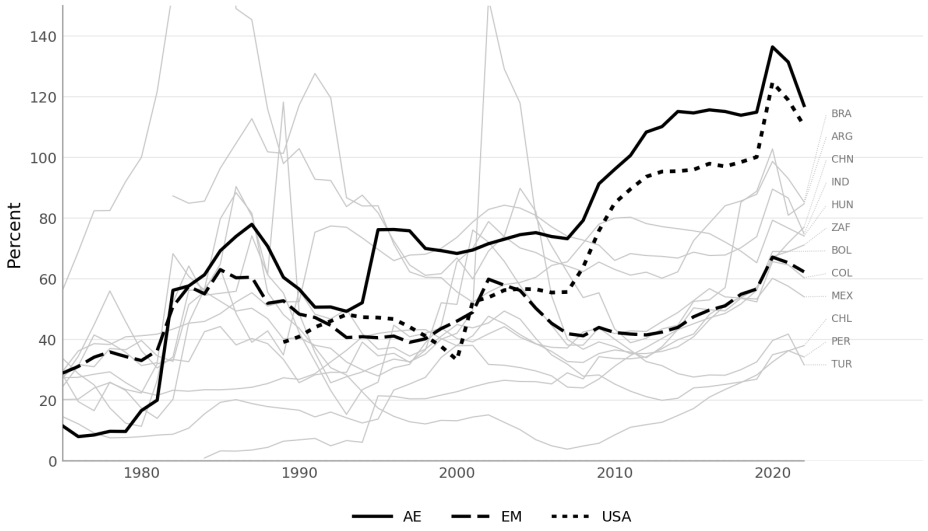
We focus on domestic factors that affect the ability of fiscal policy to cushion economic shocks. We obtain data on debt-to-GDP ratio from World Development Indicators, Global Financial Database, and Reinhart and Rogoff (2011). Data on the cost of debt measured as 10-year gov-

ernment bond yields are from the Global Financial Database. We convert bond yields into U.S. dollar equivalent for comparison across countries using average annual exchange rates vis-à-vis U.S. dollar from the Global Financial Database.

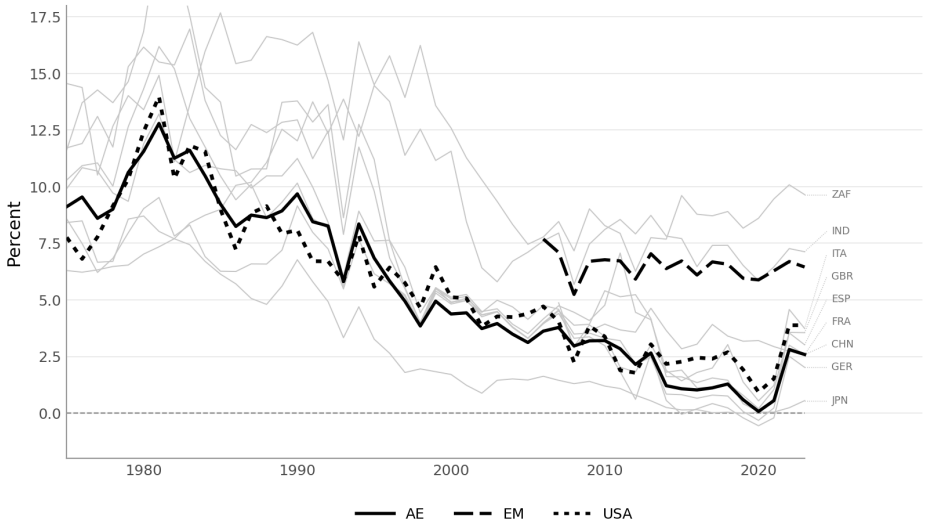
Figure 6a shows total debt-to-GDP ratios for the countries in our sample as well as the averages for advanced and emerging economies. As we can see, these ratios have increased across the board, although since 1982 the growth rate of debt-to-GDP ratio for emerging economies was substantially slower than for advanced economies, resulting in the average ratio for emerging economies being half of that for the advanced ones by the end of the sample.

Figure 6b shows that despite growing debt ratios, the cost of debt declined since the 1980s for the advanced economies, and since the mid-1990s for emerging markets. We do not have prior information for E.M.s because international sovereign bond market for emerging economies did not exist until the early 1990s and information on the price of sovereign bank loans at that time is not available. While some of this decline reflects lower inflation rates, it does demonstrate, when combined with growing debt-to-GDP ratio, a growing borrowing capacity of both, advanced and emerging economies. In figure A.9 we deflate the nominal dollar yields by the U.S. CPI. This gives the real cost of dollar borrowing. This confirms the same pattern in real terms. Real dollar yields were at their highest level in the 1980s whereas in the 2020s tightening period, they were significantly lower, even briefly turning negative. Since debt ratios increased and the cost of borrowing declined between our episodes, we also look at debt service to GNI and find qualitatively similar results to our main figures complementing our fiscal space argument. This measure is only available for emerging economies. In Figure 6c we show that the debt service for these countries is virtually flat between the 1980s and 2020s which reflects a combination of higher debt at a lower price.

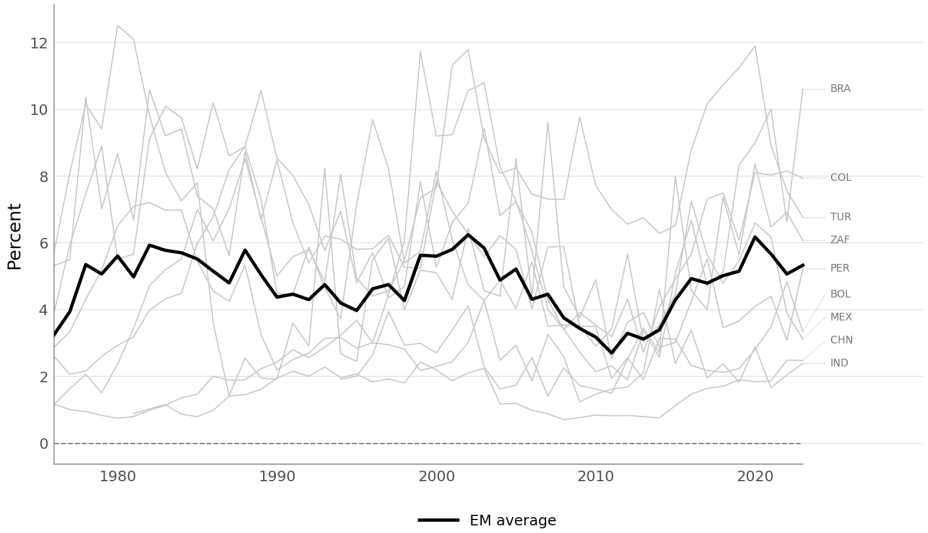
Stylized Fact 2: Despite growing debt ratios, cost of government borrowing declined. *In both advanced and emerging economies, debt to GDP ratios increased, but the cost of borrowing declined, indicating increased borrowing capacity. Therefore, in the 2020s, there was more fiscal space to cushion the impact of tighter monetary policy than in 1980s.*



(a) Debt to GDP ratios



(b) 10-year government bond yields, converted to USD for comparison



(c) Debt Service to GNI for emerging markets

Figure 6: Cost of borrowing declined despite rising debt ratios

Notes: Panel (a) reports the Debt to GDP ratio for Advanced, Emerging, and the U.S. economies between 1975 and 2022. Panel (b) reports the 10-year government bond yields (in USD) for the same set of countries in the same time period. Panel (c) reports the debt service as a share of GNI for emerging markets in the same time period. This is principal repayments and interest on long-term external debt, interest on short-term external debt, and IMF repurchases and charges. Note this is external debt service, not total sovereign debt service. Source: Panel (a) taken from the Global Financial Database; Panel (b) taken from the Global Financial Database and Federal Reserve Economic Data; Panel (c) is taken from the World Development Indicators.

2.4 Stylized Fact 3: Less vulnerability to external shocks

We obtain data on imports and exports from the IMF's Direction of Trade Statistics (DOTS) and foreign reserves and external debt from the External Wealth of Nations Database (Lane and Milesi-Ferretti 2001). Throughout, external debt refers to gross external debt liabilities. Overall trade openness increased over time for all countries (Appendix Figure A.5), making them more vulnerable to the transmission of U.S. monetary policy shocks through trade channels (Di Giovanni and Hale 2022).

One of the main channels of the U.S. monetary tightening translating into economic downturn in countries with open financial accounts is a sudden stop in international capital inflows, as global financial markets turn to safer investment in the U.S. assets. Traditional macro-finance models suggest that U.S. interest rate hikes increases the returns on U.S. safe assets reducing the interest rate differentials between domestic and international safe rates and reducing compensation for risk for emerging markets assets (Obstfeld 1998, Calvo et al. 1993). This raises borrowing costs for emerging markets and triggers capital outflows and sudden stops (Calvo 1998). An indicator of such sudden stop is a reversal of current account deficits. Indeed, in both episodes, we did observe current account reversals (Appendix Figure A.6), notably both in advanced and emerging economies.

From the extensive literature, we also know that financial openness increased dramatically for both advanced and emerging economies between 1980s and 2020s.[6] This can be measured using the Chinn and Ito (2006) index, updated through 2022, which shows an increase in *de jure* financial openness in both advanced and emerging economies (Figure A.7). At the same time, we only observe an increase in external debt to GDP ratios for advanced economies, but not for emerging ones (Figure A.8).

While these trends suggest an increased exposure to U.S. monetary policy shocks through trade and financial linkages, they don't necessarily mean increased vulnerability. Foreign exchange reserves can serve as buffer for external shocks transmitted either through trade or through financial channels. We observe that most countries accumulated larger buffers against external shocks, as can be seen from higher reserves-to-GDP ratios (Figure 7). Moreover, the shocks could also be better accommodated due to a lower share of U.S. dollar-denominated private and public external liabilities and increased share of more stable instruments. We do not have data for currency denomination of external debt in the 1980s, but we know from the literature that for emerging markets foreign debt was entirely comprised of bank loans denominated in U.S. dollars prior to the 1982 debt crisis. A decline in the share of U.S. dollar in external liabilities is documented in Benetrix et al. (2019) and Hale and Juvenal (2023), and was due to shifts in both currency and instrument composition of external liabilities. Of course, not all external liabilities are debt. Equity and FDI liabilities carry no fixed foreign currency repayment obligation, and are far more stable in a downturn. The vulnerability we document therefore comes specifically from foreign-currency debt liabilities.

[6] See recent survey by Gräbner et al. (2021).

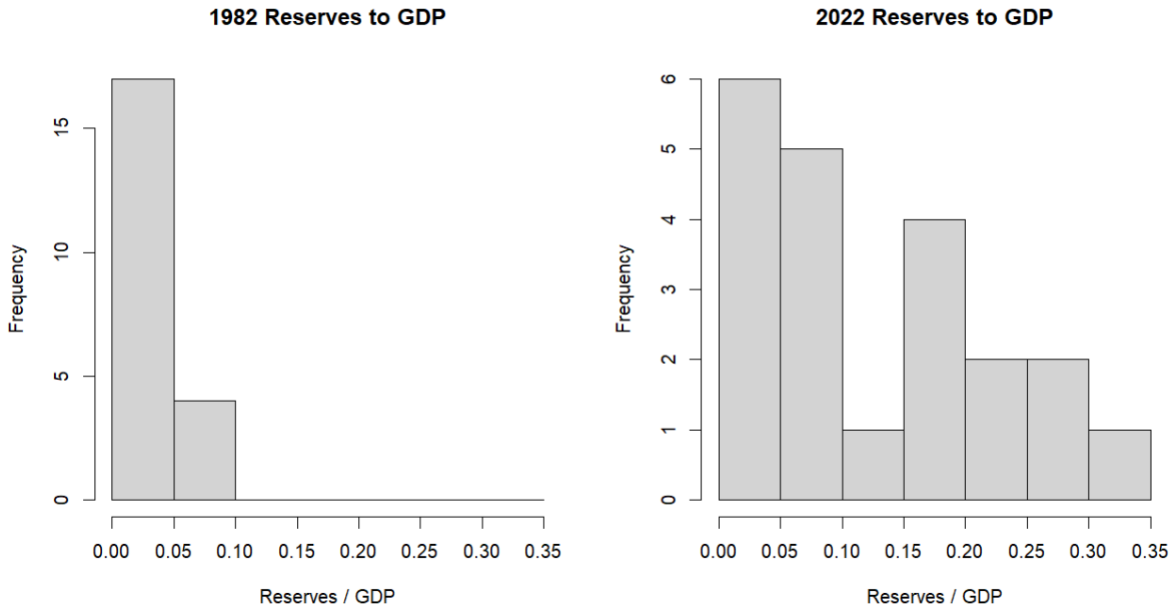


Figure 7: Foreign exchange reserves to GDP ratios were much lower in 1982 than in 2022

Notes: Distribution of Foreign exchange reserves to GDP ratios in 1982 and 2022. Reserves and GDP are in terms of USD. Source: External Wealth of Nations database.

Stylized Fact 3: Despite increased trade and financial openness, vulnerability to external shocks declined. *While exposure to external shocks increased through increased financial and trade openness, vulnerability to external shocks declined due to higher reserves and a lower reliance on U.S. dollar liabilities.*

3 Simple Mundell-Fleming framework with a fiscal space constraint

To understand the mechanisms underlying our empirical observations, we present a modified version of the Mundell-Fleming framework of Mundell (1963) and Fleming (1962). The central predictions of the standard model are well known. Under flexible exchange rates and mobile capital, monetary policy is effective and fiscal policy is crowded out. Under fixed exchange rates, fiscal policy is effective while monetary policy is replaced by the need to defend the peg. The standard model does not comment on the fiscal side of an external interest rate shock, as government spending is always modeled as an exogenous instrument and in the static framework there is no government debt accumulation or debt service. Thus, there is no mechanism to account for the extent to which the government can run a deficit while borrowing and spending. We modify the standard Mundell-Fleming framework and explicitly allow for the effects of fiscal space.[7] This approach allows us to provide a clean and intuitive narrative. Specifically, we augment the standard Balance of Payments curve with sovereign risk premium and

[7] Recent work on fiscal space largely relies on DSGE modeling. A large portion of this literature examines sovereign default risk and default risk premia. See, among others, Bi (2012), Bi and Traum (2012), Bianchi et al. (2023), Hatchondo et al. (2022). We limit our analysis to the role fiscal space plays in weathering foreign interest rate shocks.

a foreign borrowing constraint. We also endogenize government expenditures to include debt service. These two modifications allow us to tractably capture fiscal space constraints.

The model is characterized by the following system of equations:

$$Y = c(Y - T) + I(r) + G + NX(e, Y),\ I(r) = \bar{I} - b \cdot r,\ NX(e, Y) = ne - mY \quad \text{(IS Curve)} \tag{1}$$

$$\frac{M}{P} = k \cdot Y - h \cdot r \quad \text{(LM Curve)} \tag{2}$$

$$NX(e, Y) + f(r - r^* - \rho) = 0, \quad f' > 0 \quad \text{(BP Curve)} \tag{3}$$

$$G - T = (B - B_{-1})e - (r^* + \rho)B_{-1}e \quad \text{(Fiscal Policy)} \tag{4}$$

$$\rho = \rho_0 + \delta \frac{eB}{Y} \quad \text{(Risk Premia)} \tag{5}$$

$$\frac{eB}{Y} \leq \lambda. \quad \text{(Borr. Constraint)} \tag{6}$$

The equation for the IS curve (1) is a standard textbook IS curve: consumption C is a function of income less taxes, $Y - T$. For simplicity, we assume taxes are lump-sum and fixed. Private investment depends on the domestic interest rate r, and we have Net Exports NX. Net Exports increase if the exchange rate e increases (depreciation) or if output Y falls. We normalize the price level to one and assume it is fixed, so Y is the domestic currency (nominal) output. The Government Expenditures are governed by the Fiscal Policy equation (4).

The LM curve (2) is also standard: real money balances M/P are increasing in income Y and decreasing in the domestic interest rate r. Equation (3) is the balance of payments equilibrium condition. Net exports capture the current account, while $f(r - r^* - \rho)$ represents capital flows, where r^* is the foreign interest rate, and ρ is the country-specific risk premium. We allow for imperfect capital mobility, so f is finite and the BP curve slopes upward in the (Y, r) space. A higher f yields a flatter BP curve and we allow $f_{2020s} > f_{1980s}$ to reflect deeper financial integration in the 2020s vs the 1980s. All parameters: $c,\ b,\ n,\ m,\ k,\ h$ are positive.

Equation (4) is the government budget constraint in domestic currency, assuming all debt is in foreign currency. The government finances net expenditures $G - T$ through net new foreign-currency debt issuance $(B - B_{-1})e$, less debt service on the outstanding stock $(r^* + \rho)B_{-1}e$. This makes fiscal space endogenous; a rise in the risk free rate, risk premium or currency depreciaton (r^*, ρ, or e) tightens the budget constraint and reduces G. The model will show that in the 1980s, lower debt tolerance and the elevated risk premia associated with it made this burden large relative to output, leading to severe feedback effects. In the 2020s, despite higher absolute debt levels, higher debt tolerance (or fiscal space), left fiscal policy less sensitive to external conditions. Finally, Equation (5) expresses the sovereign risk premium as increasing in the debt-to-GDP ratio (eB/Y), the domestic-currency value of foreign debt relative to out-

put. The parameter $\delta > 0$ governs how harshly creditors price each additional unit of debt. We assume $\delta_{2020s} < \delta_{1980s}$ so that each unit of debt is priced less harshly now than in the 1980s. This is the model's counterpart to *Stylized fact 2* that sovereign borrowing costs fell even as debt ratios rose. This is only possible if the sensitivity of the risk premium to the indebtedness declined. We interpret lower δ to reflect the improvements in monetary credibility and financial development documented in *Stylized fact 1* implied a given level of foreign currency debt is less alarming to creditors. When the borrowing constraint is slack, an adverse shock that depreciates e or contracts Y raises eB/Y, which in turn raises ρ triggering further capital outflows and the tightening of fiscal space. A smaller δ mutes this effect. Once the ceiling binds, the premium reaches its maximum and the risk-premium amplification is exhausted at which point, adjustment occurs through forced deleveraging.

To this system, we add a borrowing constraint given by Equation 6. It assumes that international creditors are only willing to hold sovereign debt up to some fraction $\lambda > 0$ of GDP. We assume $\lambda_{2020s} > \lambda_{1980s}$ to reflect the observed stylized facts that debt ratios in the 2020s exceed those of the 1980s and yet, remain below what creditors are willing to hold. More specifically, in the 1980s, the constraint binds since the government is at its borrowing ceiling. For this period, we assume a fixed exchange rate: $e = \bar{e}$ where $\bar{e}$ is the pegged level of exchange rate. With fixed exchange rates, $\rho = \rho_0 + \delta_{1980s}\lambda_{1980s} = \bar{\rho}$. In other words, the risk premia is at its limit, priced harshly and is constant. This implies that when output falls, B must also fall, inducing a forced deleveraging. Substituting the value of λ in the dynamic form of Equation (4):

$$dG = \lambda\, dY - \bar{e}B\, dr^* \tag{7}$$

The first term implies that fiscal policy is pro-cyclical. When output falls, the ceiling tightens and the government must cut spending. The second term reflects the increase in the cost of debt servicing as a result of higher foreign rates — putting downward pressure on government spending G.

In the 2020s, by contrast, $eB/Y << \lambda_{2020s}$. The risk premium never reaches the ceiling and is lower than $\bar{\rho}$ despite higher debt ratios as long as $\delta_{2020s}(eB/Y)_{2020s} < \delta_{1980s}\lambda_{1980s}$. Because the constraint is slack, this fiscal space allows the government to freely choose G and allow B to adjust through the budget constraint. This is the key difference in the mechanism. In the 1980s, B is forced to track Y and G absorbs the shock; whereas in the 2020s, G is chosen and B absorbs it. This simple framework helps explain how the impact of US monetary policy, measured by r^*, is mediated by domestic fundamentals.

Then: Debt Intolerance. We first present equilibrium in the case that is representative of an emerging market in the 1980s. To reflect much of the prevailing reality in the '80s, we assume fixed exchange rates ($e = \bar{e}$) and mostly immobile capital (but not fully immobile). The borrowing constraint binds with $eB/Y = \lambda$, reflective of many emerging markets carrying foreign-currency obligations up to the limit of what creditors would hold. Substituting into equation (5), the risk premium becomes $\bar{\rho} = \rho_0 + \delta_{1980s}\lambda_{1980s}$: with debt as its ceiling and each unit of debt priced harshly translating directly into elevated sovereign borrowing costs through the risk premia. Moreover, since e is fixed with the binding ceiling, a contraction

in output forces a proportional fall in B and hence a cut in government spending, thereby transmitting the shock to the real economy.

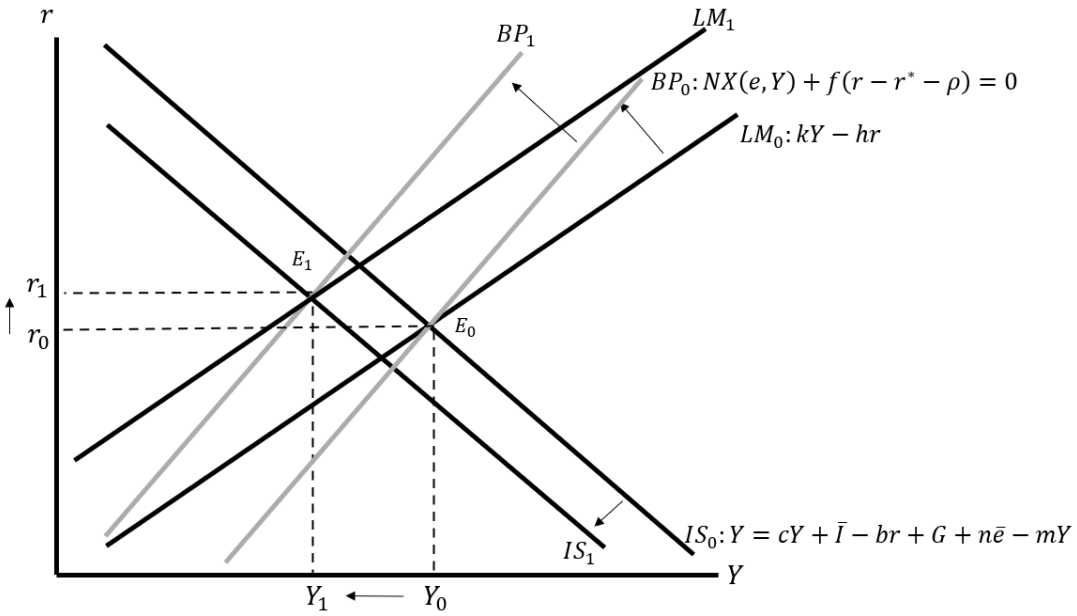


Figure 8: Spillovers in 1980s: debt intolerance and low exchange rate flexibility

Notes: Comparative statics for a representative emerging market economy responding to a foreign interest rate tightening ($r^* \uparrow$) in the 1980s case. The BP curve shifts upward ($BP_0 \rightarrow BP_1$) to maintain balance of payments and stem capital outflows in response to higher foreign rates. The IS curve shifts down due to the fiscal squeeze ($IS_0 \rightarrow IS_1$), and defending a fixed exchange rates depletes reserves to maintain the peg as real money supply falls. As a result, the LM curve shifts upwards ($LM_0 \rightarrow LM_1$) to our new equilibrium (E_1), where domestic interest rates are higher r_1 and output is lower (Y_1)

Figure 8 plots the comparative statics for a representative emerging market economy in response to a foreign interest rate tightening. We have our standard upward sloping LM curve and downward sloping IS curve. The BP curve is steeper than the LM curve to signify that capital mobility in the 80's was not very high. When there is an increase in the foreign interest rate r^*, the BP curve shifts up by dr^* since higher foreign rates require higher domestic rates to maintain the capital account balance and prevent capital outflows at every level of output. The IS curve shifts down and to the left due to the fiscal squeeze by $-\bar{e}Bdr^*$. The LM curve moves up and to the left, reflecting a fall in real money supply as the central bank uses reserves to defend the peg.

Formally, we show in Appendix B.1:

$$\frac{dY}{dr^*} = -\frac{f'(\cdot)(\bar{e}B + b)}{(s - \lambda)f' + bm} < 0. \tag{8}$$

Throughout the 1980s analysis, we maintain the assumption $s > \lambda$, where $s = 1 - c + m$. The parameter s captures the economy's built-in stabilizers, $(1 - c)$ is the marginal propensity to save and m is the marginal propensity to import, so s measures the total leakage from the circular flow of income per unit of additional output. λ governs the strength of the destabilizing force through forced deleveraging under the binding borrowing constraint. The condition $s > \lambda$ requires that the economy's stabilizing forces dominates the destabilizing force ensuring

a well defined and stable equilibrium.

While Figure 8 shows an increase in r, the effect on r is ambiguous, given by

$$\frac{dr}{dr^*} = \frac{(s-\lambda)f' + bm - m(\bar{e}B + b)}{(s-\lambda)f' + bm} \tag{9}$$

Where $(s-\lambda) > 0$, so the denominator is positive, but the sign of the numerator is ambiguous and depends on the slope of the IS curve and the risk premium function. When r^* increases, the capital account pressure pushes r up (to stem outflows), but the output contraction improves the current account via lower imports, relieving some of that pressure. If the fall in imports is not large enough to bring the BP curve back to 0, then the pressure on r to increase and prevent capital outflows dominate and $dr/dr^* > 0$.

The effect on money supply depends on the sign of dr/dr^* which in turn depends on the extent to which the fall in imports cushions the worsening of the capital account through outflows. From the LM curve, $M/P = kY - hr$, so

$$\frac{d(M/P)}{dr^*} = k \underbrace{\frac{dY}{dr^*}}_{<0} - h \underbrace{\frac{dr}{dr^*}}_{>0} < 0. \tag{10}$$

If $dr/dr^* > 0$, both terms are negative and real money balances unambiguously fall: the central bank contracts the money supply to accommodate lower output and defend the peg.

The effect on government spending is negative. This effect takes place through two channels: The first is directly through the debt servicing channel ($-\bar{e}B$) and the second indirectly through a fall in output via the binding ceiling

$$\frac{dG}{dr^*} = \lambda \frac{dY}{dr^*} - \bar{e}B < 0 \tag{11}$$

Now: Fiscal Space. Next, we examine the case of a representative emerging market in the 2020s. We assume a floating exchange rate regime, relatively mobile cross-border capital flows, and an independent monetary policy (i.e., money supply is now a policy instrument). We also have lower δ and a non-binding borrowing constraint $eB/Y << \lambda_{2020s}$, to reflect fiscal space. The government can increase its expenditures in response to the shock, up to the limit given by the following expression:

$$dG \leq dG^{max} = Y_0 \left(\lambda_{2020s} - \frac{eB}{Y} \right) - eB(dr^* + d\rho) - (1 + r^* + \rho)Bde + \frac{eB}{Y} dY, \tag{12}$$

As shown in Appendix C. The first term of the RHS is the existing stock of fiscal space and the remaining terms reflect the fact that the extent to which the government can increase G is eroded by higher foreign interest rates, risk premia and exchange rate depreciation.

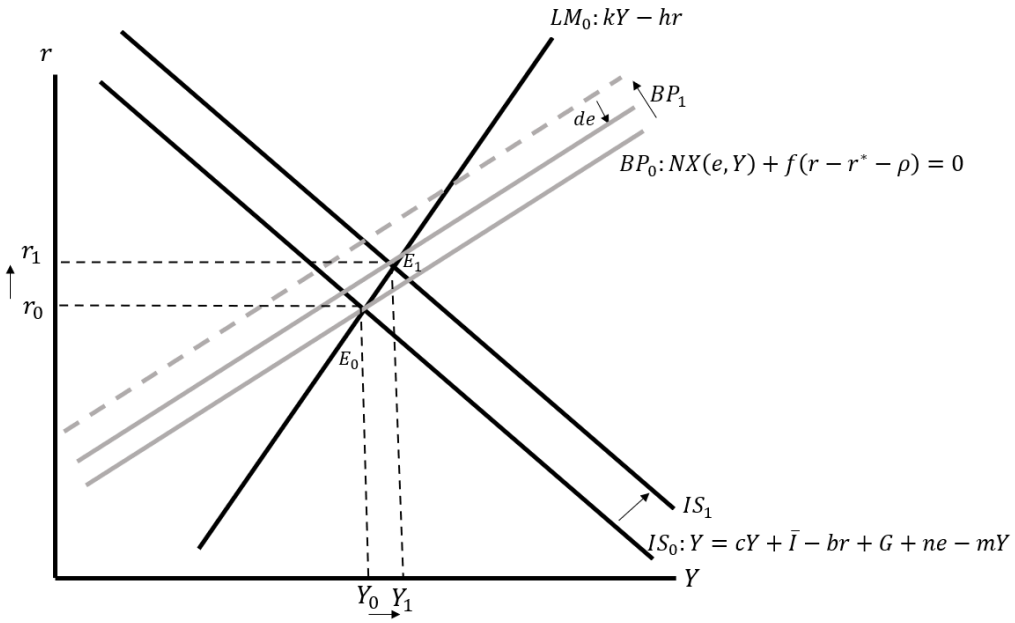


Figure 9: Spillovers in the 2020s: monetary policy independence and improved fiscal space

Notes: Comparative statics for a representative emerging market economy responding to a foreign interest rate tightening ($r^* \uparrow$) in the 2020s case. The BP curve shifts upwards ($BP_0 \rightarrow BP_1$) to maintain balance of payments and stem capital outflow. The exchange rate depreciates ($de \uparrow$), boosting net exports and improving the current account. This, combined with the presence of fiscal space shifts the BP and IS curves rightward ($(BP_1 - de), IS_0 \rightarrow IS_1$). The new equilibrium ($E_1$) has higher economic growth and higher domestic interest rates (Y_1, r_1)

Figure 9 shows the effect of an exogenous hike in the foreign interest rate, r^*. We assume more capital mobility than in the 1980s and plot the BP curve to be flatter than the LM. Just like in the 1980s case, a higher r^* induces capital outflows resulting in a balance of payments deficit at the original equilibrium, E_0. The BP curve shifts up and to the left. The capital outflow induces an exchange rate depreciation that boosts net exports. The increase in net exports and the presence of fiscal space shifts the IS curve to the right from IS_0 to IS_1. The improvement in net exports also helps partially restore balance of payments, partially offsetting the upward shift from dr^*. Unlike in the 1980s, when the government had no policy instruments due to fixed exchange rates and the lack of fiscal space, here, money supply and government spending are viable policy instruments. As a result, the LM curve does not shift and the new equilibrium moves along the existing LM curve.

Formally, we calculate the comparative statics of this system in Appendix B.2

$$\underbrace{\begin{pmatrix} s & b & -n \\ k & -h & 0 \\ -\tilde{m} & f' & \tilde{n} \end{pmatrix}}_{D} \begin{pmatrix} dY \\ dr \\ de \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ \dfrac{f'\delta}{Y(1-\omega)} \end{pmatrix} dG + \begin{pmatrix} 0 \\ 0 \\ \dfrac{f'}{1-\omega} \end{pmatrix} dr^* + \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} d\left(\frac{M}{P}\right) \tag{13}$$

Where $\omega = \delta eB/Y$; $\tilde{n} = n - f'\omega(1 + r^* + \rho)/e(1-\omega)$ and $\tilde{m} = m - f'\omega/Y(1-\omega)$. Since δ in the 2020s is small, ω is small. Also, since f' is moderately higher but still finite in the 2020s,

their product is small [8] For simplicity, we consider $\tilde{m} \to m$ and $\tilde{n} \to n$. The expression for the determinant D becomes $D = n[h(m-s) - k(b+f)] < 0$ since $m - s = c - 1 < 0$.

The effect of an increase in r^*, holding constant the policy variables ($dG = 0$ and $d(M/P) = 0$) is:

$$\frac{dY}{dr^*} = -\frac{nhf'}{D(1-\omega)} > 0, \tag{14}$$

which is positive under our assumptions.[9] The increase in output is driven primarily by a rise in exports due to a weakened currency. Additionally, if the government chooses to utilize its stock of fiscal space by increasing G, this effect is even larger as we can see from Equation (1) that the rightward shift of the IS curve is given by $(dG + nde)/s$. Fiscal expansion also raises B through the budget constraint (4) which raises ρ through (5) and puts upward pressure on the BP curve. Dividing the third row of (13) by f', the resulting vertical shift of the BP curve is only $\delta dG/\big(Y(1-\omega)\big)$. A key point of difference between the 1980s and 2020s is that in the 1980s, G could not be increased at all due to the binding ceiling (lack of fiscal space) and the premium was already at $\bar{\rho}$. In the 2020s, the fiscal space allows G to rise and since δ is smaller, the additional debt this generates is not translated into a large risk premium or capital outflows. Higher debt tolerance means the stimulus reaches the goods market largely intact rather than being crowded out through the balance of payments.

The effect on domestic interest rates in response to an increase in r^* is:

$$\frac{dr}{dr^*} = -\frac{nkf'}{D(1-\omega)} > 0. \tag{15}$$

The change in the domestic rate r is positive, as capital outflows put upward pressure on domestic rates. We also confirm that the effect on the exchange rates is positive (depreciation):

$$\frac{de}{dr^*} = -\frac{(sh+bk)f'}{D(1-\omega)} > 0. \tag{16}$$

With respect to the LM curve, since we assume $d(M/P) = 0$, then trivially, the LM curve does not shift and the new equilibrium is a movement along this LM curve from $E_0 \to E_1$.

Equation (14) isolates the response of output to a foreign tightening when the government uses neither fiscal or monetary policy ($dG = 0$ and $d(M/P)$. The general response of output allows both policy instruments to move as

$$dY = \underbrace{\frac{-nhf'}{D(1-\omega)}}_{>0} dr^* + \underbrace{\frac{-h(\tilde{n}+n\phi)}{D}}_{>0} dG + \underbrace{\frac{-(b\tilde{n}+nf')}{D}}_{>0} d\left(\frac{M}{P}\right), \quad \phi \equiv \frac{f'\delta}{Y(1-\omega)} \tag{17}$$

where each coefficient is positive since $D < 0$. In the 2020s, with room to enact fiscal stimulus, fiscal policy can offset some of the negative effect of rising r^*. While a central bank can lean against the depreciation or the resulting imported inflation by setting $d(M/P) < 0$, so the monetary term subtracts from the output but as long as the other two channels exist, a hard

[8] For the latter to be true we assume, additionally that $(1 + r^* + \rho)$ is reasonably small.

[9] The effect on output (dY/dr^*) is technically ambiguous, but imposing the previous assumptions, the effect is positive.

landing is largely avoided.

By comparing the two cases, we can see that the combination of flexible exchange rate regime with higher debt tolerance and improved fiscal frameworks can explain why emerging economies' recessions were significantly more muted in the 2020s compared to the 1980s.

4 Testing predictions: Did countries with more fiscal space perform better?

The simple theoretical framework predicts that fiscal space is an important determinant of countries' performance in the face of external monetary tightening. One way to measure the availability of fiscal space is by evaluating the relationship between government debt and GDP growth. If there is sufficient fiscal space, an increase in debt-to-GDP ratio will be associated with positive GDP growth. If there is no fiscal space, an increase in government debt will be accompanied by deteriorating confidence and may result in the lack of response or a negative response of GDP growth to an increase in debt ratios which could be due to a fall in output and rise in borrowing costs rather than fiscal expansion. If this is the case, we should expect that a) in cross-section countries with more fiscal space had higher GDP growth (lower decline) in both time periods, and b) if all countries had more fiscal space in the 2020s than in 1980s, as we documented previously, fiscal space should matter less in 2020s, because the borrowing constraint is not binding for many countries.

Given the small number of observations, we continue to rely on data visualization rather than formal statistical analysis. We do so by plotting per capita GDP growth in 1983-85 and 2022-23, respectively, against potential explanatory variables. We also include regression lines for the full sample and separately for advanced and emerging economies, whenever possible. For completeness, we include the regression results in Appendix Table A.2. We test our theoretical predictions regarding the importance of fiscal space by plotting GDP growth against the ratios of debt to GDP, external debt to GDP and foreign-currency denominated external debt to GDP, as shown in Figure 10. Solid line represents full sample regression slope, while dashed lines represent those for subsamples of advance and emerging economies.

The top panel shows that despite the higher debt-to-GDP ratios in both advanced and emerging economies in the recent episode, documented earlier, higher debt was associated with *worse* economic outcomes in the 1980s for both advanced and emerging economies, but with *better* economic outcomes in the 2020s for advanced economies, and the relationship is essentially flat for emerging economies. In the context of our model, this indicates that in the borrowing constraint has become slack for both groups, but with more room to spare for advanced economies. A positive slope means additional debt is successfully converted to growth while a flat slope means it is, at least, no longer being penalized.

Focusing on external debt only, middle panel, we find strong negative correlation between external debt-to-GDP ratio and GDP growth in the 1980s.[10] This was not the case in the recent

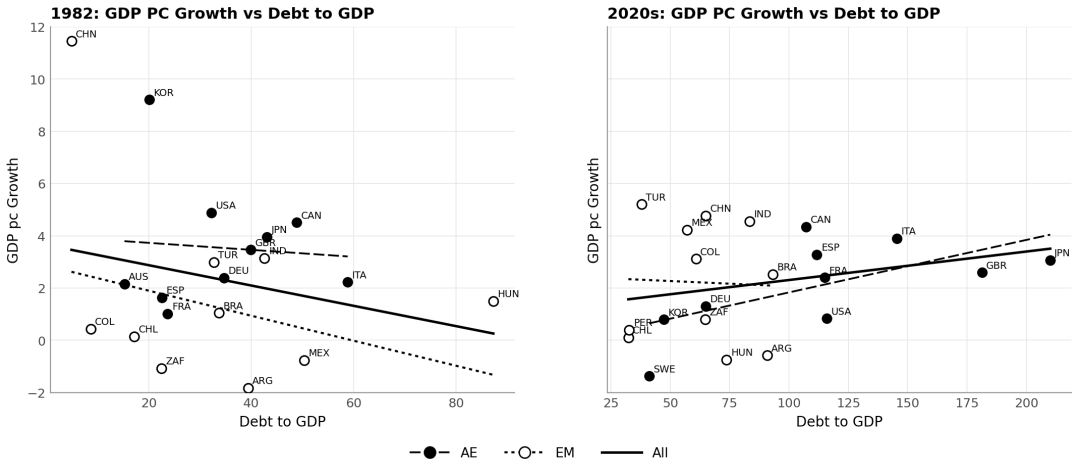
[10] China and the U.K. are omitted for the 1980s as outliers — low external debt and high growth in the case of China and high external debt and low growth in the case of the U.K.

episode for advanced economies, but was still the case for emerging economies.

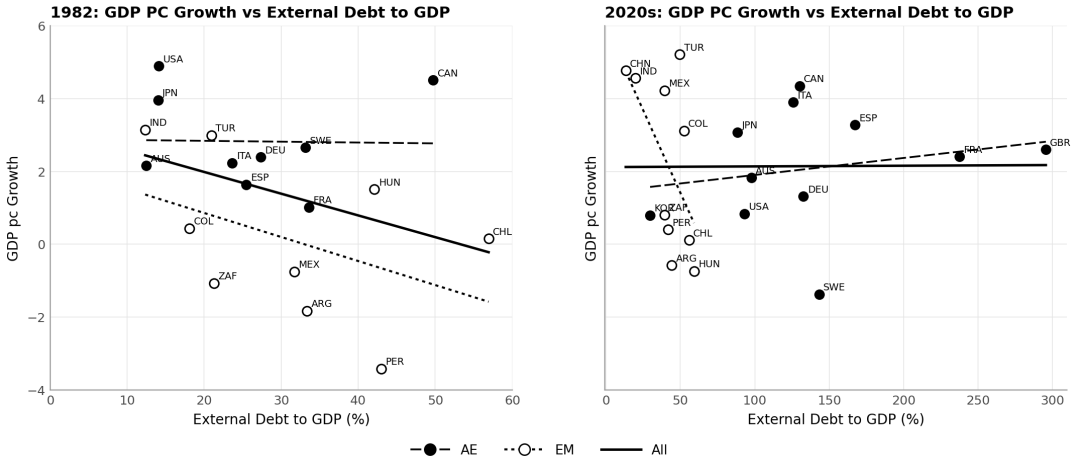
Finally, the bottom panel shows the relationship between per capita GDP growth and external debt denominated in foreign currency.[11] We can see that both in the 1980s and in the recent episodes countries with higher ratio of foreign currency debt to GDP experienced worse economic outcomes. This relationship is especially pronounced for emerging markets in the recent episode, suggesting that external dollar liabilities still play an important role in the transmission of the U.S. monetary policy. We also observe that, for emerging markets, the ratio of foreign currency external debt to GDP was substantially lower in the recent episode than in the 1980s, indicating lower vulnerability.

This evidence provides limited empirical support for our theoretical conclusion that fiscal space improvement played an important role in transmitting U.S. monetary policy tightening abroad — while both in 1980s and 2020s cross-section we observe that countries with lower debt, and therefore more fiscal space, performed better in terms of GDP growth, we only observe the flattening of this relationship over time for advanced economies.

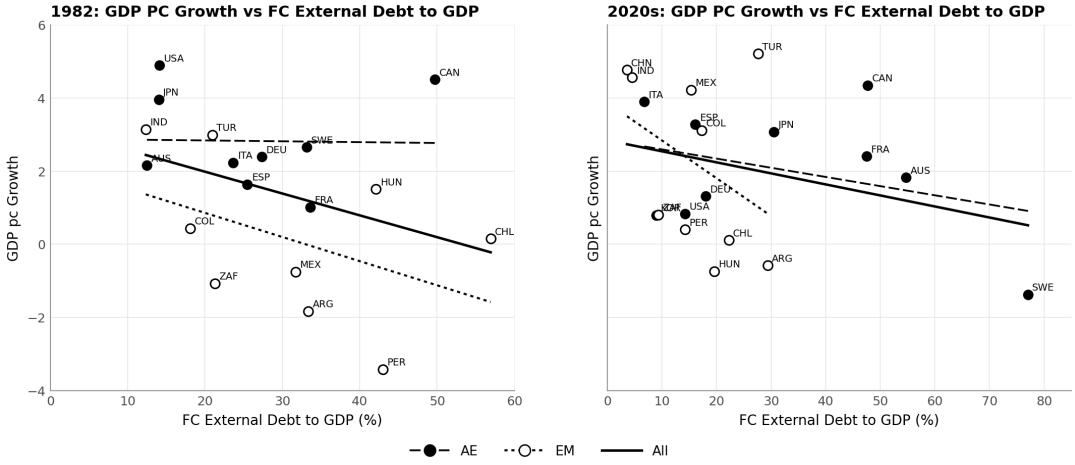
[11] Since no data on currency composition of external debt is available in the 1980s, we simply assume all external debt was in foreign currency, hence the left bottom panel is identical to the left middle panel.



(a) Per capita real GDP growth vs. Government debt (% of GDP)



(b) Per capita real GDP growth vs. external debt (% of GDP)



(c) Per capita real GDP growth and foreign-currency denominated external debt (% of GDP)

Figure 10: Emerging economies with less external debt performed better then and now

Notes: Scatter plots examining the 1982 period with the 2020s period comparing per capita real GDP growth against government debt, external debt, and foreign-currency denominated debt. Here we use pre-US rate hike fiscal space measures and post-US rate hike GDP growth, to examine the relationship between fiscal space and GDP growth. Specifically, the figures reflect how fiscal space in the running up to the US rate shocks provided some cushioning of the impact, shown by the growth rates after the rate hikes. Trend line estimated using OLS. Point estimates are shown in Appendix Table A.2.

5 Conclusion

In 2022 U.S. policy rates had reached their highest levels in over two decades, yet this did not lead to a global recession as the world experienced under similar circumstances in 1982. Even though emerging markets, as well as advanced economies, experienced sudden stops in capital inflows, the fallout did not reach the scale of disruption observed in the 1980s. We analyze trends in domestic fundamentals and external characteristics of a representative sample of advanced and emerging economies to uncover key differences between these two episodes.

We document a number of stylized facts: First, we find improved monetary policy credibility, which resulted in more effective monetary policy with respect to its effect on inflation. Therefore, monetary tightening was not as drastic in the 2020s. Second, we find that despite increasing debt ratios, borrowing costs declined, which indicates that there was more fiscal space, in both advanced and emerging economies, to accommodate monetary tightening. Third, in spite of higher levels of trade and financial openness, vulnerability to external shocks declined due to reliance on foreign currency-denominated external debt and an increase in foreign reserves accumulation.

We rationalize these stylized facts in a simple Mundell-Fleming framework augmented with fiscal space constraints. The framework suggests that, in addition to a much larger monetary policy shock, the sharp transmission of the rising policy rates in the 1980s may be associated with a lack of fiscal space combined with the lack of monetary policy independence due to fixed exchange rate regimes. In the 2020s, however, exchange rates were flexible and fiscal space was more available, which allowed for a policy mix in which fiscal authorities were able to accommodate monetary policy tightening. Of course, the experience of the 1980s and the Great Moderation that followed likely contributed to a more careful and effective monetary policy tightening that was more subdued and managed to avoid a hard landing in most economies.

References

Aguiar, Mark and Gita Gopinath (2007), "Emerging Market Business Cycles: The Cycle Is the Trend." Journal of Political Economy, 115(1):69–102, doi:10.1086/511283.

Ahmed, Shaghil and Andrei Zlate (2014), "Capital Flows to Emerging Market Economies: A Brave New World?" Journal of International Money and Finance, 48:221–248, current account imbalances and international financial integration.

Aizenman, Joshua; Donghyun Park; Irfan A. Qureshi; Gazi Salah Uddin; and Jamel Saadaoui (2024), "The Performance of Emerging Markets During the Fed's Easing and Tightening Cycles: A Cross-Country Resilience Analysis." Working Paper 32303, National Bureau of Economic Research.

Albagli, Elias; Luis Ceballos; Sebastian Claro; and Damian Romero (2019), "Channels of US Monetary Policy Spillovers to International Bond Markets." Journal of Financial Economics, 134(2):447–473.

Arora, Vivek B and Martin D Cerisola (2000), "How Does US Monetary Policy Influence Economic Conditions in Emerging Markets?", iMF working paper no. 00/148.

Baldwin, Richard; Rebecca Freeman; and Angelos Theodorakopoulos (2022), "Horses for Courses: Measuring Foreign Supply Chain Exposure.", national Bureau of Economic Research Working Paper 30525.

Benetrix, Agustin; Deepali Gautam; Luciana Juvenal; and Martin Schmitz (2019), "Cross-Border Currency Exposures.", international Monetary Fund WP 19/299.

Bernanke, Ben and Olivier Blanchard (2023), "What Caused the U.S. Pandemic-Era Inflation?" Conference draft, Hutchins Center on Fiscal & Monetary Policy.

Bernanke, Ben and Olivier Blanchard (2024), "An Analysis of Pandemic-Era Inflation in 11 Economies." Peterson Institute for International Economics Working Paper, pages 24–11.

Bernanke, Ben S. and Frederic S. Mishkin (1997), "Inflation Targeting: A New Framework for Monetary Policy?" Journal of Economic Perspectives, 11(2):97–116.

Bi, Huixin (2012), "Sovereign default risk premia, fiscal limits, and fiscal policy." European Economic Review, 56(3):389–410.

Bi, Huixin and Nora Traum (2012), "Estimating sovereign default risk." American Economic Review, 102(3):161–166.

Bianchi, Javier; Pablo Ottonello; and Ignacio Presno (2023), "Fiscal stimulus under sovereign risk." Journal of Political Economy, 131(9):2328–2369.

Bolhuis, Marijn; Arindam Roy; Patrick Schneider; and Zhao Zhang (2025), "Good Policies (and Good Luck) Helped Emerging Economies Better Resist Shocks." IMF Blog.

Bundick, Brent; A. Lee Smith; and Luca Van der Meer (2024), "Maintaining the Anchor: An Evaluation of Inflation Targeting in the Face of COVID-19." Research Working Paper 24-15, Federal Reserve Bank of Kansas City.

Calvo, Guillermo A (1998), "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops." Journal of applied Economics, 1(1):35–54.

Calvo, Guillermo A; Leonardo Leiderman; and Carmen M Reinhart (1993), "Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors." Staff Papers, 40(1):108–151.

Chen, Jiaqian; Tommaso Mancini Griffoli; and Ratna Sahay (2014), "Spillovers from United States Monetary Policy on Emerging Markets: Different This Time?"

Chinn, Menzie D. and Hiro Ito (2006), "What Matters for Financial Development? Capital Controls, Institutions, and Interactions." Journal of Development Economics, 81(1):163–192.

Clarida, Richard; Jordi Galí; and Mark Gertler (1999), "The Science of Monetary Policy: A New Keynesian Perspective." Journal of Economic Literature, 37(4):1661–1707.

Davis, J. Scott and Pon Sagnanert (2023), "Emerging-Market Countries Insulate Themselves from Fed Rate Hikes."

Di Giovanni, Julian and Galina Hale (2022), "Stock Market Spillovers via the Global Production Network: Transmission of U.S. Monetary Policy." The Journal of Finance, 77(6):3373–3421.

Di Giovanni, Julian; Sebnem Kalemli-Özcan; Alvaro Silva; and Muhammed A Yildirim (2023), "Pandemic-Era Inflation Drivers and Global Spillovers.", national Bureau of Economic Research WP 31887.

Eichengreen, Barry; Poonam Gupta; and Rishabh Choudhary (2021), "The Taper This Time." National Council of Applied Economic Research Working Paper, (131).

Eichengreen, Barry; Ricardo Hausmann; and Ugo Panizza (2003), "Currency Mismatches, Debt Intolerance and Original Sin: Why They Are Not the Same and Why It Matters." NBER Working Paper 10036, National Bureau of Economic Research.

Evdokimova, Tatiana; Piroska Nagy Mohácsi; Olga Ponomarenko; and Elina Ribakova (2023), "Central Banks and Policy Communication: How Emerging Markets Have Outperformed the Fed and ECB." Peterson Institute for International Economics Working Paper, (23-10).

Fleming, J. Marcus (1962), "Domestic financial policies under fixed and under floating exchange rates." IMF Staff Papers, 9(3):369–380.

Frankel, Jeffrey A (2011), "A solution to fiscal procyclicality: The structural budget institutions pioneered by chile." Technical report, National Bureau of Economic Research.

Frankel, Jeffrey A.; Carlos A. Végh; and Guillermo Vuletin (2013), "On Graduation from Fiscal Procyclicality." Journal of Development Economics, 100(1):32–47.

FRBNY (2025), "Measuring the Natural Rate of Interest." Technical report, Federal Reserve Bank of New York.

Georgiadis, Georgios (2016), "Determinants of Global Spillovers from US Monetary Policy." Journal of International Money and Finance, 67:41–61.

Giannone, Domenico and Giorgio Primiceri (2024), "The Drivers of Post-Pandemic Inflation." Technical report, National Bureau of Economic Research.

Gräbner, Claudius; Philipp Heimberger; Jakob Kapeller; et al. (2021), "Understanding Economic Openness: A Review of Existing Measures." Review of World Economics, 157:87–120.

Gürkaynak, Refet S.; Andrew Levin; and Eric Swanson (2010), "Does Inflation Targeting Anchor Long-Run Inflation Expectations? Evidence from the U.S., UK, and Sweden." Journal of the European Economic Association, 8(6):1208–1242.

Hale, Galina and Luciana Juvenal (2023), "External Balance Sheets and the COVID-19 Crisis." Journal of Banking & Finance, 147:106570, special Issue: The Impact of Global Pandemic on Financial Markets and Institutions.

Hale, Galina; John Leer; and Fernanda Nechio (2025), "Fiscal Policy Design and Inflation: The COVID-19 Pandemic Experience." Journal of International Money and Finance, 150:103210.

Hardy, Bryan; Deniz Igan; and Enisse Kharroubi (2024), "Resilience in Emerging Markets: What Makes It, What Could Shake It?", bank for International Settlements Bulletin 88.

Hatchondo, Juan Carlos; Leonardo Martinez; and Francisco Roch (2022), "Fiscal rules and the sovereign default premium." American Economic Journal: Macroeconomics, 14(4):244–273.

Hoek, Jasper; Steve Kamin; and Emre Yoldas (2022), "Are Higher U.S. Interest Rates Always Bad News for Emerging Markets?" Journal of International Economics, 137:103585.

Huertas, Gonzalo (2022), "Why Follow the Fed? Monetary Policy in Times of U.S. Tightening." IMF Working Paper WP/22/243, International Monetary Fund.

Jordà, Òscar and Fernanda Nechio (2023), "Inflation and Wage Growth Since the Pandemic." European Economic Review, 156:104474.

Kalemli-Özcan, Sebnem (2019), "US Monetary Policy and International Risk Spillovers."

Kalemli-Özcan, Şebnem and Filiz D. Unsal (2024), "Global Transmission of Fed Hikes: The Role of Policy Credibility and Balance Sheets." NBER Working Paper 32329, National Bureau of Economic Research.

Kamin, Steven and Aatman Vakil (2025), "Why Emerging Markets Weathered Fed Tightening So Well." Working paper, SSRN, posted on SSRN; associated with American Enterprise Institute (AEI).

Kaminsky, Graciela L.; Carmen M. Reinhart; and Carlos A. Végh (2005), "When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies." NBER Macroeconomics Annual, 19:11–82, doi:10.1086/ma.19.3585327.

Lane, Philip R and Gian Maria Milesi-Ferretti (2001), "The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries." Journal of international Economics, 55(2):263–294.

Mendoza-Fernández, Alfredo; Maurice Obstfeld; and Serra Pelin (2026), "Amid Wartime Disruptions, Most Emerging-Market Central Banks Will Follow the Fed." PIIE RealTime Economics.

Mundell, Robert A. (1963), "Capital mobility and stabilization policy under fixed and flexible exchange rates." The Canadian Journal of Economics and Political Science / Revue canadienne d'Economique et de Science politique, 29(4):475–485.

Obstfeld, Maurice (1998), "The Global Capital Market: Benefactor or Menace?" Journal of economic perspectives, 12(4):9–30.

Pelin, Serra and Alfredo Mendoza-Fernández (2025), "Do Central Banks Follow the Fed?" SSRN Electronic Journal, doi:10.2139/ssrn.5605932.

Reinhart, Carmen M and Kenneth S Rogoff (2009), This Time Is Different: Eight Centuries of Financial Folly. Princeton University Press.

Reinhart, Carmen M and Kenneth S Rogoff (2011), "From Financial Crash to Debt Crisis." American economic review, 101(5):1676–1706.

Reis, Ricardo (2022), The Burst of High Inflation in 2021-22: How and Why Did We Get Here? Bank for International Settlements, Monetary and Economic Department.

Taylor, John B. (1993), "Discretion Versus Policy Rules in Practice." Carnegie-Rochester Conference Series on Public Policy, 39:195–214.

Tillmann, Peter (2016), "Unconventional Monetary Policy and the Spillovers to Emerging Markets." Journal of International Money and Finance, 66:136–156.

A Appendix

Appendix A.1 Data Sources

We obtain the data used throughout the paper from the following sources: the Federal Reserve Economic Data (FRED) database maintained by the Federal Reserve Bank of St. Louis; the International Monetary Fund (IMF) International Financial Statistics (IFS) and Direction of Trade Statistics (DOTS); the World Bank's World Development Indicators (WDI); Global Financial Data (GFD); the External Wealth of Nations (EWN) database of Lane and Milesi-Ferretti; the historical public-debt database of Reinhart and Rogoff (RR); the Reserve Bank of India (RBI); the Organisation for Economic Co-operation and Development (OECD); and the Banco Central de Reserva del Perú (Bank of Peru). Table A.1 lists, for each series, the country coverage, frequency, and source. Countries that share the same coverage, frequency, and source are grouped on a single row.

Table A.1: Data sources

Series	Country	Coverage	Frequency	Source
Real Fed Funds Rate	United States	1/1/1962 – 12/1/2023	Monthly	FRED
Inflation	United States	1/1/1961 – 12/1/2023	Monthly	FRED
Expected Inflation 1 Year	United States	1/1/1982 – 8/1/2026	Monthly	FRED (EXPINF1YR)
Expected Inflation 5 Year	United States	1/1/1982 – 8/1/2026	Monthly	FRED (EXPINF5YR)
Expected Inflation 30 Year	United States	1/1/1982 – 8/1/2026	Monthly	FRED (EXPINF30YR)
10-Year Treasury Rate	United States	1/1/1962 – 12/1/2023	Monthly	FRED
CPI Inflation	United States	Q1 1961 – Q4 2023	Quarterly	IMF IFS
	United Kingdom, France, Japan, Germany, Spain, Italy	Q1 1955 – Q4 2023	Quarterly	IMF IFS
	Colombia, Türkiye	Q1 1956 – Q1 2024	Quarterly	FRED
	Brazil	Q1 1957 – Q4 2023	Quarterly	IMF IFS
	India	Q1 1958 – Q1 2024	Quarterly	RBI
	South Africa, Mexico, Bolivia	Q1 1958 – Q1 2024	Quarterly	FRED
	Peru	Q1 1958 – Q1 2024	Quarterly	Bank of Peru
	Hungary	Q1 1981 – Q1 2024	Quarterly	OECD
	China	Q1 1987 – Q1 2024	Quarterly	FRED
Short-term rate	United States (Fed funds rate)	Q3 1954 – Q1 2024	Quarterly	FRED
	United Kingdom (Bank of England policy rate)	Q3 1950 – Q1 2024	Quarterly	FRED
	Germany (Discount rate)	Q3 1950 – Q1 2024	Quarterly	IMF IFS
	Japan (Discount rate)	Q1 1953 – Q1 2024	Quarterly	IMF IFS
	France (Overnight call rate)	Q1 1955 – Q1 2024	Quarterly	FRED
	Peru (Policy rate)	Q1 1957 – Q1 2024	Quarterly	Bank of Peru

continued on next page

Table A.1 continued from previous page

Series	Country	Coverage	Frequency	Source
	Bolivia (Discount rate)	Q1 1957 – Q1 2024	Quarterly	IMF IFS
	South Africa (Overnight call rate)	Q1 1960 – Q1 2024	Quarterly	FRED
	Spain, Italy (Discount rate)	Q1 1964 – Q1 2024	Quarterly	FRED
	Colombia, Türkiye (Discount rate)	Q1 1964 – Q1 2024	Quarterly	IMF IFS
	India (Discount rate)	Q1 1968 – Q1 2024	Quarterly	IMF IFS
	Mexico (Overnight call rate)	Q4 1975 – Q1 2024	Quarterly	FRED
	Brazil (Overnight call rate)	Q1 1981 – Q1 2024	Quarterly	FRED
	Hungary (Overnight call rate)	Q4 1983 – Q3 2023	Quarterly	FRED
	China (Overnight call rate)	Q2 1990 – Q1 2024	Quarterly	FRED
GDP and Per Capita GDP	United States, United Kingdom, France, Japan, Germany, Spain, Italy, Brazil, India, China, South Africa, Mexico, Peru, Colombia, Bolivia, Türkiye, Hungary	1950–2023	Annual	GFD
Exports, Imports & Trade Balance	United States, United Kingdom, France, Japan, Germany, Spain, Italy, Brazil, India, South Africa, Mexico, Peru, Colombia, Türkiye	Q1 1960 – Q1 2024	Quarterly	IMF DOTS
	Hungary	Q1 1980 – Q1 2024	Quarterly	IMF DOTS
	China, Bolivia	Q1 1981 – Q1 2024	Quarterly	IMF DOTS
Debt/GDP	United States	1966–2023	Annual	World Bank (2011–2023); RR (1966–2010)
	United Kingdom	1950–2023	Annual	World Bank (1990–2023); RR (1950–1989)
	France	1950–2023	Annual	World Bank (1998–2023); RR (1950–1997)
	Japan	1950–2023	Annual	World Bank (1990–2023); RR (1950–1990)
	Spain, Brazil, India, South Africa, Peru, Argentina, Colombia, Türkiye	1950–2023	Annual	GFD
	Italy	1950–2023	Annual	World Bank (2008–2023); RR (1950–2008)
	Mexico	1950–2023	Annual	World Bank
	Australia	1950–2016	Annual	GFD (1990–2016); RR (1950–1989)
	Korea	1958–2023	Annual	GFD
	Bolivia	1970–2023	Annual	GFD
	China	1982–2023	Annual	GFD (1984–2023); RR (1982–1984)
	Hungary	1982–2023	Annual	GFD
	Germany	1990–1999	Annual	GFD

continued on next page

Table A.1 continued from previous page

Series	Country	Coverage	Frequency	Source
Unemployment Rate	Germany, Italy, Japan, Peru, United Kingdom, United States	1950–2023	Annual	GFD
	Spain	1964–2023	Annual	GFD
	Chile	1966–2022	Annual	GFD
	France	1968–2023	Annual	GFD
	Mexico	1973–2023	Annual	GFD
	Argentina	1974–2022	Annual	GFD
	Brazil	1976–2022	Annual	GFD
	China	1978–2022	Annual	GFD
	Colombia	1990–2023	Annual	GFD
	India, South Africa	1991–2023	Annual	GFD
	Hungary	1992–2023	Annual	GFD
	Türkiye	2000–2023	Annual	GFD
	Bolivia	—	Annual	GFD
Credit to Domestic Private Sector (% of GDP)	Argentina, Brazil, Bolivia, Chile, Colombia, Japan, Mexico, South Africa, Türkiye, United Kingdom, United States	1975–2022	Annual	WDI
	India, Peru	1975–2021	Annual	WDI
	China	1985–2022	Annual	WDI
	Hungary	1991–2022	Annual	WDI
	France, Germany, Italy, Spain	2001–2022	Annual	WDI
Financial Development Index	Argentina, Brazil, Bolivia, China, Chile, Colombia, France, Germany, Hungary, India, Italy, Japan, Mexico, Peru, South Africa, Spain, Türkiye, United Kingdom, United States	1980–2021	Annual	IMF Financial Development Database
Exchange Rates	Argentina, Brazil, China, Chile, Colombia, France, Germany, India, Italy, Japan, Mexico, Peru, South Africa, Spain, Türkiye, United Kingdom	1950–2024	Monthly	GFD
FX Reserves	Argentina, Bolivia, China, Chile, Colombia, France, Germany, Hungary, India, Italy, Japan, Mexico, Peru, South Africa, Spain, Türkiye, United Kingdom, United States	1970–2023	Annual	EWN
Current Account	Argentina, Bolivia, China, Chile, Colombia, France, Germany, Hungary, India, Italy, Japan, Mexico, Peru, South Africa, Spain, Türkiye, United Kingdom, United States	1970–2023	Annual	EWN

continued on next page

Table A.1 continued from previous page

Series	Country	Coverage	Frequency	Source
GDP (USD)	Argentina, Bolivia, China, Chile, Colombia, France, Germany, Hungary, India, Italy, Japan, Mexico, Peru, South Africa, Spain, Türkiye, United Kingdom, United States	1970–2023	Annual	EWN
External Debt	Argentina, Bolivia, China, Chile, Colombia, France, Germany, Hungary, India, Italy, Japan, Mexico, Peru, South Africa, Spain, Türkiye, United Kingdom, United States	1970–2023	Annual	EWN
Long-Term Bond Yield	Germany, France, India, Italy, Japan, South Africa, Spain, United Kingdom, United States	10Y, 1950–2024	Monthly	GFD
	China	10Y, 2007–2024	Monthly	GFD
Short-Term Bond Yield	United States	1Y, 1950–2024	Monthly	GFD
	India, South Africa, Brazil	3M, 1950–2024	Monthly	GFD
	Italy	3Y, 1950–2024	Monthly	GFD
	United Kingdom	3Y, 1963–2024	Monthly	GFD
	Germany, France	2Y, 1967–2024	Monthly	GFD
	Japan	2Y, 1974–2024	Monthly	GFD
	Mexico	3M, 1978–2024	Monthly	GFD
	Spain	1Y, 1979–2024	Monthly	GFD

Appendix A.2 Additional charts



Figure A.1: U.S. Inflation Rate

Notes: U.S. headline and core CPI between 1972 and 2023. Source: Federal Reserve Economic Data

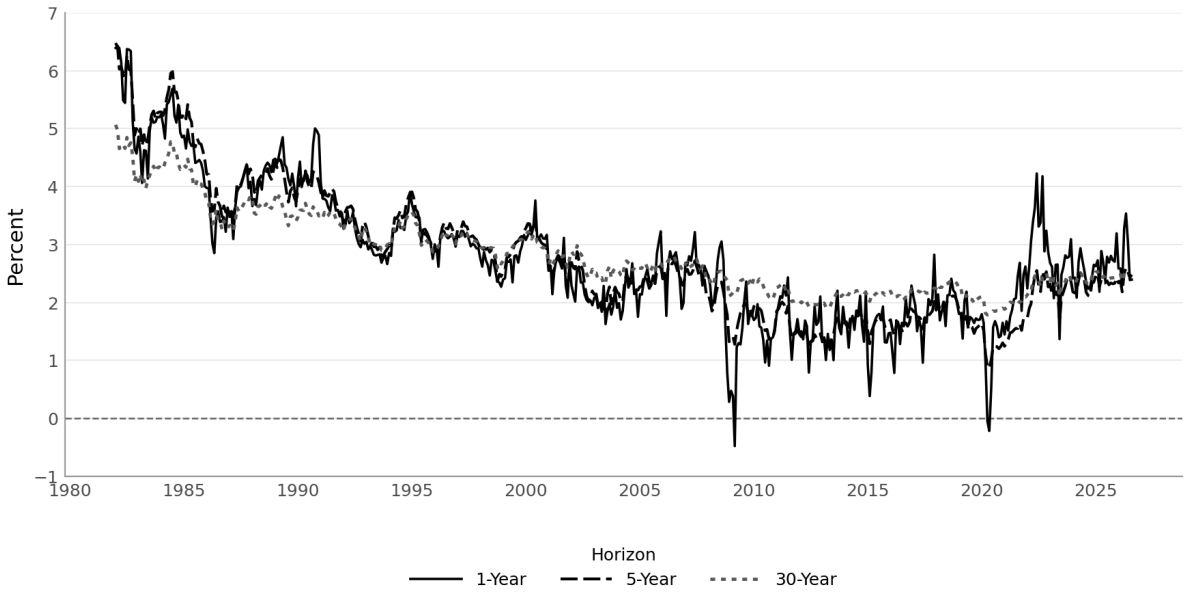


Figure A.2: U.S. Inflationary Expectations

Notes: Model implied U.S. Inflation expectations between 1982 and 2026 at the 1-, 5-, and 30-year horizons (solid, dashed, dotted). The series are model-based, not survey-based — estimated from the Cleveland Fed's term-structure model (Haubrich–Pennacchi–Ritchken), which combines nominal Treasury yields, inflation swaps, and survey forecasts. Source: Federal Reserve Economic Data and the Cleveland Fed Expected Inflation Model, available from 1982.

U.S. inflation data comes from Federal Reserve Economic Data (FRED). Figure A.1 shows the trends of the U.S. CPI headline and core inflation since the 1970s. We can see that one of potentially important differences in the initial conditions between the 1980s and 2020s is the preceding inflation rate. Persistence of inflation is crucially important for the inflationary expectations, and therefore the effort needed to bring inflation down. Figure A.2 shows that, indeed, in 2022 inflationary expectations rose a little, especially at 1-year horizon, but did not become unanchored, as they did in the 1980s.



Figure A.3: Global CPI Inflation

Notes: Global CPI Inflation across advanced and emerging markets between 1973 and 2022. Source: Federal Reserve Economic Data

Inflation data for the countries in our sample were sourced from the International Monetary Fund (IMF), FRED, and central banks of selected countries, when necessary. Figure A.3 presents consumer price index (CPI) inflation rates for all sample countries, along with group averages for emerging and advanced economies.[12] We observe significant inflationary episodes in both 1982 and 2022, with a notably sharper surge in emerging markets during 1982 and a more moderate spike during 2022. Advanced economies, on the other hand, experienced on average a comparatively steeper increase in inflation during 2022. We also observe that, with the exception of the U.S., inflation decline was much more gradual in the 1980s compared to the 2020s, which is consistent with better anchored expectations and therefore likely more effective monetary policy.

[12] Due to very high inflation in the 1980s, Brazil, Mexico, and Peru are omitted from the sample.

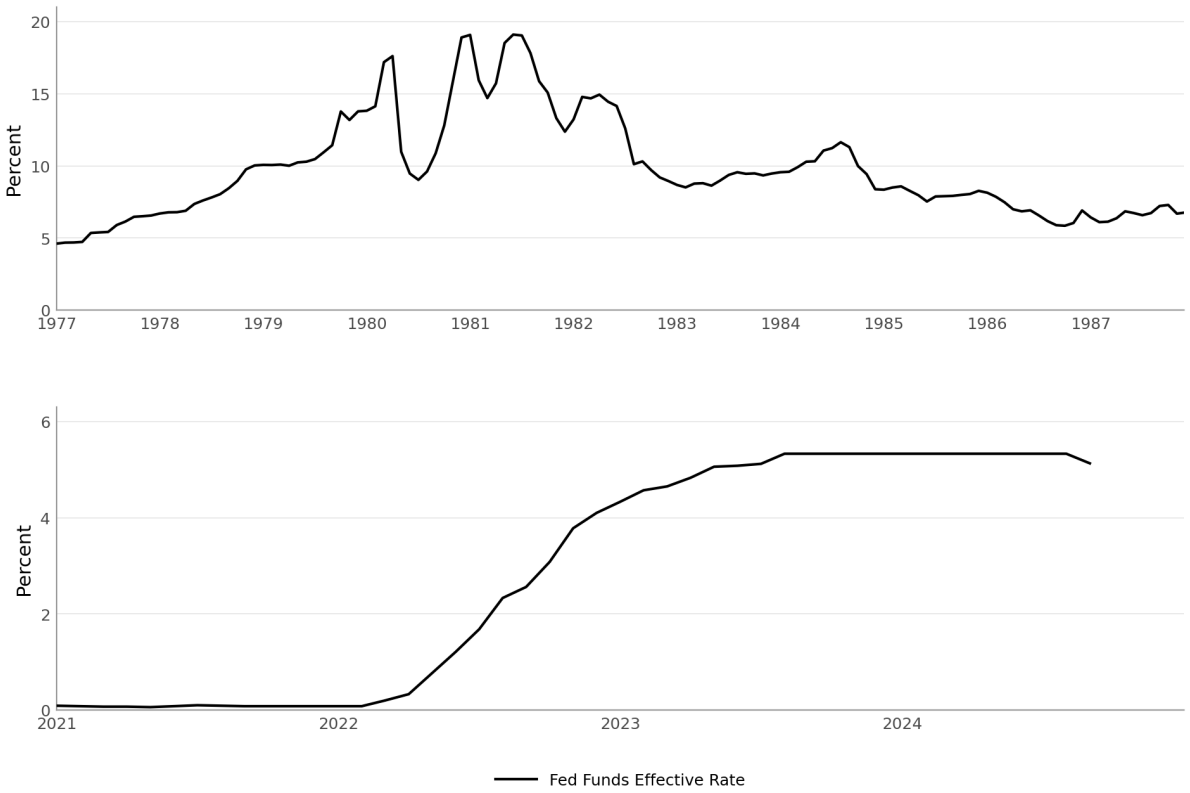


Figure A.4: U.S. Effective Federal Funds Rate

Notes: Effective Federal Funds Rate between 1977-1987 *(top)* and 2021-2024 *bottom*. Source: Federal Reserve Economic Data

For the U.S. monetary policy we use the Effective Federal Funds Rate (FFR) from the Federal Reserve Economic Data. Figure A.4 compares the dynamics of the FFR in the 1980s and 2020s. We can see that in the late 1970s-early 1980s there was less commitment shown by the U.S. monetary policy, as reflected in fluctuating policy rate.

Finally, we consider countries' vulnerability to external shocks.

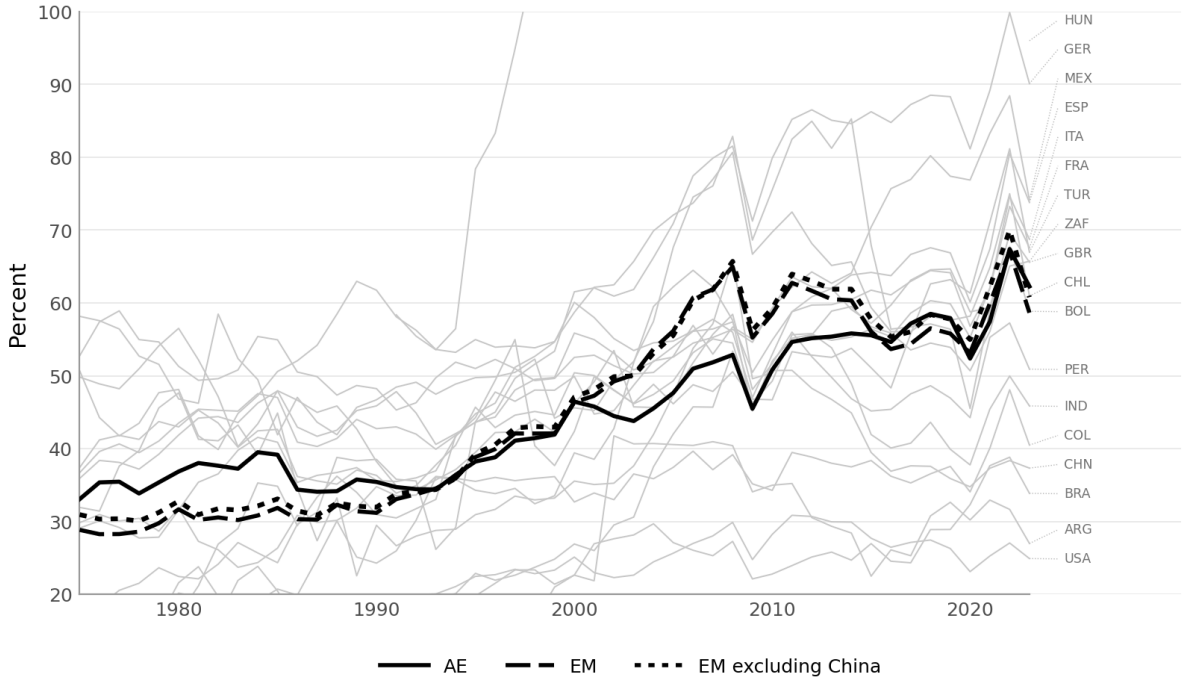


Figure A.5: Sum of Exports and Imports as a percent of GDP

Notes: Exports and Imports as a percentage of GDP across advanced and emerging markets between 1975 and 2023. Source: World Development Indicators

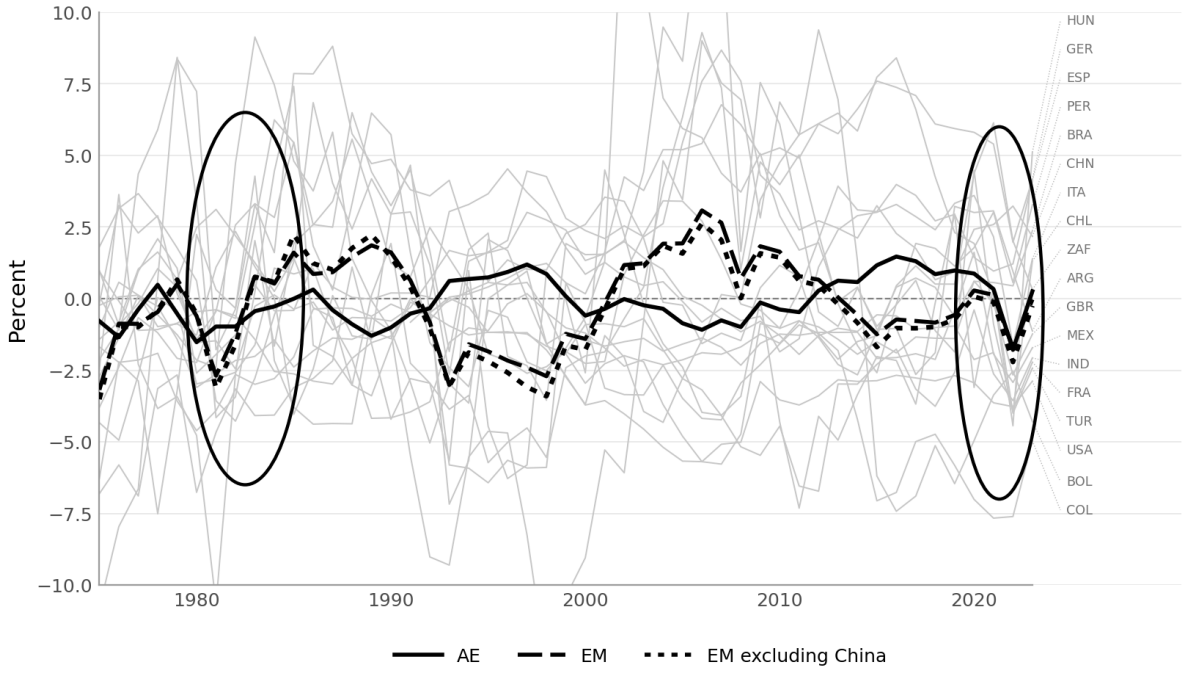


Figure A.6: Current account to GDP ratios

Notes: Current account to GDP ratios across advanced and emerging markets between 1975 and 2023. Two circled periods indicate our two comparison crisis periods. Source: World Development Indicators

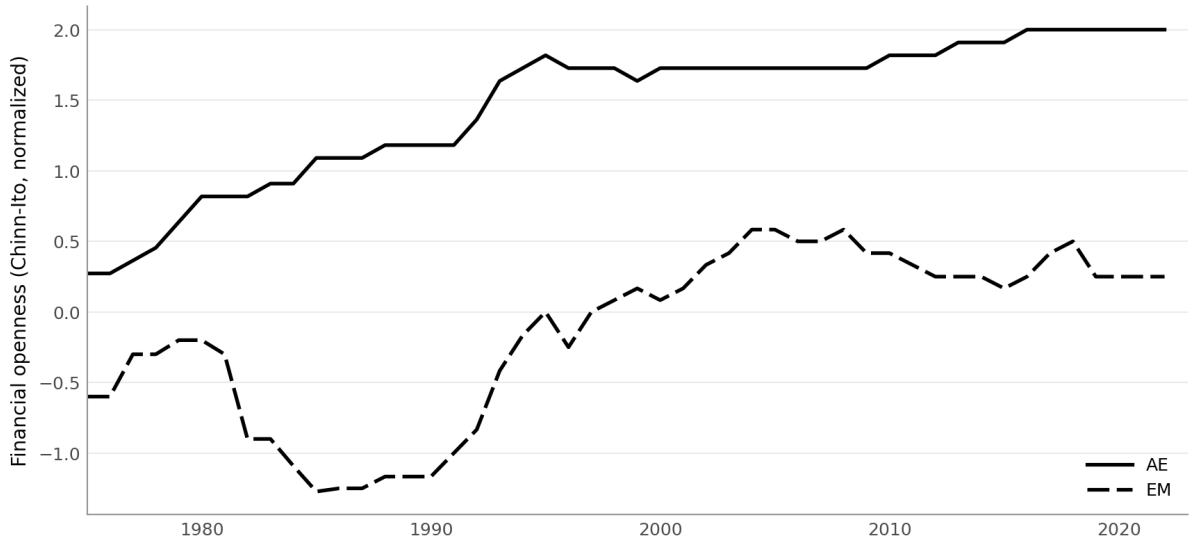


Figure A.7: Average Chinn and Ito (2006) Measure of Financial Openness for Emerging and Advanced Economies

Notes: Average *de jure* financial openness for advanced and emerging economies between 1975 and 2022. Source: Chinn and Ito (2006), using the 2023 updated values.

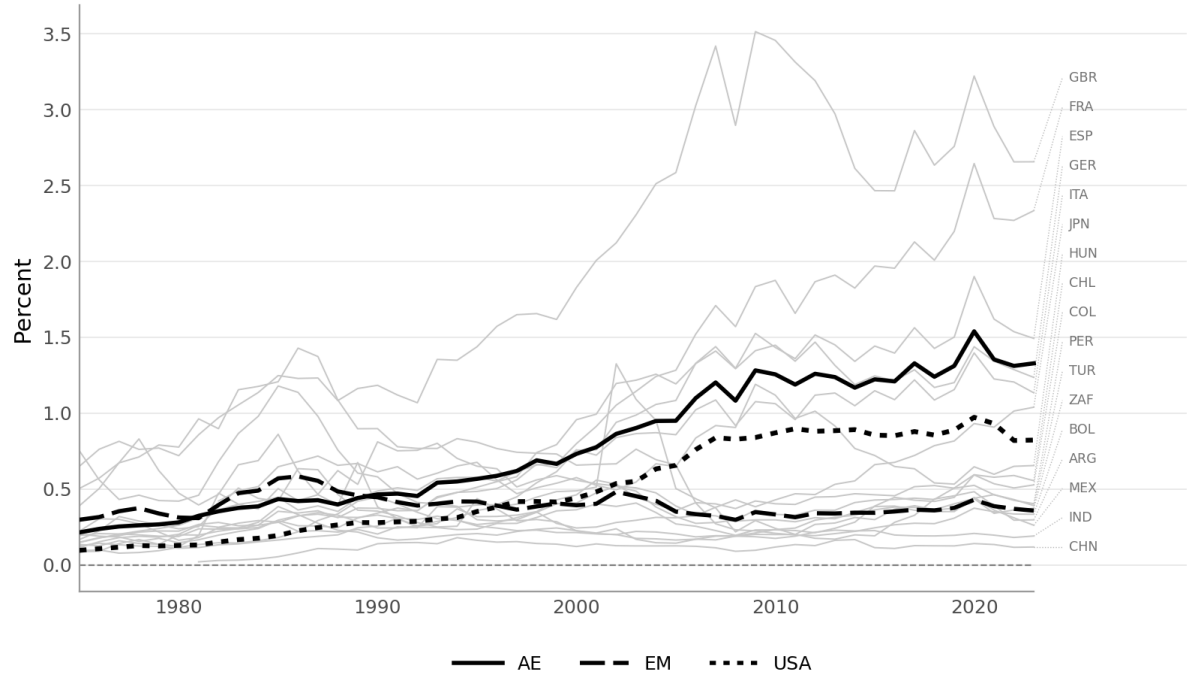


Figure A.8: External debt to GDP ratio

Notes: External debt to GDP ratio for advanced and emerging economies between 1975 and 2023, as well as the United States. Source: External Wealth of Nations

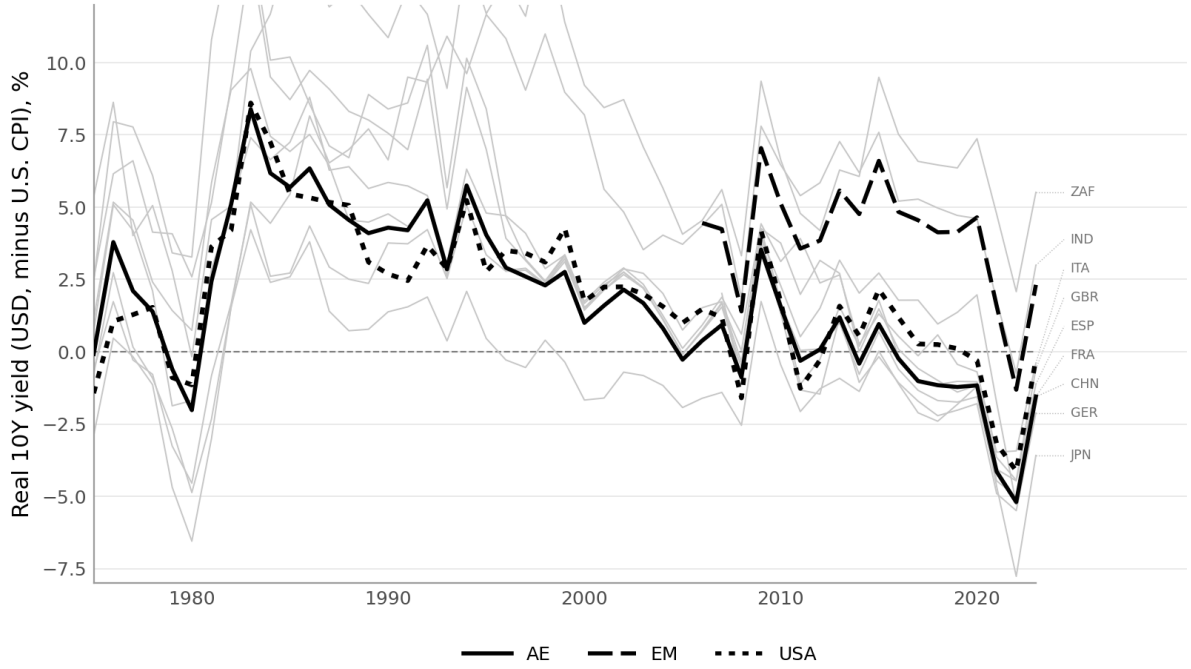


Figure A.9: Real 10-year government bond yields (USD, deflated by U.S. CPI)

Notes: Ten-year government bond yields converted to U.S. dollars (as in Figure 6b) and deflated by realized U.S. CPI inflation, giving the real cost of dollar borrowing for advanced and emerging economies as well as the United States between 1975 and 2022; grey lines are individual countries. Source: Global Financial Database, FRED, and authors' calculations.

Per Capita GDP Growth	1982			2020s		
	All	AE	EM	All	AE	EM
Panel A. Government debt to GDP (Figure 10a)						
Debt to GDP	-0.039	-0.013	-0.048	0.011	0.020**	-0.004
	(0.041)	(0.060)	(0.055)	(0.009)	(0.009)	(0.035)
	[0.357]	[0.828]	[0.410]	[0.253]	[0.048]	[0.910]
Constant	3.652	3.998	2.857	1.216	-0.178	2.473
	(1.579)	(2.173)	(2.222)	(0.914)	(1.080)	(2.315)
	[0.032]	[0.103]	[0.231]	[0.199]	[0.873]	[0.313]
Observations	21	10	11	21	10	11
R^2	0.045	0.006	0.077	0.068	0.405	0.002
Panel B. External debt to GDP (Figure 10b)						
External Debt to GDP	-0.060	-0.002	-0.066	0.000	0.005	-0.091*
	(0.040)	(0.042)	(0.051)	(0.006)	(0.007)	(0.047)
	[0.154]	[0.957]	[0.241]	[0.977]	[0.539]	[0.092]
Constant	3.177	2.885	2.178	2.118	1.434	5.952
	(1.245)	(1.185)	(1.745)	(0.733)	(1.145)	(2.080)
	[0.021]	[0.045]	[0.252]	[0.009]	[0.242]	[0.021]
Observations	18	9	9	21	11	10
R^2	0.123	0.000	0.190	0.000	0.043	0.314
Panel C. FC-denominated external debt to GDP (Figure 10c)						
FC External Debt to GDP	-0.060	-0.002	-0.066	-0.030	-0.025	-0.103
	(0.040)	(0.042)	(0.051)	(0.024)	(0.024)	(0.089)
	[0.154]	[0.957]	[0.241]	[0.227]	[0.333]	[0.280]
Constant	3.177	2.885	2.178	2.843	2.845	3.874
	(1.245)	(1.185)	(1.745)	(0.738)	(0.953)	(1.638)
	[0.021]	[0.045]	[0.252]	[0.001]	[0.017]	[0.046]
Observations	18	9	9	20	10	10
R^2	0.123	0.000	0.190	0.080	0.117	0.143

Standard Errors in Parentheses; *p*-values in Brackets

*** p<0.01, ** p<0.05, * p<0.1

Table A.2: Per Capita GDP Growth and Debt Ratios, 1982 versus the 2020s

Notes: Dependent variable is average per capita real GDP growth in all panels. Each column reports the regression line plotted in the corresponding figure panel: the pooled sample (All), advanced economies (AE), and emerging markets (EM). Each panel uses the same sample plotted in the figure, so observation counts differ across panels according to data availability. Standard errors are reported in parentheses and p-values in square brackets.

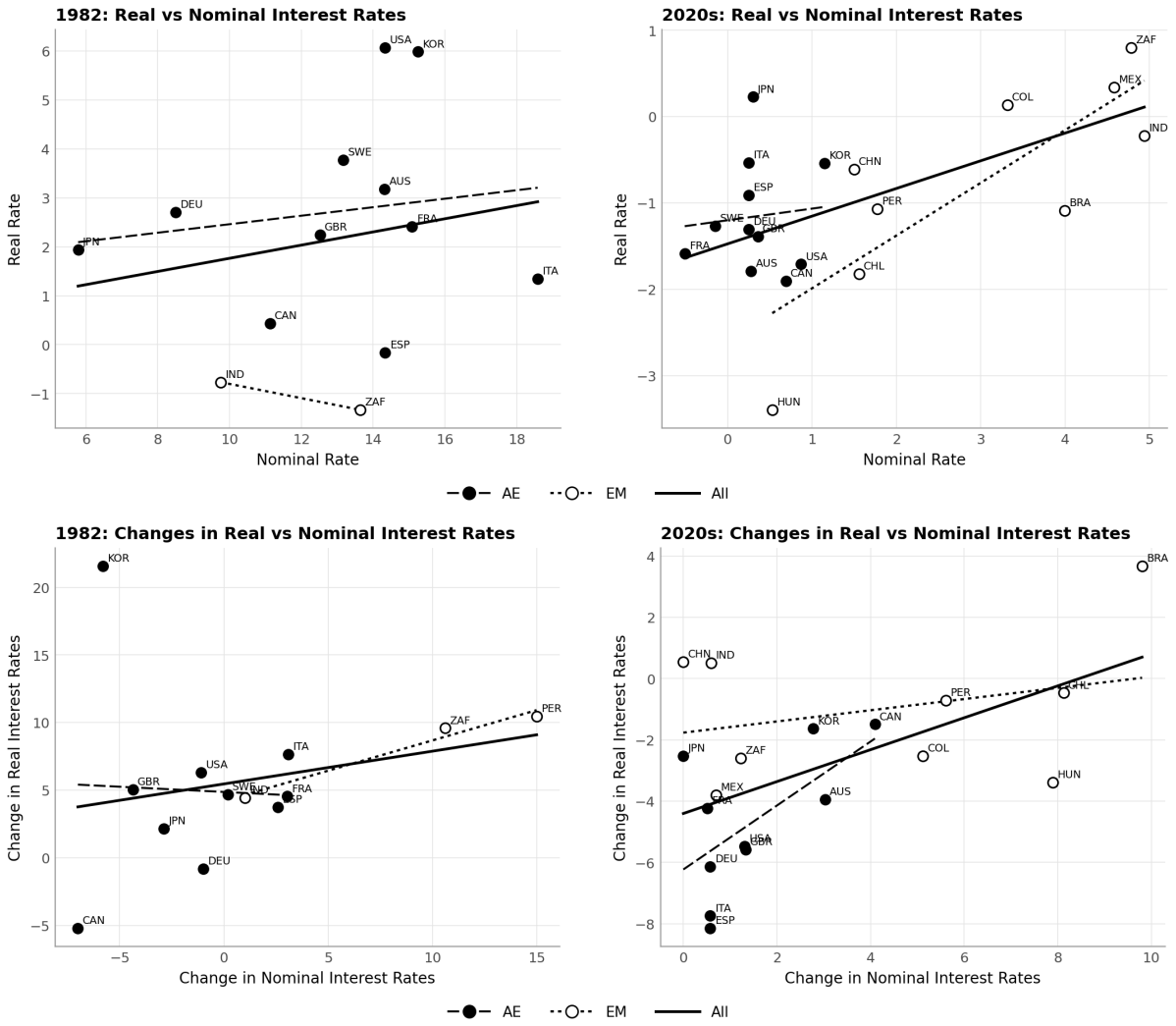


Figure A.10: Real vs. Nominal Interest rates — levels and changes

Notes: Scatter plots examining the 1982 period with the 2020s period comparing real and nominal interest rates. Trend line estimated using OLS. Point estimates are shown in Appendix Table A.3.

Figure A.10 plots the relationship between real and nominal interest rates in both episodes, across countries, both in levels and in changes.[13] We measure the changes in interest rates as the difference between the rates between 1982 and 1980 for the 80's and as the difference of rates between 2022 and 2020 for the recent period. We can make two observations, both supporting our conjecture — first, the level of real rates in the recent episodes was much lower, meaning that the contractionary impact of monetary policy tightening was much less pronounced (even accounting for the trend decline in the equilibrium real interest rate, which is estimated to be 3.5 in the mid-1980s and 1.5 in 2020s (FRBNY 2025)); second, the response of real rates to nominal rates was much stronger in the 2020s.

[13] The levels chart exclude Argentina, Brazil, Mexico, and Peru, because of very high levels of nominal interest rates in the 1980s. The changes chart excludes Argentina, Mexico, and Peru because of very large changes in nominal interest rates in the 1980s. If we include these outliers, they will make our argument even stronger.

Interest Rates	1982			2020s		
	All	**AE**	**EM**	**All**	**AE**	**EM**
Panel A. Real vs. nominal interest rates, levels (Figure A.10, top). Dependent variable: real rate.						
Nominal Rate	0.135	0.087	-0.146	0.321***	0.135	0.611***
	(0.205)	(0.188)		(0.106)	(0.481)	(0.172)
	[0.525]	[0.654]		[0.007]	[0.786]	[0.009]
Constant	0.419	1.592	0.653	-1.474	-1.200	-2.600
	(2.707)	(2.516)		(0.244)	(0.264)	(0.583)
	[0.880]	[0.543]		[<0.001]	[0.001]	[0.003]
Observations	13	11	2	20	11	9
R^2	0.038	0.023	†	0.339	0.009	0.643
Panel B. Changes in real vs. nominal rates (Figure A.10, bottom). Dependent variable: change in real rate.						
Change in Nominal Rate	0.242	-0.077	0.448	0.520**	1.044*	0.183
	(0.297)	(0.670)	(0.080)	(0.199)	(0.490)	(0.227)
	[0.432]	[0.911]	[0.112]	[0.018]	[0.066]	[0.448]
Constant	5.460	4.868	4.200	-4.403	-6.229	-1.764
	(1.798)	(2.484)	(0.848)	(0.819)	(0.959)	(1.276)
	[0.011]	[0.086]	[0.127]	[<0.001]	[<0.001]	[0.209]
Observations	13	10	3	19	10	9
R^2	0.057	0.002	0.969	0.288	0.362	0.085

Standard Errors in Parentheses; *p*-values in Brackets

*** p<0.01, ** p<0.05, * p<0.1

Table A.3: Real and Nominal Interest Rates, Levels and Changes, 1982 versus the 2020s

Notes: Each column reports the regression line plotted in the corresponding figure panel: the pooled sample (All), advanced economies (AE), and emerging markets (EM). The dependent variable is the real interest rate in Panel A and the change in the real interest rate in Panel B. Each panel uses the same sample plotted in the figure. Standard errors are reported in parentheses and p-values in square brackets. †: the column is estimated on only 2 observations, so standard errors, p-values, and R^2 are not identified.

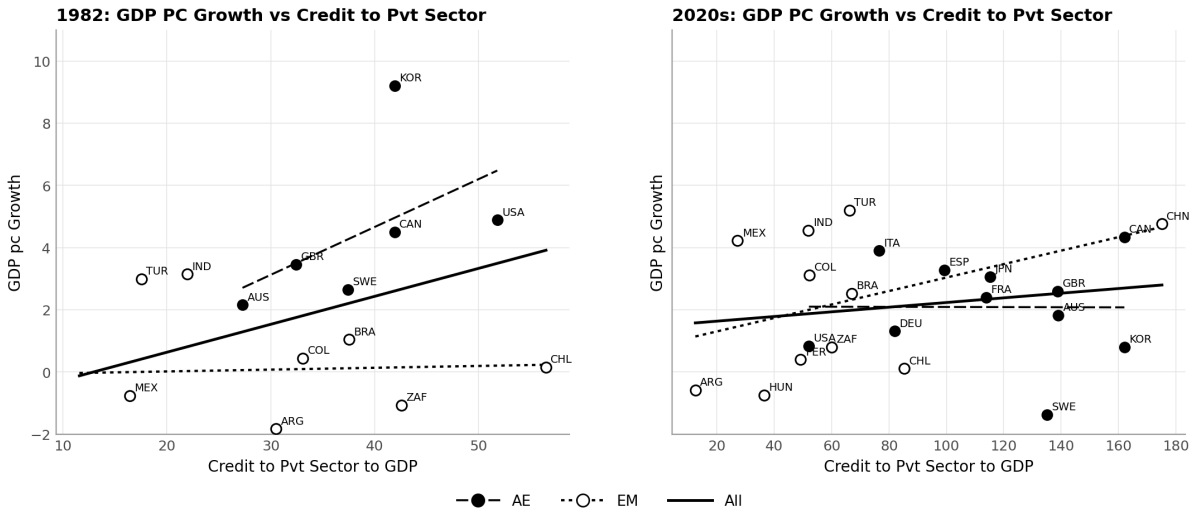


Figure A.11: Per capita GDP growth vs. bank credit to private sector (% of GDP)

Notes: Scatter plots examining the 1982 period with the 2020s period comparing real GDP per capita growth to Credit to the private sector. Trend line estimated using OLS. Point estimates are shown in Appendix Table A.4.

We conjectured that one reason for more effective monetary policy is the level of financial development. To test whether this is the case in the data, we evaluate whether countries with higher levels of financial development experienced better economic performance in either or both episodes. Figure A.11 shows that the ratio of domestic credit to GDP increased between 1980s and 2020s for most countries.[14] However, there is no strong evidence that countries with a higher ratio of bank credit to GDP performed better in either of the episodes: in the 1980s, the relationship between financial development and post-tightening GDP growth was positive for advanced economies, but flat for emerging economies; in the 2020s, there was essentially no relationship between these two variables.

[14] Japan is an outlier in 1980s with 125 percent ratio of private credit to GDP, and is therefore omitted from the chart.

Per Capita GDP Growth	1982			2020s		
	All	AE	EM	All	AE	EM
Credit to Pvt Sector / GDP	0.090	0.154	0.006	0.007	-0.000	0.022
	(0.063)	(0.128)	(0.056)	(0.009)	(0.015)	(0.016)
	[0.177]	[0.295]	[0.919]	[0.417]	[0.990]	[0.219]
Constant	-1.164	-1.490	-0.100	1.485	2.112	0.871
	(2.245)	(5.055)	(1.836)	(0.907)	(1.854)	(1.215)
	[0.613]	[0.783]	[0.958]	[0.117]	[0.284]	[0.492]
Observations	15	6	9	22	11	11
R^2	0.135	0.266	0.002	0.033	0.000	0.163

Standard Errors in Parentheses; *p*-values in Brackets

*** p<0.01, ** p<0.05, * p<0.1

Table A.4: Per Capita GDP Growth on Credit to the Private Sector, 1982 versus the 2020s

Notes: Dependent variable is average per capita real GDP growth. Each column reports the regression line plotted in the corresponding figure panel: the pooled sample (All), advanced economies (AE), and emerging markets (EM). The sample in each column matches the points plotted in the figure. Standard errors are reported in parentheses and p-values in square brackets.

Appendix B Proofs for the Model

We have the following system of equations

Appendix B.1 Case 1: The 1980s

$$Y = c(Y - T) + \bar{I} - br + G + n\bar{e} - mY \qquad \text{(IS)} \tag{B.1}$$

$$\frac{M}{P} = kY - hr \qquad \text{(LM)} \tag{B.2}$$

$$n\bar{e} - mY + f(r - r^* - \rho) = 0 \qquad \text{(BP)} \tag{B.3}$$

$$\rho = \rho_0 + \delta\lambda \qquad \text{(Risk Premia)} \tag{B.4}$$

$$G - T = (B - B_{-1})\bar{e} - (r^* + \rho)B_{-1}\bar{e} \qquad \text{(Fiscal Policy)} \tag{B.5}$$

$$\frac{eB}{Y} \leq \lambda. \qquad \text{(Borr. Constraint)} \tag{B.6}$$

For the 1980s, $eB/Y = \lambda$, $e = \bar{e}$, and so $\rho = \rho_0 + \delta\lambda \equiv \bar{\rho}$: the risk premium is at its ceiling and constant. Recovery requires forced deleveraging.

From equation (B.5):

$$dG = \bar{e}\,dB - \bar{e}B_0\,dr^*, \quad \text{where} \quad \bar{e}\,dB = \lambda\,dY \tag{B.7}$$

So:

$$dG = \underbrace{\lambda\,dY}_{\substack{\text{when output falls,}\\ \text{the ceiling forces } B\\ \text{to fall and spending}\\ G \text{ also falls}}} - \underbrace{\bar{e}B_0\,dr^*}_{\substack{\text{higher foreign rates}\\ \text{raise the cost of}\\ \text{debt servicing}}} \tag{B.8}$$

That is, dG falls due to both factors when r^* increases. B_0 is B evaluated at the initial steady state; elsewhere we suppress the subscript.

From equation (B.1), taking the differential and substituting (B.8):

$$\begin{aligned} s\,dY &= dG - b\,dr \\ (s - \lambda)\,dY + b\,dr &= -\bar{e}B_0\,dr^* \end{aligned} \tag{B.9}$$

And hence we obtain:

$$(s - \lambda)\frac{dY}{dr^*} + b\frac{dr}{dr^*} = -\bar{e}B_0 \tag{B.10}$$

From equation (B.3):

$$\begin{aligned} -m\,dY + f'\,dr &= f'\,dr^* \\ \implies \frac{dr}{dr^*} &= 1 + \frac{m}{f'}\frac{dY}{dr^*} \end{aligned} \tag{B.11}$$

Substituting (B.11) into (B.10):

$$(s-\lambda)\frac{dY}{dr^*} + b\left[1 + \frac{m}{f'}\frac{dY}{dr^*}\right] = -\bar{e}B_0 \tag{B.12}$$

Rearranging, we get

$$\boxed{\frac{dY}{dr^*} = \frac{-f'(\bar{e}B_0 + b)}{(s-\lambda)f' + bm}} \tag{B.13}$$

which is negative provided $s > \lambda$, i.e., $(1 - c + m) > \lambda = eB/Y$. We require $s > \lambda$ for stability.

And from substituting this value in (B.11) and rearranging:

$$\frac{dr}{dr^*} = \frac{(s-\lambda)f' + bm - m(\bar{e}B_0 + b)}{(s-\lambda)f' + bm} \tag{B.14}$$

which is positive provided $(s-\lambda)f' + bm > m(\bar{e}B_0 + b)$: the pressure on r to increase to prevent capital outflows (BP $= 0$) dominates the fall in output that reduces imports and improves the current account.

from (B.8):

$$\frac{dG}{dr^*} = \lambda \underbrace{\frac{dY}{dr^*}}_{<0} - \underbrace{\bar{e}B_0}_{>0} < 0 \tag{B.15}$$

Since $\lambda = \frac{\bar{e}B}{Y}$:

$$\frac{dB}{dr^*} = \frac{\lambda}{\bar{e}}\frac{dY}{dr^*} < 0 \tag{B.16}$$

which represents forced deleveraging during the crisis.

From the LM curve, $\frac{M}{P} = kY - hr$, so:

$$\frac{d(M/P)}{dr^*} = k\underbrace{\frac{dY}{dr^*}}_{<0} - h\underbrace{\frac{dr}{dr^*}}_{>0} < 0 \tag{B.17}$$

Under the maintained assumption $\frac{dr}{dr^*} > 0$, both terms are negative and real money balances unambiguously fall: the central bank contracts the money supply to accommodate lower output and defend the peg.

Appendix B.2 Case 2: The 2020s

In the 2020s, the exchange rate is flexible and adjusts to clear markets. The foreign-currency debt burden is well below its ceiling, $eB/Y \ll \lambda$.

The system of equations and their total differentials are as follows:

IS Curve:

$$sY = \bar{I} - cT + G + ne - br \qquad \Rightarrow \qquad s\,dY = dG + n\,de - b\,dr \tag{B.18}$$

LM Curve:

$$\frac{M}{P} = kY - hr \qquad \Rightarrow \qquad k\,dY - h\,dr = d\left(\frac{M}{P}\right) \tag{B.19}$$

BP Curve:

$$\underbrace{ne - mY}_{\text{NX}} + \underbrace{f(r - r^* - \rho)}_{\text{KA}} = 0 \qquad \Rightarrow \qquad n\,de - m\,dY + f'(\cdot)(dr - dr^* - d\rho) = 0 \tag{B.20}$$

Risk Premia ($eB/Y < \lambda$):

$$\rho = \rho_0 + \delta\frac{eB}{Y} \qquad \Rightarrow \qquad d\rho = \frac{\delta e}{Y}\,dB + \frac{\delta B}{Y}\,de - \frac{\delta Be}{Y^2}\,dY \tag{B.21}$$

Government Budget Constraint / Fiscal Policy:

$$G - T = (B - B_{-1})e - (r^* + \rho)B_{-1}e \qquad \Rightarrow \qquad dG = e\,dB - (r^* + \rho)B_{-1}\,de - B_{-1}e\,(dr^* + d\rho) \tag{B.22}$$

We linearize around an initial steady state and hence use $B = B_{-1}$ around the steady state. From equation (B.22):

$$dB = \frac{1}{e}\left[dG + Be\,dr^* + Be\,d\rho + (r^* + \rho)B\,de\right] \tag{B.23}$$

Substituting (B.23) into equation (B.21):

$$d\rho = \frac{\delta}{Y}\left[dG + Be\,dr^* + Be\,d\rho + (r^* + \rho)B\,de\right] + \frac{\delta B}{Y}\,de - \frac{\delta Be}{Y^2}\,dY \tag{B.24}$$

Rearranging terms, we get

$$d\rho = \frac{1}{1-\omega}\left[\frac{\delta}{Y}\,dG + \omega\,dr^* + \frac{\omega}{e}\left[1 + r^* + \rho\right]de - \frac{\omega}{Y}\,dY\right] \tag{B.25}$$

where $\omega \equiv \delta\frac{eB}{Y}$.

Substituting (B.25) into the BP differential (B.20):

$$n\,de - m\,dY + f'\left(dr - dr^* - \frac{1}{1-\omega}\left[\frac{\delta}{Y}\,dG + \omega\,dr^* + \frac{\omega}{e}\,(1 + r^* + \rho)\,de - \frac{\omega}{Y}\,dY\right]\right) = 0 \tag{B.26}$$

Rearranging terms:

$$\underbrace{\left[n - \frac{f'\omega(1 + r^* + \rho)}{(1-\omega)e}\right]}_{\tilde{n}}de - \underbrace{\left[m - \frac{f'\omega}{(1-\omega)Y}\right]}_{\tilde{m}}dY + f'\,dr = \frac{f'\delta}{(1-\omega)Y}\,dG + \frac{f'}{1-\omega}\,dr^* \tag{B.27}$$

Combining the IS differential, the LM differential, and equation (B.27), we obtain the fol-

lowing system:

$$\begin{aligned} s\,dY + b\,dr - n\,de &= dG \\ k\,dY - h\,dr &= d\left(\frac{M}{P}\right) \\ -\tilde{m}\,dY + f'\,dr + \tilde{n}\,de &= \frac{f'\delta}{(1-\omega)Y}\,dG + \frac{f'}{1-\omega}\,dr^* \end{aligned} \tag{B.28}$$

In matrix form:

$$\begin{pmatrix} s & b & -n \\ k & -h & 0 \\ -\tilde{m} & f' & \tilde{n} \end{pmatrix} \begin{pmatrix} dY \\ dr \\ de \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ \frac{f'\delta}{(1-\omega)Y} \end{pmatrix} dG + \begin{pmatrix} 0 \\ 0 \\ \frac{f'}{1-\omega} \end{pmatrix} dr^* + \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} d\left(\frac{M}{P}\right) \tag{B.29}$$

Appendix C Fiscal Space and the Government Spending Ceiling

In the 2020s, the debt burden is below its ceiling: $eB/Y \leq \lambda$. This constraint must continue to hold after any small perturbation, so:

$$\frac{(B + dB)(e + de)}{Y + dY} \ll \lambda \tag{C.1}$$

To linearize, note that for small $\frac{dY}{Y}$:

$$\frac{1}{Y + dY} = \frac{1}{Y} \cdot \frac{1}{1 + \frac{dY}{Y}} \approx \frac{1}{Y}\left(1 - \frac{dY}{Y}\right) \tag{C.2}$$

Expanding (C.1) and retaining only first-order terms:

$$\frac{e}{Y}\,dB + \frac{B}{Y}\,de - \frac{eB}{Y^2}\,dY < \lambda - \frac{eB}{Y} \equiv \Lambda > 0 \tag{C.3}$$

where Λ measures the remaining fiscal space which is the distance between the current debt burden and its ceiling.

From the government budget constraint (B.22):

$$e\,dB = dG + (r^* + \rho)B\,de + Be\,(dr^* + d\rho) \tag{C.4}$$

Substituting into the linearized ceiling:

$$\frac{dG}{Y} + \frac{(1 + r^* + \rho)B\,de}{Y} + \frac{Be\,(dr^* + d\rho)}{Y} - \frac{Be\,dY}{Y^2} < \Lambda \tag{C.5}$$

Rearranging:

$$\boxed{dG < Y\Lambda - eB\,(dr^* + d\rho) - (1 + r^* + \rho)B\,de + \frac{eB}{Y}\,dY \equiv d\bar{G}_{\max}} \tag{C.6}$$

The expression $d\bar{G}_{\max}$ defines the maximum feasible increase in government spending con-

sistent with the debt ceiling. It is increasing in the available fiscal space Λ and in output dY, and decreasing in the foreign interest rate dr^*, the risk premium $d\rho$, and depreciation de.

In the 1980s, $\Lambda = 0$. Setting $\Lambda = 0$ in equation (C.6):

$$dG^{\max}\Big|_{1980s} = -eB\,dr^* - eB\,d\rho - (1 + r^* + \rho)B\,de + \frac{eB}{Y}\,dY \tag{C.7}$$

With $de = 0$ (fixed rate), $d\rho = 0$ (the binding ceiling keeps $eB/Y = \lambda$ constant), and $dY < 0$:

$$dG^{\max}\Big|_{1980s} = -eB\,dr^* + \frac{eB}{Y}\,dY < 0 \tag{C.8}$$

Both terms are negative. The government cannot expand and it is forced to reduce spending. This is precisely the $dG = \lambda\,dY - \bar{e}B\,dr^*$ we derived earlier for the 1980s.