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External Finance in Emerging Markets and Developing Economies: A Tale of Differences in Vulnerabilities

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Abstract

Over the past two decades, many emerging market economies have become more resilient to external financial shocks. This paper assesses whether such resilience is broadly shared across emerging markets and developing economies by classifying them into three tiers based on economic size, income level, institutional strength, and financial integration. The analysis shows that first-tier emerging markets and developing economies have improved their external balance sheets and reduced dependence on official support. However, second- and third-tier emerging markets and developing economies have experienced growing external vulnerabilities since the global financial crisis, marked by rising external debt liabilities and declining foreign exchange reserves. Using a range of indicators, including sovereign defaults, arrears, partial defaults, and International Monetary Fund lending, the paper identifies episodes of external financial distress and shows that distress remains widespread among second- and third-tier emerging markets and developing economies. The empirical analysis confirms that key components of the net international investment position—especially external debt and foreign exchange reserves—predict the onset of external financial distress, with institutional quality shaping the impact. Weak institutions amplify risks, while strong institutions mitigate them. These findings highlight the importance of recognizing heterogeneity across emerging markets and developing economies, strengthening institutional quality alongside external balance-sheet management, and rebuilding buffers to safeguard against renewed global financial stress.

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1. Introduction

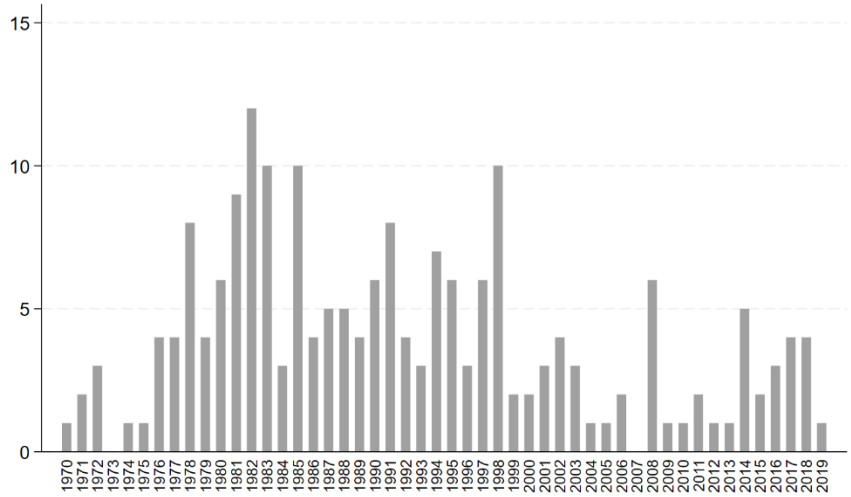
During the past two decades, a narrative has gradually developed on the progress achieved by emerging market economies in improving their macroeconomic performance and strengthening their resilience to external shocks (see, for example, Abiad et al., 2015; Hardy et al., 2024; Kalemli-Özcan and Unsal, 2024). The factors at play include stronger institutions and improved macroeconomic policy settings, such as fiscal frameworks, central bank independence often coupled with inflation targeting, and, in many cases, a floating exchange rate. These changes have led to better macroeconomic management, the ability of the sovereign to borrow in domestic currency, growing integration into global financial markets, and a more resilient external balance sheet (Lane and Milesi-Ferretti, 2007, 2018), including relatively high foreign exchange reserves.

The result has been a much-reduced incidence of external crises, especially after the Global Financial Crisis (GFC) of 2007-2008 (Figure 1). A recent case illustrating this progress was the rapid and sharp tightening of monetary policy in most advanced economies, especially the United States. While previous episodes of U.S. monetary policy tightening in the early 1980s as well as the mid-1990s had been associated with external crises in several emerging market economies, this time these economies coped generally well (Hardy et al., 2024; Kalemli-Özcan and Unsal, 2024). We find this narrative well-grounded and convincing for a set of relatively large and well-established emerging market economies, many of which are members of the G-20, OECD, or European Union. Many of these countries experienced severe financial crises during the 1980s and 1990s, which provided the impetus for structural and institutional reforms and progress in macroeconomic management. As a result, the incidence of external crises has fallen sharply.

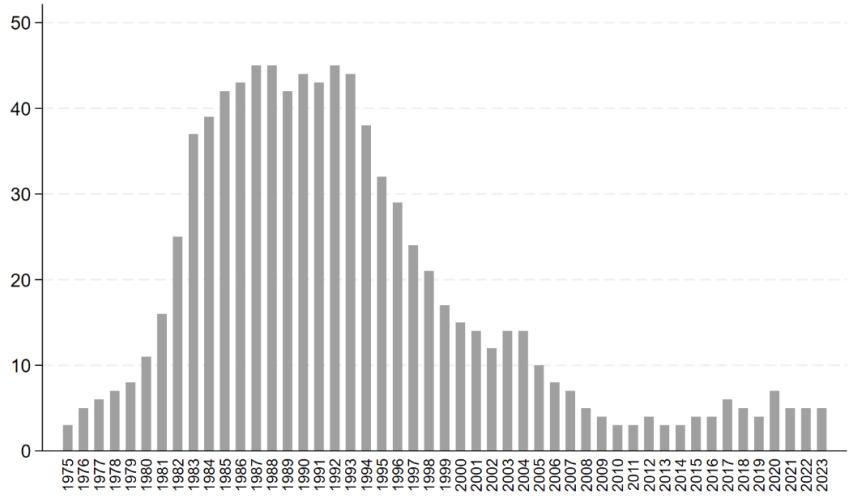
At the same time, however, there are many emerging markets and developing economies (EMDEs) outside the "first-tier" sample on which the narrative is based. These represent a much smaller share of world GDP compared to first-tier EMDEs and are often less financially developed or integrated into world financial markets. A cursory look at the aftermath of the COVID-19 shock and the subsequent rise in global interest rates reveals that many of these economies faced severe external distress, requiring international bailouts/IMF programs or, in some cases, experienced outright external defaults.

Figure 1. Financial crises in EMDEs

(a) Incidence of systemic banking / sovereign debt crises



(b) Number of EMDEs in default or debt restructuring



Note: Data on systemic banking crises and sovereign debt crises are obtained from Nguyen et al. (2022). A systemic banking crisis is defined as a period marked by significant signs of financial distress in the banking system (e.g., bank runs, widespread bank losses, or liquidations) or substantial government intervention (e.g., bank restructuring costs exceeding 3% of GDP, liquidity support exceeding 5% of deposits and liabilities to nonresidents, or asset purchases exceeding 5% of GDP). A sovereign debt crisis is defined as a period in which total sovereign defaults exceed 1% of GDP for at least three consecutive years or exceed 7% of GDP in total. Information on sovereign default and restructuring episodes is sourced from Graf von Luckner et al. (2025). The list of emerging markets and developing economies (EMDEs) follows the World Bank's classification for 2024–25. See Table 1 for the full list of countries.
Source: Authors' calculations based on databases of Nguyen et al. (2022) and Graf von Luckner et al. (2025).

To better understand these contrasting experiences, we classify EMDEs into three tiers. The first-tier group comprises members of the G20, the OECD, the European Union, and the ASEAN-5 economies—countries that are relatively large, wealthier, and more financially integrated, with stronger institutional quality. These economies are frequently the focus of academic and policy studies, also reflecting better data

availability and their growing influence in the global economy. The second-tier group consists of economies often classified as frontier markets. These countries typically have smaller economic size, lower income levels, and more limited integration with global financial markets compared to first-tier EMDEs. The third-tier group includes low-income countries that either lack meaningful access to international capital markets or are classified as fragile and conflict-affected. This classification enables us to examine whether improvements in external resilience are broadly shared across EMDEs or concentrated among a relatively small group of well-established economies.

We first document striking divergences in the evolution of external balance sheets across the three country groups since the end of the GFC of 2007-09. While first-tier EMDEs have generally strengthened their external positions and reduced reliance on official support, many second- and third-tier EMDEs continue to face substantial external vulnerabilities. Since the GFC, these countries have experienced growing external imbalances, with rising external debt liabilities and declining foreign exchange reserves. We also present a range of external financial distress indicators that highlight the greater vulnerability of second- and third-tier EMDEs relative to their first-tier counterparts. First, sovereign bond spreads between first- and second-tier EMDEs widen significantly during periods of global stress, underscoring the heightened sensitivity of second-tier EMDEs to external shocks. Second, the financial burden of servicing external debt has increased markedly for second- and third-tier EMDEs since the GFC, in contrast to the more stable debt servicing costs of first-tier EMDEs. Third, many second- and third-tier EMDEs continue to face repayment difficulties, often missing payments or servicing only a portion of their external obligations. Fourth, while first-tier EMDEs have largely reduced their reliance on IMF lending, many second- and third-tier EMDEs remain financially fragile and dependent on external assistance.

We then identify external financial distress episodes based on multiple indicators—including sovereign defaults, arrears, partial defaults, and reliance on IMF lending—and show that distress remains widespread among second- and third-tier EMDEs. While the share of first-tier EMDEs in distress has declined substantially over time, the share of second- and third-tier EMDEs in distress remains high and rises during periods of global turmoil such as the GFC and the COVID-19 pandemic. Several features of external financial distress are noteworthy. First, distress episodes are persistent: once a country enters distress, it is highly likely to remain in distress the following year. Second, the probability of entering distress differs markedly across groups, and is higher for second- and third-tier EMDEs. Third, these differences have become even more pronounced in recent years. While the probability of distress has either increased or remained steady for the second- and third-tier groups, it has declined significantly for first-tier EMDEs—suggesting improved external resilience in this group. Finally, distress episodes are associated with pronounced economic slowdowns across all tiers, underscoring the substantial macroeconomic costs of prolonged external financial vulnerability.

Building on these descriptive findings, we conduct an empirical analysis to explore the relationship between external balance sheets and the likelihood of external financial distress. Specifically, we assess whether the net international investment position (NIIP), the broadest measure of a country's external position, has predictive power for the onset of distress episodes by estimating the probability of such events using logit and probit models. The results show that weaker NIIPs—particularly those characterized by higher net external debt and lower foreign exchange reserves—significantly raise the likelihood of entering distress. Moreover, we find that institutional quality shapes this relationship: the adverse impact of weak external positions is amplified under weak institutions but diminishes and becomes insignificant under strong institutions. These findings underscore the critical role of both the level and composition of external

balance sheets, as well as the adequacy of external buffers, and the strength of domestic institutions in shaping EMDEs' vulnerability to external shocks. These vulnerabilities are all the more concerning in an environment where escalating geopolitical tensions and pressures for global trade and financial fragmentation could raise the likelihood of higher global risk aversion as well as real and financial market shocks.

Related literature. This paper builds on the literature examining external financial vulnerabilities associated with external stock positions. It makes use of the External Wealth of Nations (EWN) database, developed in Lane and Milesi-Ferretti (2001; 2017; 2018), which provides comprehensive data on the external assets and liabilities of over 210 economies, including several that do not publish international investment position data. For this paper, the EWN database is extended through 2023.

The evolution of gross foreign assets and liabilities has important implications for global financial stability and the transmission of cross-country spillovers through financial linkages. Gourinchas and Obstfeld (2012) emphasize that the GFC was preceded by historically large global imbalances, sustained by complex multilateral patterns of gross financial flows. Mendoza et al. (2009) argue that these imbalances were driven by financial integration among countries with heterogeneous domestic financial markets, while Caballero et al. (2008) highlight cross-country differences in the capacity to produce financial assets for global savers, underscoring the importance of asset heterogeneity. This paper complements these studies by focusing on external imbalances at the country level, particularly within the EMDE group, and highlighting the heterogeneity in external balance sheet dynamics and associated vulnerabilities.

This paper also contributes to a broad literature on identifying episodes of severe financial distress, including sovereign defaults (Asonuma and Trebesch, 2016; Erce et al., 2024; Graf von Luckner et al., 2025), financial crises (Bordo et al., 2001; Reinhart and Rogoff, 2009; Schularick and Taylor, 2012; Laeven and Valencia, 2013; 2020; Baron et al., 2021; Nguyen et al., 2022), credit booms and busts (Mendoza and Terrones, 2008; Jordà et al., 2011; Schularick and Taylor, 2012), and sudden stops in capital flows (Calvo, 1998; Calvo et al., 2004; Forbes and Warnock, 2012; Li et al., 2018). Our work is particularly related to studies that link external imbalances to the occurrence of external crises. For instance, Catão and Milesi-Ferretti (2014) find that the ratio of net foreign liabilities to GDP is a significant predictor of external crises. Similarly, Gourinchas and Obstfeld (2012) emphasize the role of rapid external leverage accumulation as a key precursor to financial turmoil. A key distinction of our study is that we broaden the focus beyond full-blown crisis episodes to include a wider range of external financial distress events, and we concentrate exclusively on EMDEs, allowing for a more granular assessment of vulnerability within this heterogeneous group. Graf von Luckner et al. (2024) also examine episodes of external financial distress, but their analysis is confined to low-income countries and centers on developing a systematic algorithm to assess the out-of-sample predictive performance of different models. By contrast, our study spans a broader set of EMDEs and emphasizes the predictive role of NIIPs.

Our work is also related to a growing body of research assessing the resilience of EMDEs to external shocks. Abiad et al. (2015) highlight the improved macroeconomic performance of EMDEs since the early 2000s, attributing this progress to strengthened policy frameworks and a lower incidence of external and domestic shocks. More recently, Kalemli-Özcan and Unsal (2024) argue that improvements in monetary policy regimes, alongside a reduction in dollar-denominated debt, have enabled emerging markets to weather recent U.S. monetary tightening with limited disruption. Hardy et al. (2024) similarly contrast the relatively smooth response of EMDEs during the post-pandemic inflationary shock with the crises triggered by tightening episodes in the 1980s and 1990s, emphasizing the role of improved monetary frameworks,

fiscal rules, and prudential oversight. However, Kose and Ohnsorge (2020) caution that many EMDEs entered the post-GFC era with weaker fiscal positions and rising debt burdens, leaving them less prepared to confront future downturns. In this paper, we reconcile these contrasting views by documenting substantial heterogeneity across EMDEs. While a subset of relatively large and financially integrated EMDEs have improved their external balance sheets, many others have accumulated significant external imbalances and continue to experience persistent financial distress, particularly in the wake of recent global shocks. We also highlight that aggregate external balance sheet statistics for EMDEs reflect to a very large extent the features of first-tier countries, which represent the lion's share of EMDE GDP and financial assets and liabilities, and hence mask these different underlying developments in our second- and third-tier groups.

The remainder of the paper is organized as follows. Section 2 describes the data sources and the construction of the three-tier country classification. Section 3 documents the heterogeneous trends in external balance sheets and their evolution across the three country groups over time. Section 4 examines differences in external financial vulnerabilities using a range of distress indicators, showing that—unlike first-tier EMDEs—many second- and third-tier EMDEs continue to experience financial distress. Section 5 presents an empirical analysis assessing whether external balance sheets, particularly NIIP and its components, can predict the onset of external financial distress. Section 6 concludes.

2. Data and Country Groups

2.1. Data

We combine several datasets for our analysis. The primary dataset is the EWN database, an updated version of Lane and Milesi-Ferretti (2018). This dataset provides estimates of external assets and liabilities for 212 economies covering the period 1970–2023. These data are based on international investment position reports submitted by countries to the IMF, supplemented with estimates for economies and periods where official data are unavailable, and with adjustments in cases where officially reported data are incomplete or inconsistent with alternative sources (such as data reported by partner countries). Following the standard decomposition of external assets and liabilities used in the Balance of Payments Statistics, positions are categorized into the following categories: foreign direct investment, portfolio equity, portfolio debt, other investment, and foreign exchange reserves (for assets). We exclude gold holdings from foreign exchange reserves, as they are not financial claims on another economy. We also exclude financial derivatives, given their relatively small size for EMDEs. For further details on data construction and methodology, we refer readers to Lane and Milesi-Ferretti (2018) and to the metadata in the database (Milesi-Ferretti, 2025).

The second dataset is the debt statistics from International Debt Statistics (IDS) from the World Bank. We use total external debt (series code: DT.DOD.DECT.CD), total debt service on external debt (DT.TDS.DECT.EX.ZS), debt forgiveness and reduction (DT.DFR.DPPG.CD), and external debt in arrears as the sum of interest in arrears to official creditors (DT.IXA.OFFT.CD), interest in arrears to private creditors (DT.IXA.PRVT.CD), principal in arrears to official creditors (DT.AXA.OFFT.CD), and principal in arrears to private creditors (DT.AXA.PRVT.CD).[1] We then compute the total debt due as the sum of external

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1. We use fourth-quarter data from the World Bank's Quarterly External Debt Statistics (QEDS) for countries where external debt data are not available in the International Debt Statistics (IDS).

debt in arrears and total debt service on external debt. We also use debt service on public and publicly guaranteed (PPG) external debt (DT.TDS.DPPG.CD) when measuring the pressure on public finance.

Additionally, we utilize the following datasets. For sovereign default data, we use the list of sovereign default spells compiled by Graf von Luckner et al. (2025) covering 1970-2024.[2] This dataset focuses on distressed debt exchanges arising in the context of financial crises and includes only defaults and restructuring of medium- and long-term debt. We obtain Emerging Markets Bond Index (EMBI) spreads from JPMorgan. The financial development index is taken from the IMF Financial Development Index Database, which provides a relative ranking of countries based on the depth, access, and efficiency of their financial institutions and markets. The data for the use of IMF credit and loans as a percent of quota is also obtained from the IMF. We use the Chinn-Ito index developed by Chinn and Ito (2006) to measure capital account openness. Institutional quality is proxied by the political risk rating from the PRS Group's International Country Risk Guide (ICRG), and the World Bank's Worldwide Governance Indicators (WGI) are used to assess the quality of governance across countries. Finally, we obtain other macroeconomic data from the IMF and World Bank.[3]

2.2. Country Groups

Our sample comprises 94 emerging markets and developing economies, carefully selected to exclude countries with unique economic characteristics, such as financial centers, small states, and resource-rich economies that have accumulated large external assets.[4] Specifically, starting with the set of EMDEs as defined by the World Bank, we first exclude financial centers and small states.[5] We then further exclude economies lacking reliable statistics or exhibiting unique characteristics or extreme external positions (such as the very large creditor positions of economies such as Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates).[6] This selection process results in a final sample of 94 economies. We classify these economies into three tiers to explore heterogeneity across groups in terms of their external balance sheets and financial distress incidence. The classification into three distinct tiers is central to our analysis, providing a framework for examining differences in economic structures and international asset and liability positions across the groups.[7]

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2. The dataset is an update of Cruces and Trebesch (2013).

3. Specifically, we obtain nominal GDP in U.S. dollars from the World Economic Outlook (WEO); real GDP per capita in constant 2015 U.S. dollars from the World Development Indicators (WDI); exports and primary income from the WDI; current account balance from the International Financial Statistics (IFS); and government revenue from the IMF Fiscal Monitor database.

4. Notably, China is also excluded from our sample due to its dominant economic size, which could skew the analysis.

5. We identify financial centers based on the classification by Lane and Milesi-Ferretti (2018), while small states are defined according to the World Bank Group's threshold of countries with a population of 1.5 million or less.

6. Specifically, we drop the following 23 economies: Afghanistan; Central African Republic; Chad; Equatorial Guinea; Eritrea; Gabon; Iran, Islamic Rep.; Iraq; Kosovo; Kuwait; Lebanon; Liberia; Libya; Qatar; Saudi Arabia; Somalia; South Sudan; Syrian Arab Republic; Turkmenistan; United Arab Emirates; Venezuela, RB; West Bank and Gaza; and Yemen, Rep.

7. While the classification of countries into these three tiers is inherently subjective and open to debate, it provides a useful framework for our analysis. We acknowledge that alternative classification schemes could yield different insights. However, we demonstrate that small variations in country classifications do not materially affect our findings by testing the robustness of our results against alternative groupings (see Appendix A.1).

The first-tier group consists of 19 EMDEs selected based on their substantial access to international financial markets and significant economic influence. Economies are classified into the first-tier group if they meet at least one of the following criteria: (i) membership in the G20; (ii) membership in the European Union; (iii) membership in the OECD or candidate status for OECD membership; or (iv) inclusion among the ASEAN-5 economies. This classification ensures that the first-tier group mostly captures well-established emerging market economies with considerable global economic relevance. Table 1 lists the first-tier economies along with their eligibility under each criterion.[8]

Table 1. List of first-tier economies

Country	Region	Income group[1)]	G20	EU[2)]	OECD[2)]	ASEAN-5	S&P[3)]	FTSE[3)]	MSCI[3)]	EMBI[3)]
Argentina	LAC	UMC	◯		△		FM		SM	◯
Brazil	LAC	UMC	◯		△		EM	AEM	EM	◯
Bulgaria	ECA	HIC		◯	△		FM	FM	SM	◯
Chile	LAC	HIC			◯		EM	SEM	EM	◯
Colombia	LAC	UMC			◯		EM	SEM	EM	◯
Costa Rica	LAC	UMC			◯					◯
Hungary	ECA	HIC		◯	◯		EM	AEM	EM	◯
India	SAR	LMC	◯				EM	SEM	EM	◯
Indonesia	EAP	UMC	◯		△	◯	EM	SEM	EM	◯
Malaysia	EAP	UMC				◯	EM	AEM	EM	◯
Mexico	LAC	UMC	◯		◯		EM	AEM	EM	◯
Peru	LAC	UMC			△		EM	FM	EM	◯
Philippines	EAP	LMC				◯	EM	SEM	EM	◯
Poland	ECA	HIC		◯	◯		EM	DM	EM	◯
Romania	ECA	HIC		◯	△		FM	SEM	FM	◯
Russian Federation[4)]	ECA	HIC	◯				SM			
South Africa	SSA	UMC	◯				EM	AEM	EM	◯
Thailand[5)]	EAP	UMC			△	◯	EM	AEM	EM	
Türkiye	ECA	UMC	◯	△	◯		EM	AEM	EM	◯

Note: 1) World Bank country classifications by income level for 2024-25.
2) △ indicates a candidate country.
3) S&P Dow Jones Indices, FTSE Equity Country Classification, MSCI Market Classification, and JP Morgan's Emerging Market Bond Index Global, as of April 2025. DM = Developed Markets, EM = Emerging Markets, AME = Advanced Emerging Markets, SEM = Secondary Emerging Markets, FM = Frontier Markets, SM = Standalone Markets.
4) The Russian Federation was removed from FTSE and EMBI in March 2022 and from MSCI in March 2022.
5) Thailand is not included in EMBI Global but is included in JP Morgan's Government Bond Index-Emerging Markets (GBI-EM), which tracks local currency sovereign bonds.

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8. Specifically, 8 economies in the first-tier group are members of the G20, 4 are members of the European Union, 7 are members of the OECD, and 7 are OECD candidates. In addition, 4 economies belong to the ASEAN-5. Including the ASEAN-5 helps broaden the regional representation of the first-tier group by adding two East Asia and Pacific (EAP) economies—Malaysia and the Philippines—to the list.

The fact that all first-tier economies are represented in at least one major equity or bond index indicates their significant access to international financial markets.[9] The inclusion of these countries in the first-tier group aligns with the focus of many studies on emerging market economies, making this group a useful benchmark for comparative analysis.

To classify remaining economies into two groups, we designate as third-tier those that meet at least one of the following conditions: (1) classified as low-income countries (LICs) according to the World Bank; (2) classified as lower-middle-income countries (LMCs) that are not included in JPMorgan's EMBI Global and are represented in fewer than one major equity index; or (3) identified as fragile and conflict-affected situations (FCS) by the World Bank. Notably, countries that are candidates for European Union membership are classified in the second-tier group regardless of these criteria, reflecting their relatively higher income levels, stronger institutional frameworks, and better access to financial markets. The purpose of this classification is to ensure that the second-tier group remains broadly comparable to the first-tier group by excluding LICs and FCS countries, widely recognized as facing persistent financial difficulties.

The above classification results in 44 second-tier EMDEs and 31 third-tier EMDEs. Tables 2 and 3 present the full lists of the second- and third-tier EMDEs, respectively. The second-tier group comprises economies with higher income levels and better access to international financial markets compared to the third-tier group. These economies are often categorized as frontier markets, characterized by smaller economic size and limited global financial integration relative to first-tier EMDEs. Examples of second-tier economies include Bangladesh, the Arab Republic of Egypt, Ghana, Jordan, Kenya, Pakistan, Sri Lanka, Senegal, Tunisia, and Viet Nam.

The third-tier group encompasses 31 EMDEs that are mostly smaller in size, have lower income levels, and lack meaningful access to international capital markets. These countries face structural barriers to financial development and integration, limiting their participation in cross-border financial flows. The group is predominantly composed of lower-middle- and low-income economies, with a significant concentration in Sub-Saharan Africa. About half of the countries in this group experience violent conflict or exhibit significant institutional and social fragility. Only a few are included in major equity or bond indices. A special case is Nigeria, a country with GDP considerably above the one in other countries in the group and generally more integrated in global financial markets, which could belong to the second-tier group, were it not for its classification as a country facing a fragile and conflict-affected situation.

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9. As of April 2025, all first-tier economies—except the Russian Federation and Thailand—are included in at least two of the three major equity indices (S&P Dow Jones Indices, FTSE Equity, and MSCI) or in JPMorgan's EMBI Global. Russia was previously included in all these indices but was removed from FTSE and EMBI in March 2022 and from MSCI in March 2023. Thailand is not included in EMBI Global because it primarily issues local-currency debt; however, it is part of JPMorgan's Government Bond Index–Emerging Markets (GBI-EM), which tracks local-currency sovereign bonds.

Table 2. List of second-tier economies

Country	Region	Income group[1)]	S&P[2)]	FTSE[2)]	MSCI[2)]	EMBI[2)]
Albania[3)]	ECA	UMC				
Algeria	MNA	UMC				
Angola	SSA	LMC				◯
Armenia	ECA	UMC				◯
Azerbaijan	ECA	UMC				◯
Bangladesh	SAR	LMC	FM	FM	FM	
Belarus	ECA	UMC				
Benin	SSA	LMC			FM	◯
Bolivia	LAC	LMC				◯
Bosnia and Herzegovina[3)]	ECA	UMC			SM	
Botswana	SSA	UMC	FM	FM	SM	
Côte d'Ivoire	SSA	LMC	FM	FM	FM	◯
Dominican Republic	LAC	UMC				◯
Ecuador	LAC	UMC	FM			◯
Egypt, Arab Rep.	MNA	LMC	EM	SEM	EM	◯
El Salvador	LAC	UMC				◯
Georgia[3)]	ECA	UMC				◯
Ghana	SSA	LMC	FM	FM		◯
Guatemala	LAC	UMC				◯
Honduras	LAC	LMC				◯
Jamaica	LAC	UMC	FM		SM	◯
Jordan	MNA	LMC	FM	FM	FM	◯
Kazakhstan	ECA	UMC	FM	FM	FM	◯
Kenya	SSA	LMC	FM	FM	FM	◯
Moldova[3)]	ECA	UMC				
Mongolia	EAP	UMC		FM		◯
Morocco	MNA	LMC	FM	FM	FM	◯
Namibia	SSA	UMC	FM			◯
North Macedonia[3)]	ECA	UMC		FM		
Oman	MNA	HIC	FM	FM	FM	◯
Pakistan	SAR	LMC	FM	FM	FM	◯
Paraguay	LAC	UMC				◯
Senegal	SSA	LMC			FM	◯
Serbia[3)]	ECA	UMC		FM	FM	◯
Sri Lanka	SAR	LMC	FM	FM	FM	◯
Tajikistan	ECA	LMC				◯
Tanzania	SSA	LMC	SM	FM		
Trinidad and Tobago	LAC	HIC	FM		SM	◯
Tunisia	MNA	LMC	FM	FM	FM	
Ukraine[3)]	ECA	UMC	SM		SM	◯
Uruguay	LAC	HIC				◯
Uzbekistan	ECA	LMC				◯
Viet Nam	EAP	LMC	FM	FM	FM	
Zambia	SSA	LMC	FM			◯

Note: 1) World Bank country classifications by income level for 2024-25.

2) S&P Dow Jones Indices, FTSE Equity Country Classification, MSCI Market Classification, and JP Morgan's Emerging Market Bond Index Global, as of April 2025. EM = Emerging Markets, SEM = Secondary Emerging Markets, FM = Frontier Markets, SM = Standalone Markets.

3) EU candidate countries.

Table 3. List of third-tier economies

Country	Region	Income group[1)]	FCS[2)]	S&P[2)]	FTSE[2)]	MSCI[2)]	EMBI[2)]
Burkina Faso	SSA	LIC	Conflict			FM	
Burundi	SSA	LIC	Fragility				
Cambodia	EAP	LMC					
Cameroon	SSA	LMC	Conflict				◯
Congo, Dem. Rep.	SSA	LIC	Conflict				
Congo, Rep.	SSA	LMC	Fragility				
Ethiopia	SSA	LIC	Conflict				◯
Gambia, The	SSA	LIC					
Guinea	SSA	LMC					
Guinea-Bissau	SSA	LIC	Fragility			FM	
Haiti	LAC	LMC	Conflict				
Kyrgyz Republic	ECA	LMC					
Lao PDR	EAP	LMC					
Lesotho	SSA	LMC					
Madagascar	SSA	LIC					
Malawi	SSA	LIC		SM			
Mali	SSA	LIC	Conflict			FM	
Mauritania	SSA	LMC					
Mozambique	SSA	LIC	Conflict				◯
Myanmar	EAP	LMC	Conflict				
Nepal	SAR	LMC					
Nicaragua	LAC	LMC					
Niger	SSA	LIC	Conflict			FM	
Nigeria	SSA	LMC	Conflict	SM		SM	◯
Papua New Guinea	EAP	LMC	Fragility				◯
Rwanda	SSA	LIC		SM			◯
Sierra Leone	SSA	LIC					
Sudan	SSA	LIC	Conflict				
Togo	SSA	LIC				FM	
Uganda	SSA	LIC		SM			
Zimbabwe	SSA	LMC	Fragility			SM	

Note: 1) World Bank country classifications by income level for 2024-25.
2) World Bank's classification of fragile and conflict-affected situations (FCS) for 2024-25. "Conflict" refers to countries experiencing violent conflict, identified by conflict-related deaths exceeding a threshold relative to the population. "Fragility" refers to countries with significant institutional and social weaknesses, determined by indicators measuring the quality of policies, institutions, and signs of fragility.
3) S&P Dow Jones Indices, FTSE Equity Country Classification, MSCI Market Classification, and JP Morgan's Emerging Market Bond Index Global, as of April 2025. FM = Frontier Markets, SM = Standalone Markets.

Table 4 highlights the key differences across three groups in terms of economic size, income level, financial development and openness, and the quality of governance. By construction, the first-tier EMDEs are larger in GDP, have higher income levels, and are financially more developed and open than the other two groups. The average GDP of the first-tier group stood at $887 billion in 2023, compared to $100 billion for the second tier and just $39 billion for the third tier. Real GDP per capita also follows a similar gradient, with the first tier averaging nearly $10,000 per person, which is nearly double the second-tier average and about nine times the third-tier average. Financial development, measured by the IMF index, is highest in the first-tier group (0.46), followed by the second tier (0.25) and the third tier (0.13). Financial openness, measured by the Chinn-Ito index (Chinn and Ito, 2006), also declines progressively from 0.50 in the first tier to 0.33 in the third tier. Governance indicators from the World Bank also show a clear deterioration in

institutional quality as we move from the first- to the third-tier group. All six indicators—Control of Corruption, Government Effectiveness, Political Stability, Rule of Law, Regulatory Quality, and Voice and Accountability—exhibit significantly weaker scores for lower-tier economies. These patterns confirm that lower-tier EMDEs face structural institutional challenges alongside weaker economic fundamentals and limited financial integration. The large gaps across nearly all indicators underscore the vulnerability and fragility of second- and third-tier EMDEs.

Table 4. Group comparison

	First-tier	Second-tier	Third-tier
GDP (2023, billions, US$)	887 [436]	100 [72]	39 [20]
Real GDP per capita (2023, constant 2015 US$)	9,925 [10,327]	5,144 [4,310]	1,143 [956]
Financial Development (2021, IMF)	0.46 [0.43]	0.25 [0.24]	0.13 [0.12]
Financial Openness (2022, Chinn-Ito)	0.50 [0.42]	0.45 [0.42]	0.33 [0.16]
Worldwide Governance Indicators (World Bank, 2023)			
Control of Corruption (CC)	44.2 [41.7]	38.4 [38.0]	22.6 [20.0]
Government Effectiveness (GE)	53.0 [55.7]	43.2 [42.2]	20.0 [19.3]
Political Stability and Absence of Violence (PV)	37.2 [28.7]	38.0 [35.8]	24.6 [19.7]
Rule of Law (RL)	47.1 [50.2]	38.9 [41.7]	22.3 [21.2]
Regulatory Quality (RQ)	54.7 [57.3]	42.3 [44.3]	21.2 [20.5]
Voice and Accountability (VA)	53.6 [53.9]	39.5 [40.0]	26.2 [26.0]

Note: Reported values are means, with medians in brackets. The financial development index is sourced from the IMF Financial Development Index Database and reflects the depth, access, and efficiency of financial institutions and markets, with values ranging from 0 to 1. Financial openness is measured by the Chinn-Ito index (Chinn and Ito, 2006), also ranging from 0 to 1. The Worldwide Governance Indicators are reported in percentile ranks from 0 to 100. For data sources and methodology, see Kaufmann and Kraay (2024). Higher values indicate greater financial development, higher financial openness, lower risk, and better governance quality.

Table 5 shows the distribution of external assets, liabilities, and GDP across the three groups in 2023, highlighting the dominance of first-tier economies, which account for over 75% of external assets, liabilities, and output in the sample. Despite their larger count, second- and third-tier EMDEs represent only a small share, particularly in external assets. The table also confirms the representativeness of our sample—covering over 80% of EMDE liabilities and GDP (excluding China)—while emphasizing the outsized influence of China and large EMDEs in aggregate data. This underscores the importance of disaggregating EMDEs to better understand their diverse external balance sheets.

Table 5. Share of each group in external assets and liabilities, and GDP

	% of All Sample			% of EMDE excl. China			% of All EMDE		
Group	Asset	Liab	GDP	Asset	Liab	GDP	Asset	Liab	GDP
First-tier	81.7	74.3	75.0	46.0	60.6	65.7	31.4	46.2	38.9
Second-tier	15.4	19.9	19.5	8.7	16.2	17.1	5.9	12.4	10.1
Third-tier	2.9	5.8	5.4	1.6	4.8	4.8	1.1	3.6	2.8
Total	100.0	100.0	100.0	56.3	81.6	87.5	38.4	62.2	51.8

Note: Shares are computed using 2023 values. The EMDE aggregate includes the countries listed in Table B1 as well as China. The full list of countries in each group is provided in Tables 1–3.

3. The Evolution of External Balance Sheets in Different Groups of EMDEs

In this section, we document the heterogeneous features and evolution of external balance sheets across the three distinct groups, with a particular focus on the period following the GFC. Before doing so, it is important to highlight the potential implications of the conventions adopted for the measurement of the international investment position (IIP), the external financial balance sheet of a country. Most components of the IIP should be reported at market value. In practice, this occurs systematically for portfolio equity, while for portfolio debt some EMDEs (such as Argentina) report their market value, while others (especially lower income countries) use nominal values. For other investments, most reporting is at nominal values, and for FDI (where estimating market value is more complex) many countries, especially among EMDEs, use book value. These criteria matter for the interpretation of the evidence on the relation between external sector variables and financial distress. Among first-tier countries, where portfolio debt liabilities are in some cases reported at market value and are a more important component of external debt, we could see an improvement in the external debt position during periods of distress because of falling market prices for debt securities, which would weaken the relation between external balance sheet vulnerabilities and the likelihood of distress.[10] In contrast, for our second- and third-tier countries it is likely that most external liabilities (with the exception of portfolio equity, which is generally small) are estimated at nominal or book values, and hence a rise in external distress does not mechanically affect the reported value of external liabilities.

3.1. Net International Investment Position

We begin with Figure 2, which illustrates the NIIP by group as a percentage of world GDP. The figure highlights the distinct roles played by different economies in the global financial system. Consistent with the existing literature, the United States remains the largest net debtor, maintaining a persistently negative NIIP throughout the period. In contrast, advanced economies, financial centers, and China act as net creditors, consistently holding positive NIIP. For EMDEs, the NIIP has gradually improved, approaching a neutral position in recent years. This aggregate improvement reflects efforts by many EMDEs to strengthen their external balance sheets through better debt management and the accumulation of foreign exchange

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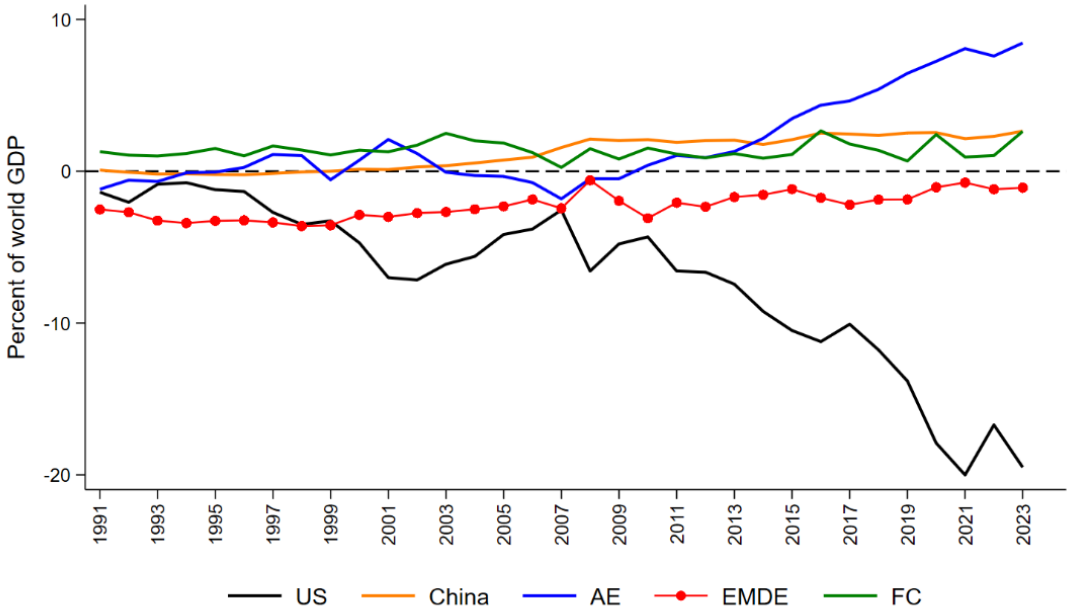
10. A salient example is Argentina, where portfolio debt liabilities in U.S. dollars fell by half between 2017 and 2019, despite no net sales by nonresidents.

reserves, as well as the substantial accumulation of assets by a number of Middle Eastern oil exporters. However, this aggregated trend may obscure important heterogeneity within the EMDE group.

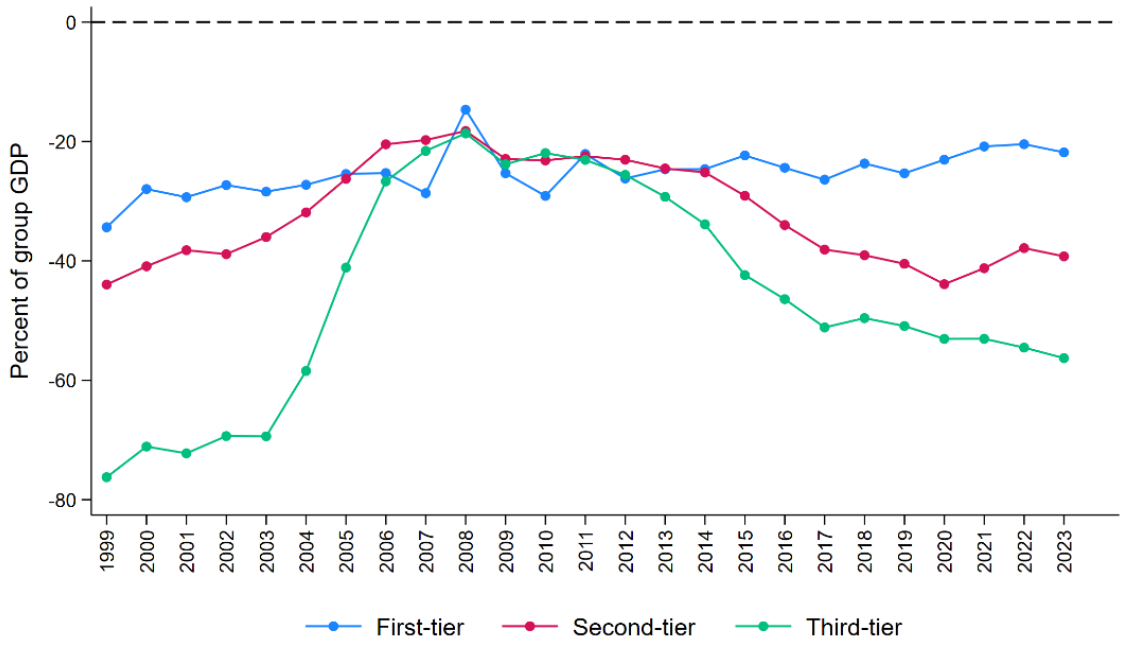
Figure 2. Net international investment position by group



Note: The aggregated net international investment position (NIIP) for each group is expressed as a share of world GDP. The full list of countries classified as advanced economies (AEs), emerging markets and developing economies (EMDEs), and financial centers (FCs) is provided in Table B1.
Source: Authors' calculations based on the updated EWN database.

To uncover this heterogeneity, Figure 3 presents the evolution of the NIIP across the three subgroups of EMDEs in our sample (which, as mentioned earlier, exclude large creditors as well as China). The blue dotted line represents the first-tier group, which has shown a steady improvement in its external position. The NIIP of the first-tier group increased from –28% of GDP in 1999 to –22% in 2023, a trend that aligns closely with the aggregate EMDE trajectory shown in Figure 2. In contrast, the NIIPs of the second- and third-tier groups have worsened significantly since the GFC. The second-tier group, after a period of improvement leading up to 2008, saw its NIIP decline from –18% of GDP in 2008 to –39% in 2023. A similar but more pronounced deterioration is observed for the third-tier group, whose NIIP fell sharply to –56% of GDP in 2023. These divergent trajectories underscore the growing external vulnerabilities faced by the second- and third-tier EMDEs in the post-GFC era.

Figure 3. Net international investment position across EMDE groups



Note: The aggregated NIIP for each group is expressed as a share of the group's aggregated GDP. The full list of countries in each group is provided in Tables 1-3.
Source: Authors' calculations based on the updated EWN database.

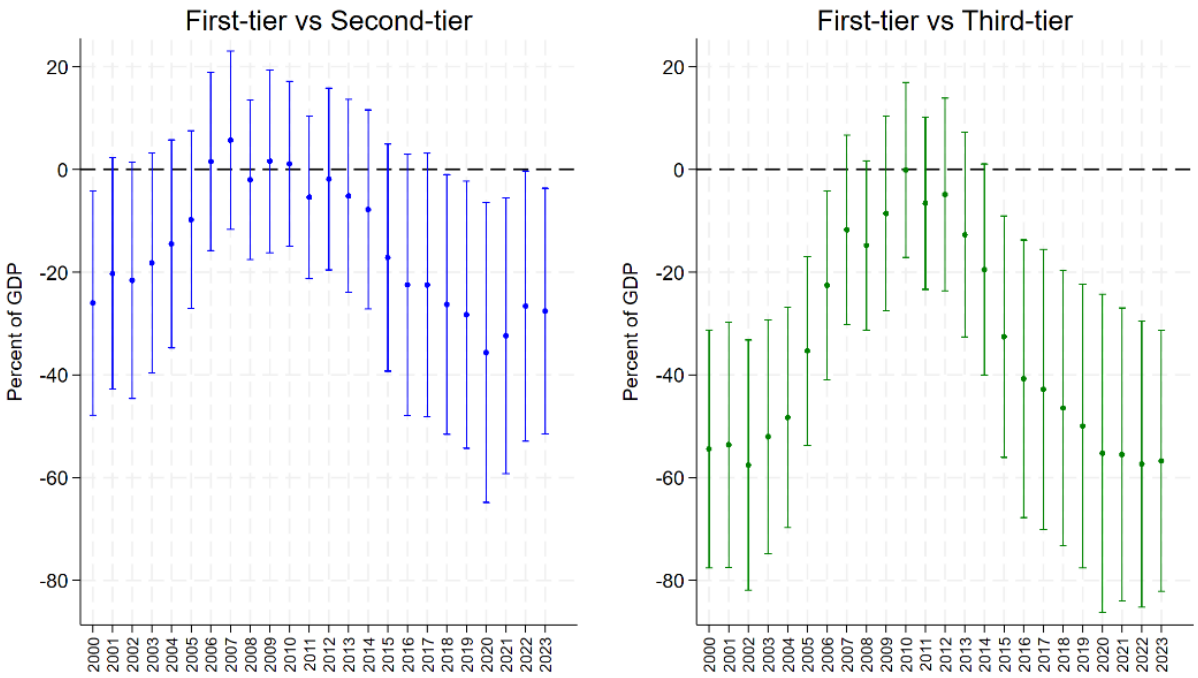
Given that the aggregate trends could still potentially be influenced by a small number of countries in each group, we conduct a series of simple cross-sectional regressions over time to further investigate the statistical differences in NIIP across these groups. Specifically, we run the following simple cross-sectional regression for each year:

$$NIIP_i = C + \beta_2 Tier2 + \beta_3 Tier3 + u_i\,, \tag{1}$$

where *NIIP* is the ratio of net international investment position to GDP, and *Tier2* and *Tier3* are indicator variables taking the value of one if a country belongs to the second- and third-tier group and zero otherwise, respectively. The coefficients from these regressions capture the differences in NIIP between the first-tier group and the other groups.

The evolution of coefficients over time, displayed in Figure 4, confirms that the diverging aggregate trend is statistically significant. The differences in NIIP between the first-tier group and the other groups have shrunk before the GFC but have widened since the GFC. As of 2023, the NIIP is approximately 28 percentage points lower for the second-tier group and about 57 percentage points lower for the third-tier group compared to the first-tier group.

Figure 4. Statistical differences in NIIP across EMDE groups



Note: This figure displays the evolution of coefficients from the following cross-sectional regression for each year: $NIIP_i = C + \beta_2 Tier2 + \beta_3 Tier3 + u_i$, where $NIIP_i$ is the ratio of net international investment position to GDP for country i, and *Tier2* and *Tier3* are indicator variables equal to one if the country belongs to the second- and third-tier group and zero otherwise, respectively. The coefficients β_2 and β_3 are plotted on the left and right panels, respectively, along with 90% confidence intervals. The full list of countries in each group is provided in Tables 1-3.

Figure 5 illustrates the importance of debt forgiveness and reduction in the late 1990s and early 2000s. During that period, the World Bank, the International Monetary Fund (IMF) and other multilateral, bilateral and commercial creditors implemented two significant debt relief initiatives—the Heavily Indebted Poor Countries (HIPC) and the Multilateral Debt Relief Initiative (MDRI)—aimed at reducing the unsustainable debt burdens of low-income countries.[11] The implementation of these debt relief initiatives played a crucial role in improving the NIIP of low-income countries before the GFC. Between 1999 and 2008, debt forgiveness and reduction contributed to an increase in NIIP by 1 percentage point for the first-tier group, 4 percentage points for the second-tier group, and 21 percentage points for the third-tier group.

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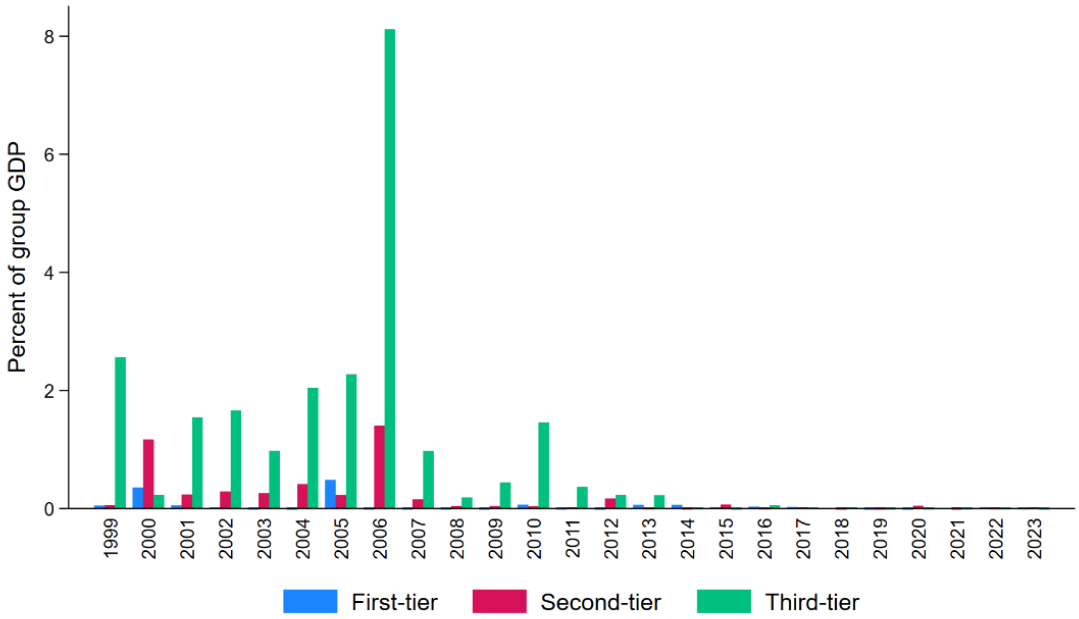
11. The Heavily Indebted Poor Countries (HIPC) Initiative, launched in 1996, aimed to assist the world's poorest nations in managing unsustainable debt burdens. In 2005, the Multilateral Debt Relief Initiative (MDRI) was introduced as a complementary measure to HIPC, providing full debt cancellation from three major multilateral institutions: the International Development Association (IDA) of the World Bank, the IMF, and the African Development Fund (AfDF).

Figure 5. Debt forgiveness and reduction



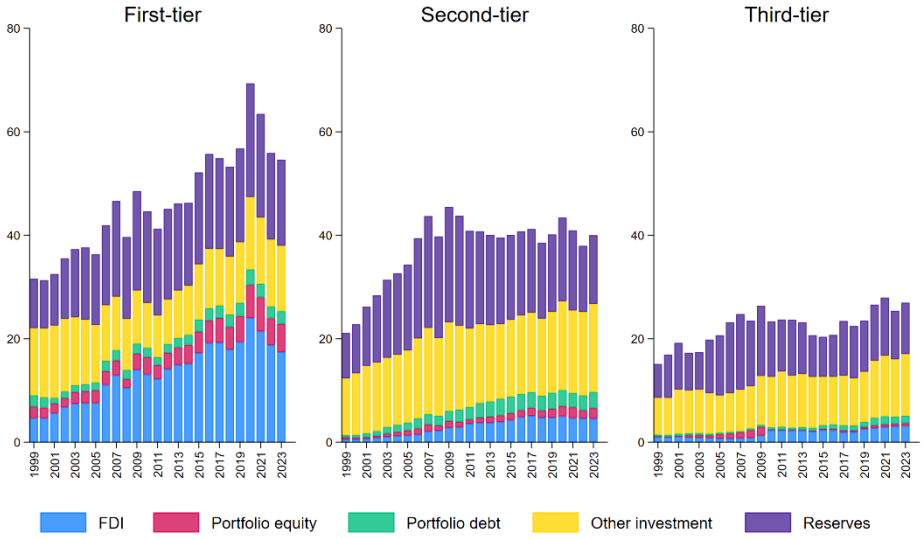
Note: The aggregated debt forgiveness and reduction for each group is expressed as a share of the group's aggregated GDP. The full list of countries in each group is provided in Tables 1-3.
Source: Authors' calculations based on the International Debt Statistics (IDS) from the World Bank.

While significant debt forgiveness and reduction played a crucial role in improving the external financial positions of many poorer EMDEs before the GFC, the post-GFC era can be characterized by divergent trends in the accumulation of external assets and liabilities among the three groups. The top panel of Figure 6 shows that the first-tier group has accumulated external assets at a much higher rate compared to the second- and third-tier groups. The second-tier group's accumulation of external assets has stagnated since the GFC, while the third-tier group has accumulated external assets throughout the period but at a much slower rate. On the other hand, the bottom panel of Figure 6 shows a substantial increase in external liabilities for the third-tier group. Indeed, after experiencing a significant reduction attributed to massive debt forgiveness and reduction, external liabilities of the third-tier group have rebounded to levels close to their peak in the early 2000s, highlighting their persistent reliance on external finance.

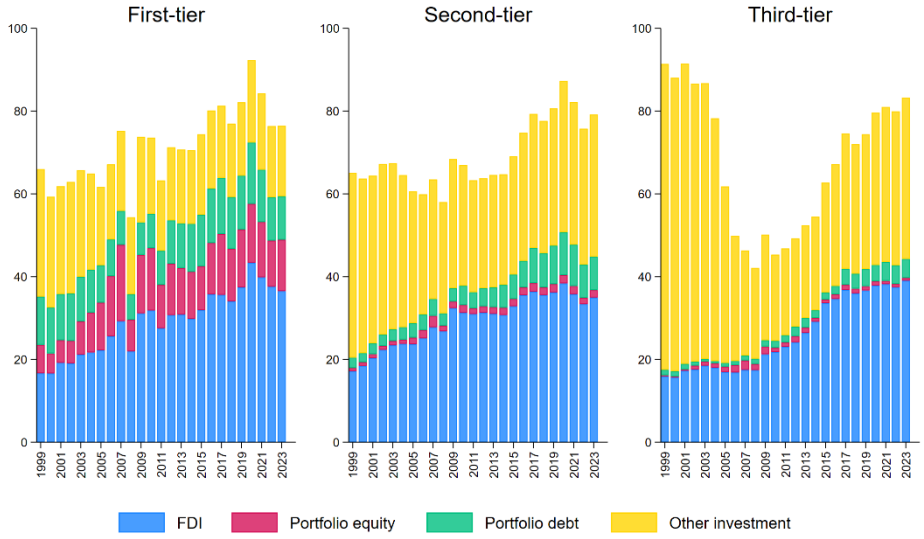
The composition of external financing sources also varies widely across the three groups. The first-tier group maintains a more diverse range of external financing sources, partly due to their greater access to international financial markets. In contrast, the second- and third-tier groups rely heavily on foreign direct investments (FDI) or other investments such as official lending and bank lending as they have more limited access to international financial markets. When categorizing FDI and portfolio equity as equity-type liabilities and portfolio debt and other investment as debt-type liabilities, it becomes evident that the second- and third-tier groups are more dependent on debt-type external liabilities. While the share of debt-type liabilities is 36% for the first-tier group, it reaches 54% and 52% for second- and third-tier groups, respectively.

Figure 6. Evolution of gross external assets and liabilities by EMDE group

(a) Gross external assets



(b) Gross external liabilities

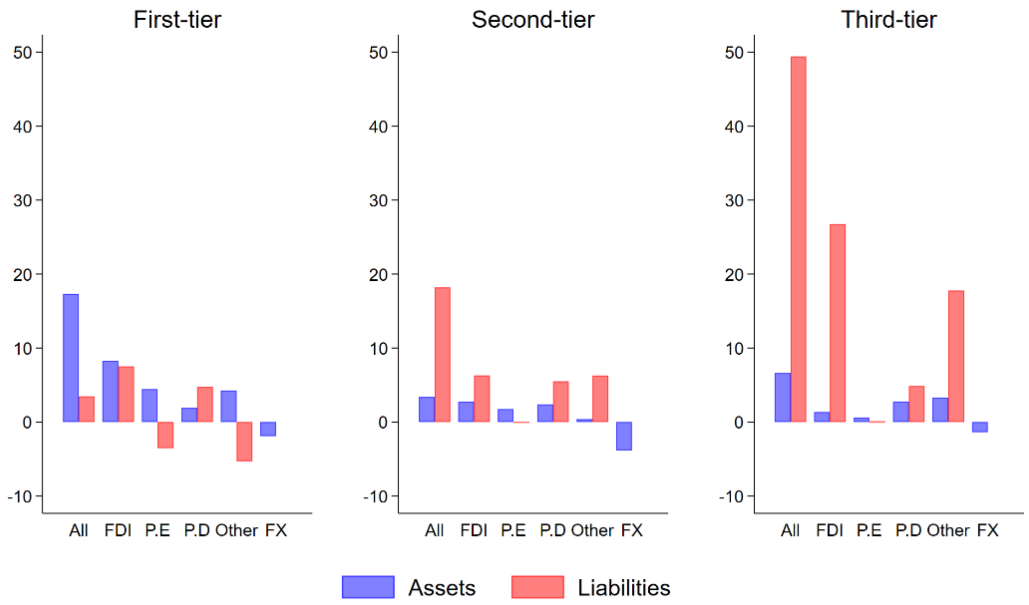


Note: The aggregated gross external assets and liabilities for each group by category are expressed as a share of the group's aggregated GDP. The full list of countries in each group is provided in Tables 1-3.
Source: Authors' calculations based on the updated EWN database.

Figure 7 compares changes in external assets and liabilities since the GFC for each group. Between 2010 and 2023, the external assets to GDP ratio increased by 17 percentage points for the first-tier group, which is substantially higher than the increase in the external liabilities to GDP ratio of 3 percentage points. During the same period, the first-tier group has accumulated a substantial amount of FDI, portfolio equity, and other investment assets. On the other hand, the second- and third-tier groups have accumulated external liabilities at a much higher rate than the accumulation of external assets. The second-tier group's

external liabilities to GDP ratio rose by 18 percentage points with only a 3 percentage point increase in the ratio of external assets to GDP. Except for the portfolio equity, all other external liabilities increased significantly. There was a modest increase in the external assets to GDP ratio, despite a 4 percentage point fall in the foreign exchange (FX) reserves to GDP ratio. The difference in the changes of external assets and liabilities to GDP ratios is more pronounced for the third-tier group. The third-tier group's external liabilities to GDP ratio increased by almost 50 percentage points, which is substantially higher than the increase in the external assets to GDP ratio of 7 percentage points. The massive increase in external liabilities to GDP ratio was mainly due to the rise in FDI and other investment liabilities.

Figure 7. Change in the ratio of external assets and liabilities to GDP, 2010-23



Note: The bars show the average changes in the ratio of external assets and liabilities to GDP in each category between 2010 and 2023. P.E refers to portfolio equity assets or liabilities; P.D refers to portfolio debt assets or liabilities; and FX denotes foreign exchange reserve assets. The full list of countries in each group is provided in Tables 1-3.
Source: Authors' calculations based on the updated EWN database.

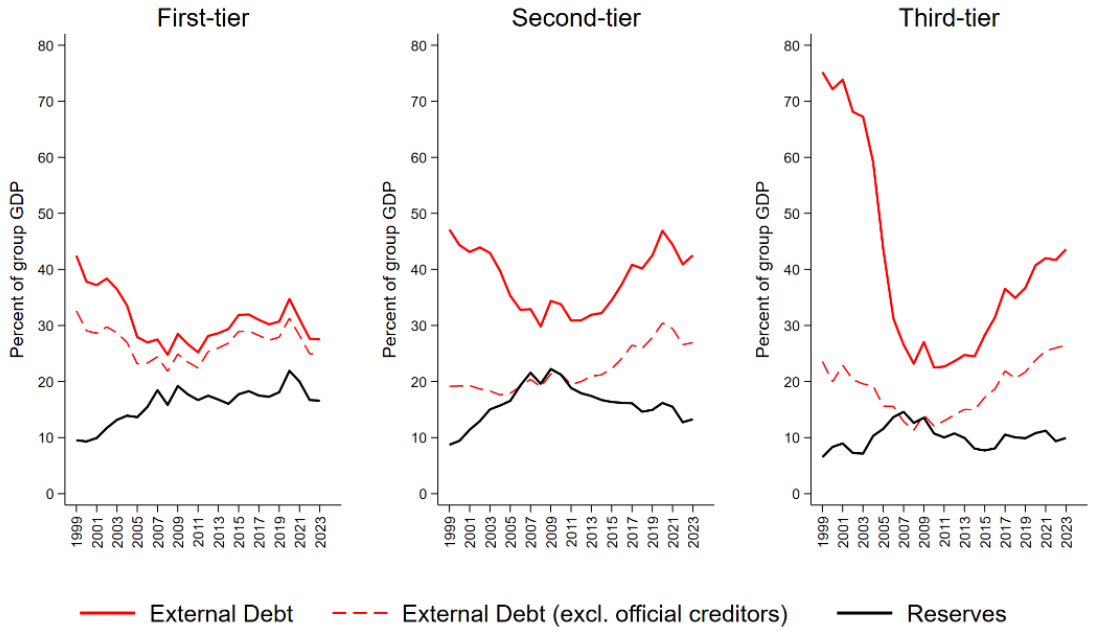
3.2. External Debt Liabilities and FX Reserves

The distinction between equity liabilities and debt liabilities is crucial in understanding the financial vulnerability of a country. While equity liabilities are generally less concerning, debt liabilities can pose significant risks. At the same time, a critical factor in mitigating these risks is the availability of sufficient FX reserves, which serve as a buffer against external shocks by providing countries with the means to stabilize their economies during periods of financial distress. In this context, we examine whether countries across different groups hold adequate FX reserves relative to their external debt liabilities.

Figure 8 shows that the level of FX reserves consistently falls short of external debt liabilities across all three groups. However, the gap between FX reserves and external debt liabilities is significantly larger for the second- and third-tier groups compared to the first-tier group. As of 2023, FX reserves cover

approximately 60% of external debt liabilities for the first-tier group, while they cover only 31% and 23% for the second- and third-tier groups, respectively. The trends also differ across groups. For the first-tier group, external debt liabilities declined and FX reserves increased leading up to the GFC. Since then, both have remained relatively stable, keeping the gap between them narrow. In contrast, the second-tier group shows a U-shaped pattern in external debt liabilities and an inverted U-shape in FX reserves, with a turning point around the GFC—resulting in a widening gap. A similar divergence is observed for the third-tier group, which has accumulated external debt liabilities at a much faster rate than FX reserves since the GFC.

Figure 8. External debt liabilities and FX reserves



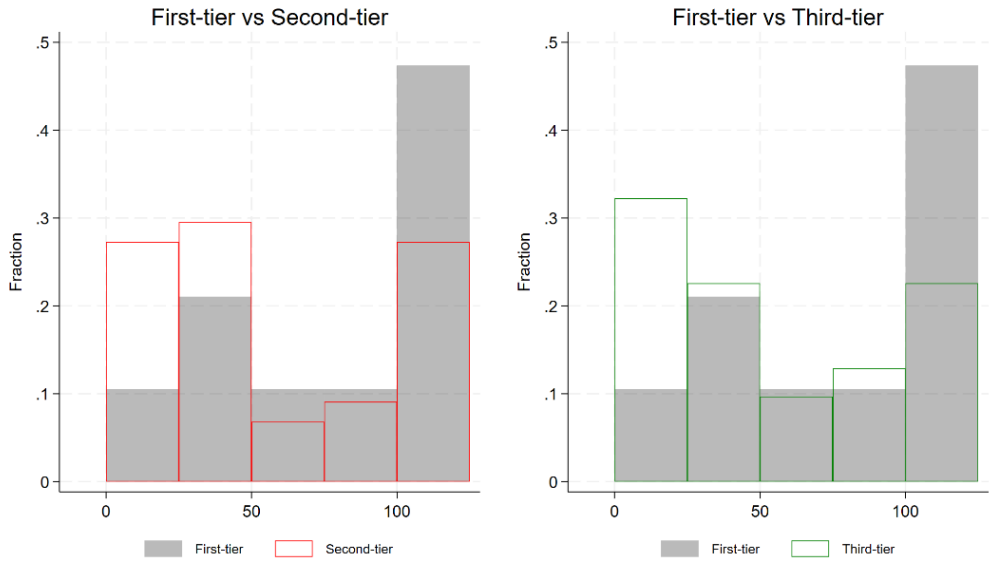
Note: The aggregated external debt liabilities, external debt liabilities excluding debt to official creditors, and FX reserves for each group are expressed as a share of the group's aggregated GDP. The external debt liabilities are defined as the sum of external portfolio debt liabilities and other investment liabilities. The full list of countries in each group is provided in Tables 1-3.
Source: Authors' calculations based on the updated EWN database.

Many second- and third-tier EMDEs rely heavily on official creditors, which may reduce some of the risks associated with external debt liabilities, as debt owed to official creditors is generally considered less risky due to its more favorable terms and conditions. However, Figure 8 shows that external debt liabilities still substantially exceed FX reserves for the second- and third-tier groups, even when official creditor debt is excluded. Moreover, the gap between FX reserves and non-official external debt has widened. As of 2023, FX reserves cover about half and less than half of external debt liabilities excluding official creditor debt for the second- and third-tier groups, respectively.

Figure 9 compares the distribution of FX reserves to external debt liabilities ratio between the first-tier group and the other two groups for 2023, showing that differences among groups are not driven by outliers. The left panel focuses on the comparison between first- and second-tier groups, and the right panel between the first- and third-tier groups. The solid grey bars represent the share of countries in each bin for the first-tier group. First, about half of the first-tier countries have an FX reserves-to-external debt ratio exceeding

100%. This suggests that these countries are in a relatively strong position to manage their external debt obligations. In contrast, the other two groups show a starkly different picture, with only about 20%-30% of countries achieving the ratio above 100%. Furthermore, more than half of the second-tier EMDEs have a ratio below 50%, highlighting their vulnerability in terms of insufficient official reserves relative to their external debt levels. The distribution for third-tier EMDEs mirrors that of the second-tier group, indicating similar challenges in maintaining adequate FX reserves.

Figure 9. Distribution of FX reserves to external debt liabilities ratio, 2023



Note: The ratio of FX reserves to external debt liabilities *excluding debt to official creditors* as of 2023 is used. The full list of countries in each group is provided in Tables 1-3.
Source: Authors' calculations based on the updated EWN database.

In sum, we find significant differences in external balance sheets and their evolution across the three country groups. Specifically, countries in the second- and third-tier groups have experienced a substantial buildup of external imbalances since the GFC, characterized by a simultaneous rise in external debt liabilities and a decline in FX reserves. This pattern points to growing external vulnerabilities in these economies. The increased reliance on external borrowing reflects their growing dependence on foreign capital to finance economic activities, while the erosion of reserves undermines their capacity to buffer against external shocks. Together, these dynamics heighten financial fragility and leave these countries more exposed to adverse global conditions.

4. External Financial Distress

The evidence presented in the previous section highlights the need for a comprehensive assessment of the external vulnerabilities faced by second- and third-tier EMDEs. In this section, we provide further evidence on the rising vulnerabilities of these economies using a range of external financial distress indicators. Based on these measures, we define the concept of external financial distress and show that, unlike first-tier EMDEs, many second- and third-tier EMDEs continue to experience external financial distress.

4.1. Rising External Financial Distress

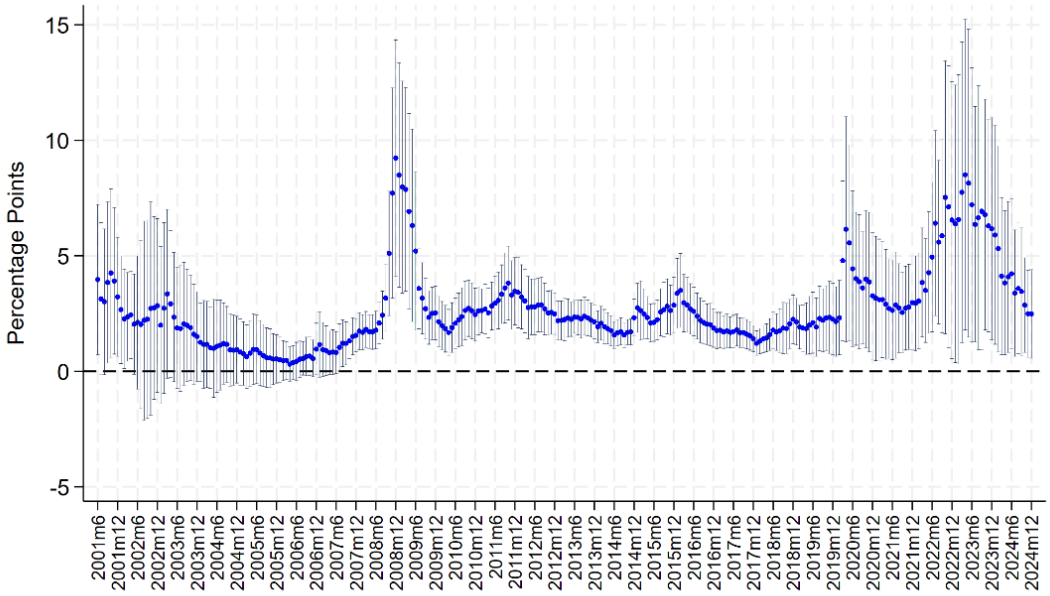
External financial distress can be effectively assessed through sovereign bond spreads. These spreads serve as a critical indicator of the perceived risk associated with a country's debt, reflecting the premium investors demand to hold bonds from a particular country over a risk-free benchmark. Thus, we first focus on comparing the monthly average sovereign bond spreads between first- and second-tier EMDEs. Due to the limited access to international financial markets for most third-tier EMDEs, spread data for these countries is generally unavailable. Consequently, our comparison is restricted to the first- and second-tier groups, utilizing the following simple cross-sectional regression to elucidate the differences:

$$Spreads_i = C + \beta Tier2 + u_i\,, \tag{2}$$

where *Spreads* denotes the average sovereign bond spreads, and *Tier2* is an indicator variable taking the value of one if a country belongs to the second-tier group and zero otherwise. The coefficient, β, captures the average difference in spreads between the first- and second-tier groups.

The evolution of the estimated coefficients, shown in Figure 10 along with 90% confidence intervals, reveals a consistent pattern: the spread differential between the first- and second-tier groups tends to widen in response to adverse global shocks. Notable episodes include the GFC, the COVID-19 pandemic, and recent interest rate hikes by the U.S. Federal Reserve. During these periods, sovereign bond spreads for second-tier EMDEs rise more sharply relative to first-tier EMDEs.

Figure 10. Statistical difference in sovereign bond spreads across first- and second-tier countries



Note: This figure displays the evolution of coefficient from the following cross-sectional regression for each month: $Spread_i = C + \beta_2 Tier2 + u_i$, where $Spread_i$ is the monthly average of JPMorgan's EMBI spreads for country i, and *Tier2* is an indicator variable equal to one if the country belongs to the second-tier group and zero otherwise. The first-tier group includes Brazil, Bulgaria, Chile, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Thailand, and Türkiye. The second-tier group includes Algeria, Angola, Armenia,

Azerbaijan, Belarus, Bolivia, Ecuador, Egypt, Georgia, Ghana, Guatemala, Honduras, Jamaica, Jordan, Kazakhstan, Kenya, Mongolia, Morocco, Namibia, Oman, Pakistan, Paraguay, Senegal, Serbia, Tajikistan, Tanzania, Tunisia, Ukraine, Uruguay, Uzbekistan, Viet Nam, and Zambia. The data availability varies by country. Data after 2022m3 for Belarus, Russian Federation, and Ukraine, and data after 2024m7 for Zambia are dropped due to their extreme values. Argentina is excluded from the first-tier group due to its history of debt defaults and prolonged debt restructuring. The vertical lines represent 90% confidence intervals.

The widening of spreads during adverse global events underscores the asymmetric impact of global shocks on first- and second-tier EMDEs. First-tier economies, typically supported by stronger economic fundamentals and more resilient financial systems, are better positioned to weather periods of financial turbulence. In contrast, second-tier countries—often characterized by weaker macroeconomic structures and limited market depth—show higher susceptibility to external shocks.

While sovereign bond spreads are widely used as a key indicator of external financial distress, their applicability is limited, especially for third-tier EMDEs. Due to their restricted access to international capital markets, these countries typically rely on alternative sources of external financing rather than issuing sovereign bonds. Hence, capturing the financial pressures they face requires additional indicators. One such measure is the public external debt service, expressed as a share of government revenues and of exports plus primary income. This metric offers a broader perspective on debt sustainability, particularly for economies with limited market access.

Figure 11 indicates that pressures on public finances have risen sharply for second- and third-tier EMDEs since the GFC. Prior to the GFC, public and publicly guaranteed external debt service—as a share of either government revenue (Panel a) or exports and primary income (Panel b)—declined across all three groups. However, these ratios more than doubled for second- and third-tier EMDEs between 2010 and 2023, while those for the first-tier group have remained relatively stable. As of 2023, second-tier EMDEs allocate about 12% of their government revenues to servicing external debt principal and interest, compared to about 6% in first-tier economies. Third-tier EMDEs spent around 8%.[12] This growing debt service underscores mounting financial pressures on lower-tier economies. Rising debt service obligations constrain fiscal space, limiting these governments' capacity to invest in essential public services and development priorities.

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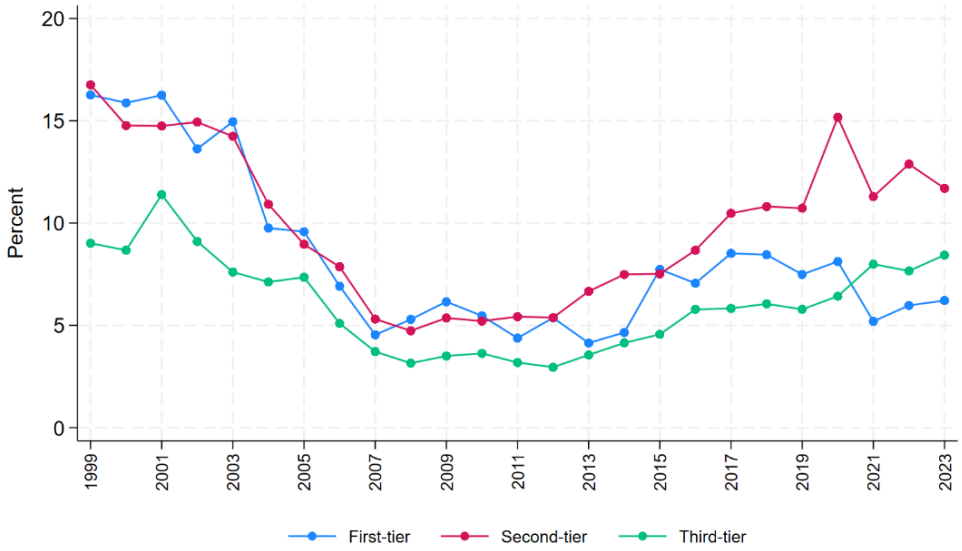
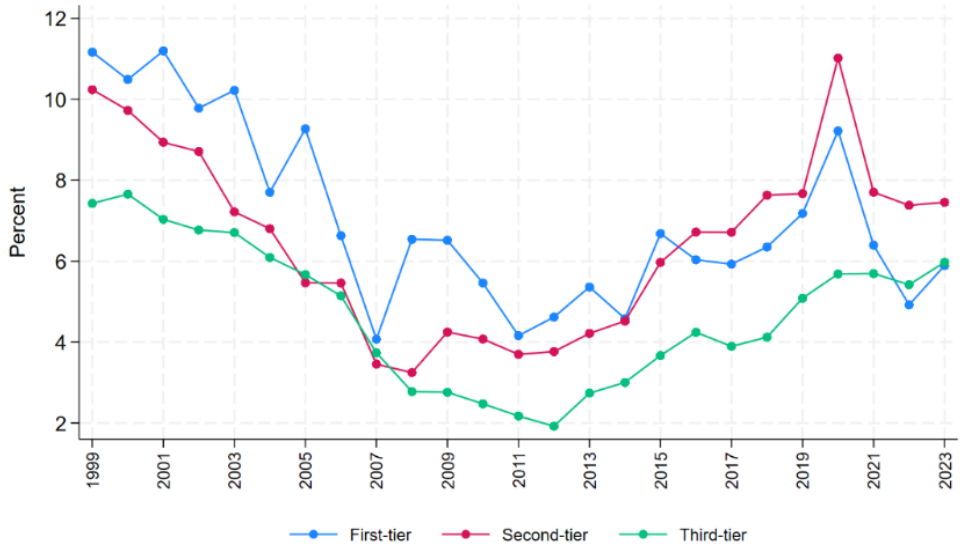
12. Third-tier EMDEs' lower debt service ratios partly reflect higher reliance on concessional debt: in 2023, the median share of concessional external debt in total stocks was 0.7%, 6.4%, and 32.0% for first-, second-, and third-tier groups.

Figure 11. Public and publicly guaranteed external debt service

(a) PPG external debt service to government revenues



(b) PPG external debt service to exports and primary income



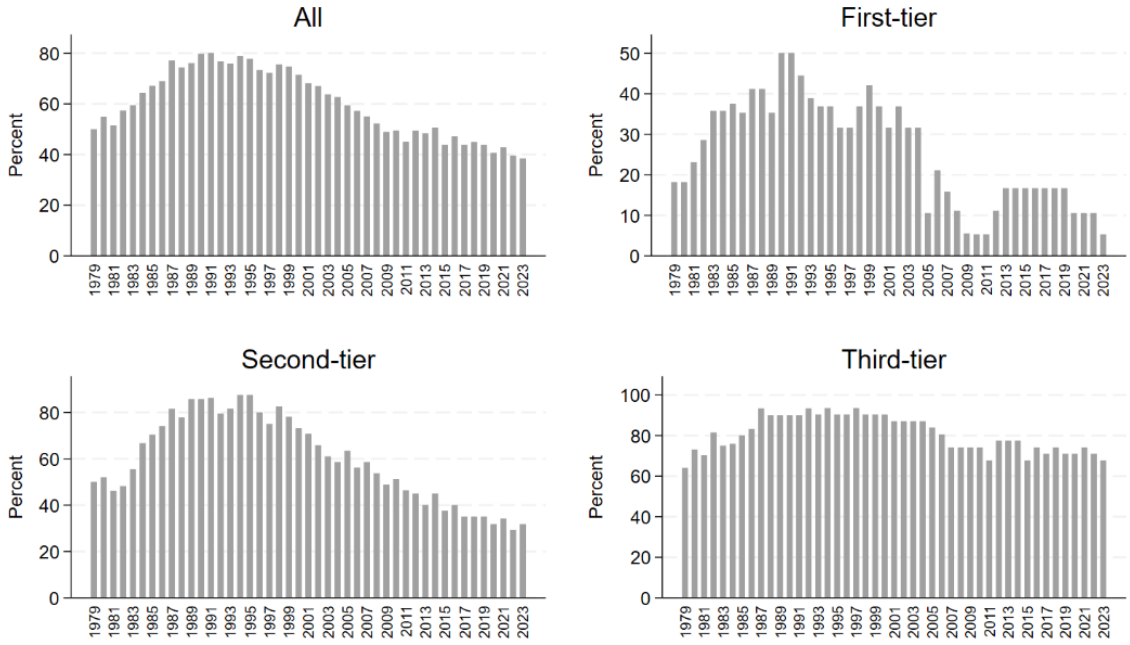
Note: This figure plots the median ratio of public and publicly guaranteed (PPG) external debt service to government revenue (Panel a) and the median ratio of PPG external debt service to exports and primary income (Panel b). The full list of countries in each group is provided in Tables 1-3.
Source: Authors' calculations based on the International Debt Statistics, IMF Fiscal Monitor database, and the World Development Indicators.

One limitation of using public external debt service as an indicator of financial distress is that it does not capture situations where countries miss payments on their external obligations. When a country pays only part of what is due, the recorded debt service amount falls, potentially understating the actual level of financial strain. Arellano et al. (2023) document that many emerging market economies frequently

experience partial defaults, during which they continue to borrow while accumulating arrears. To address this limitation, we examine the incidence of partial default. Following Arellano et al. (2023), we compute the partial default as the ratio of interest and principal in arrears to the sum of debt service and interest and principal in arrears. This measure ranges from 0 to 1, where 0 indicates no default and 1 signifies full default. By applying this measure, we assess the extent of partial defaults across countries over time.

Figure 12 shows that while the overall share of EMDEs in partial default has declined since the late 1990s, this trend has been primarily driven by improvements among first- and second-tier EMDEs. As of 2023, approximately 40% of the economies in our sample were in partial default, with considerable variation across groups. About 70% of third-tier EMDEs (21 out of 31) and about 30% of second-tier EMDEs (13 out of 41) were in partial default, compared to only one out of 19 economies in the first-tier group.[13] This disparity underscores the persistent external financial distress faced by many second- and third-tier EMDEs.

Figure 12. Share of countries in partial default



Note: This figure plots the share of countries in partial default. Following Arellano et al. (2023), the partial default ratio is computed as the ratio of interest and principal in arrears to the sum of debt service and interest and principal in arrears. A country is considered to be in partial default if the ratio exceeds 0.01. The full list of countries in each group is provided in Tables 1–3.
Source: Authors' calculations based on the International Debt Statistics.

Figure 13 illustrates the distribution of partial defaults across the three groups in 2022. The solid grey bars represent the first-tier group, where only one economy—Argentina—were in partial default. In contrast, a significant number of second- and third-tier EMDEs serviced only a fraction of their debt obligations. The partial default ratio exceeded 20% for 8 economies in the second-tier group and 12 in the

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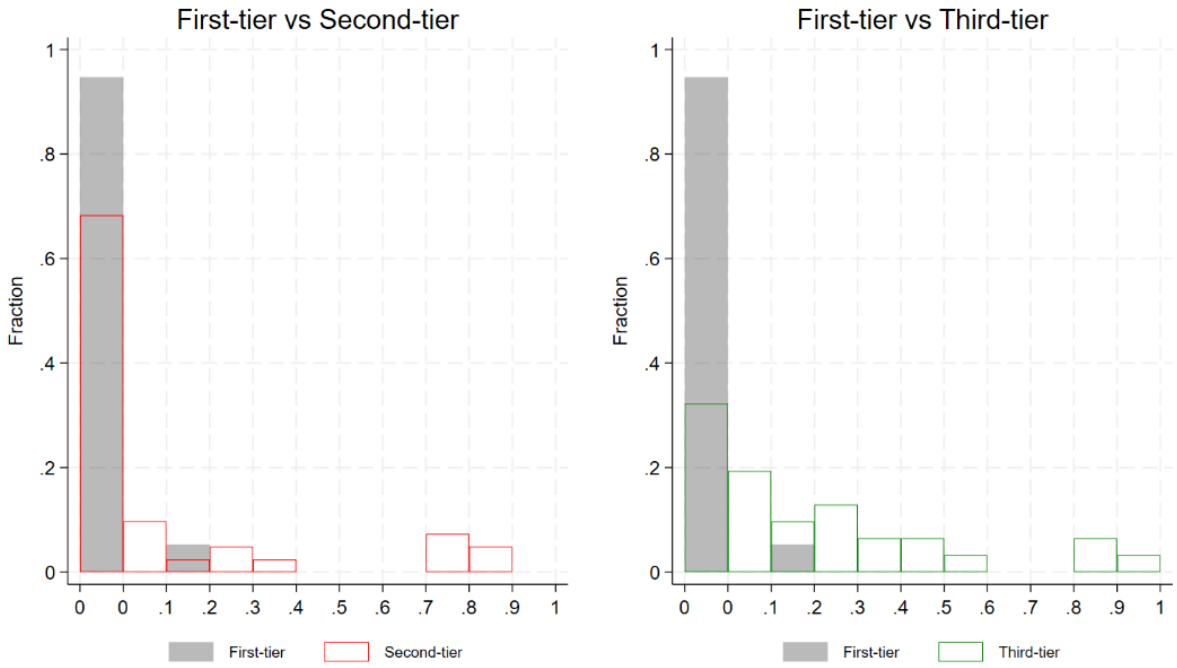
13. The data are not available for three economies (Namibia, Oman, and Trinidad and Tobago) in the second-tier group.

third-tier group. These patterns underscore the persistent financial difficulties faced by lower-tier economies and highlight the importance of using more granular indicators—such as partial defaults—to capture the full extent of external financial distress.

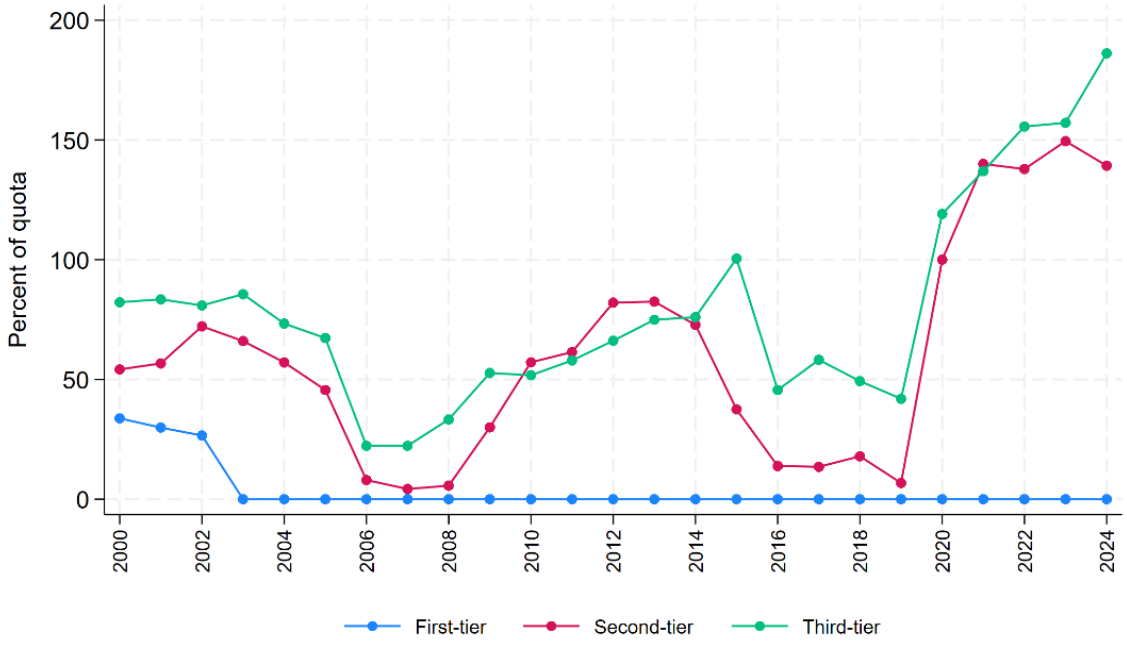
Figure 13. Distribution of partial default, 2023



Note: This figure compares the distribution of the partial default ratio across EMDE groups as of 2023. Following Arellano et al. (2023), the partial default ratio is computed as the ratio of interest and principal in arrears to the sum of debt service and interest and principal in arrears. The full list of countries in each group is provided in Tables 1–3.
Source: Authors' calculations based on the International Debt Statistics.

High reliance on IMF lending serves as another important indicator of financial distress among countries. Governments often turn to the IMF to address balance of payments problems, stabilize macroeconomic conditions, or avert full-blown crises. Figure 14 presents the group median of the ratio of IMF loans to quota, a metric that captures the extent to which countries utilize their allocated IMF resources. Since 2005, the median ratio for first-tier countries has remained at zero, indicating minimal dependence on IMF financing and reflecting relatively strong macroeconomic fundamentals. In contrast, the second- and third-tier groups exhibit a markedly different trend. Their ratios rise noticeably in response to major global shocks, such as the GFC and the COVID-19 pandemic. These episodes pushed many of these economies into distress, prompting increased IMF engagement.

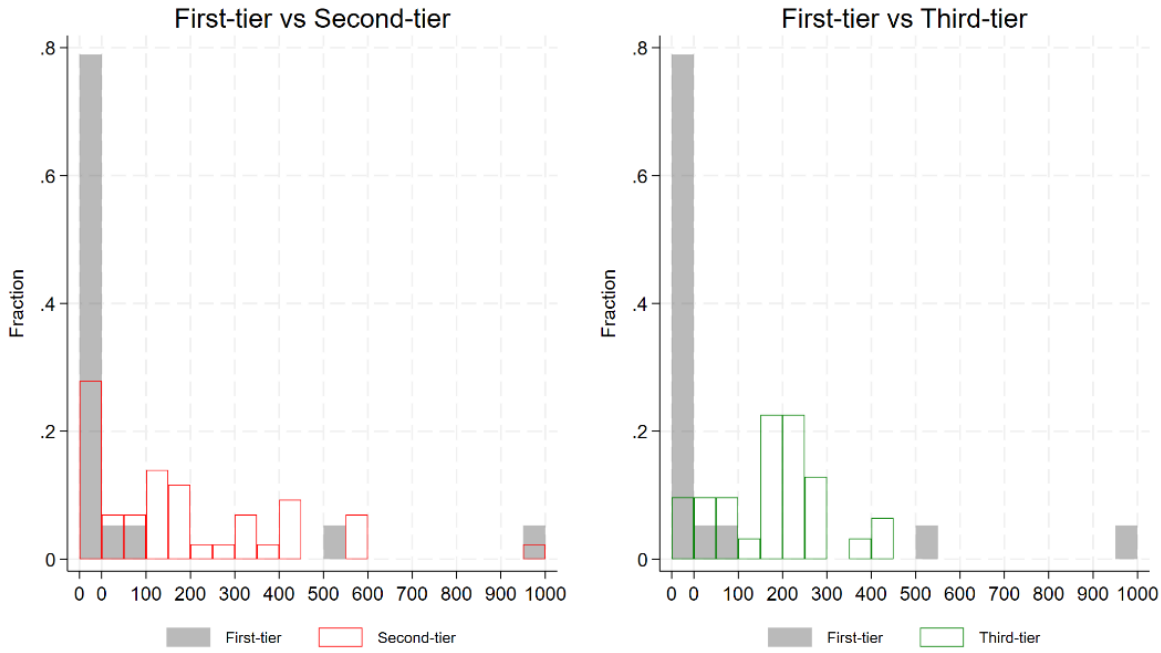
Figure 14. IMF loans to quota ratio



Note: This figure plots the median ratio of the use of IMF fund credit and loans to quota for each group. The full list of countries in each group is provided in Tables 1–3.
Source: International Monetary Fund.

Figure 15 provides a comparative distribution of the IMF loans-to-quota ratio for 2024. Only a few economies in the first-tier group—Argentina, Colombia, Costa Rica, and South Africa—have active IMF loans, with particularly high dependence for Argentina and Costa Rica. In contrast, many second- and third-tier EMDEs continue to rely heavily on IMF support as of 2024. The ratio exceeded 200% for 14 economies in the second-tier group and 13 in the third-tier group. This indicates that these countries are still grappling with the economic repercussions of recent global shocks and have yet to achieve the resilience to external shocks observed in first-tier economies.

Figure 15. Distribution of IMF loans to quota ratio, 2024



Note: This figure compares the distribution of the use of IMF fund credit and loans as a percent of quota across EMDE groups as of 2024. The full list of countries in each group is provided in Tables 1–3.
Source: International Monetary Fund.

4.2. Defining External Financial Distress Episodes

We have thus far shown that many second- and third-tier EMDEs are experiencing external financial distress, based on various indicators. To formalize this concept, we define a country as being in external financial distress if it meets any of the following criteria: (i) it is in a default spell compiled by Graf von Luckner et al. (2025); (ii) a partial default ratio exceeds 0.5; (iii) external debt in arrears exceeds 10% of total external debt in the previous year; or (iv) IMF loans exceed 200% of quota.[14] While the choice of these thresholds is open to debate, we test the robustness of our findings by varying them (see Appendix A.2).[15]

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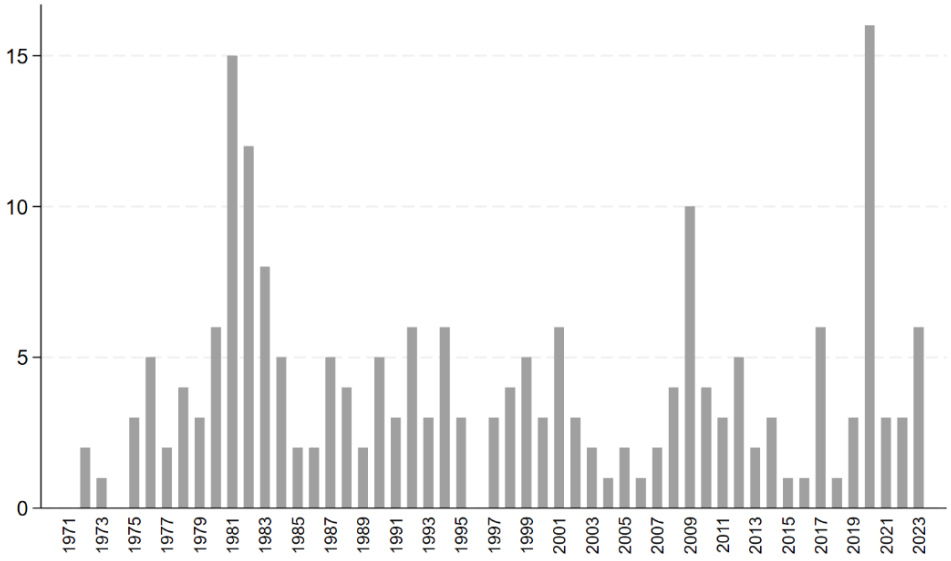
14. While we cover the period from 1970 to 2023, the World Bank's international debt statistics have been discontinued for several countries: Hungary (since 2014), Malaysia (since 2017), Poland (since 2008), Romania (since 2021), Chile (since 2012), and Uruguay (since 2012). For these countries, we assume that the partial default ratio and the arrears-to-debt ratio are zero during the periods for which data are unavailable, as both indicators had remained at zero or near zero for several years prior to discontinuation.

15. The definition of external financial distress can also be derived from the IMF/World Bank debt sustainability frameworks: the Sovereign Risk and Debt Sustainability Analysis for Market Access Countries (MAC-SRDSF) and the Debt Sustainability Framework for Low-Income Countries (LIC-DSF). However, because of the limited time and country coverage—e.g., the LIC-DSF was only introduced in 2005—these distress assessments are not applicable to our analysis. Appendix C shows that our classification is broadly consistent with the recent IMF/World Bank debt sustainability assessments.

Based on the defined criteria, we identify 214 episodes of external financial distress across 86 economies with 1,701 observations.[16] Figure 16 shows that the occurrence of external financial distress remains significant, in contrast to the much-reduced incidence of full-scale external financial crises previously shown in Figure 1. This divergence suggests that, while fewer EMDEs may be undergoing severe crises, many continue to grapple with persistent financial pressures. Figure 17 illustrates the share of EMDEs in external financial distress across the three tiers. Among first-tier EMDEs, the share in distress has declined substantially over time, with only two economies—Argentina and Costa Rica—currently classified as distressed. This trend reflects the increased resilience of first-tier EMDEs to external shocks. In contrast, the second-tier group has seen a rise in distress episodes, particularly during periods of global turmoil such as the GFC and the COVID-19 pandemic, underscoring their heightened vulnerability. For third-tier EMDEs, the share of economies in external financial distress declined during the 2000s, primarily due to substantial debt relief and multilateral support. However, approximately 40% of third-tier EMDEs remain in distress, highlighting the persistent structural challenges they face in achieving external financial stability.

Figure 16. Incidence of external financial distress



Note: This figure plots the annual incidence of external financial distress episodes in our sample. A country is considered to be in external financial distress if it meets any of the following criteria: (i) a default or debt restructuring episode; (ii) a partial default ratio exceeding 0.5; (iii) external debt in arrears exceeding 10% of total external debt in the previous year; or (iv) IMF loans exceeding 200% of quota. There are 214 external financial distress episodes in total.

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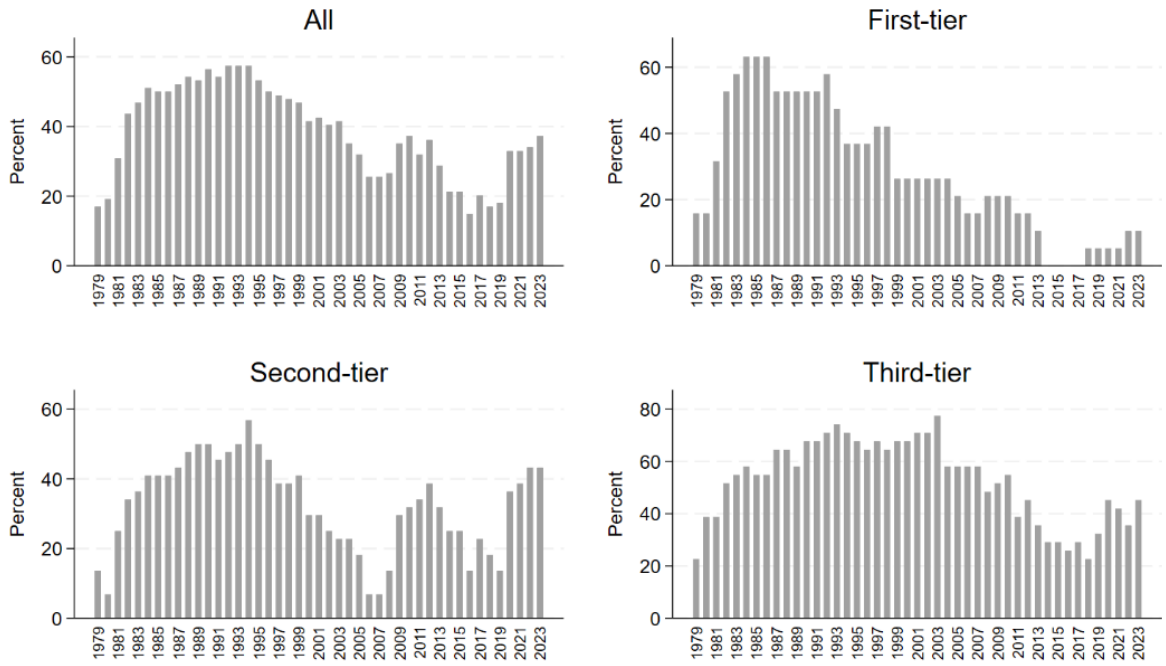
16. Figure B1 in Appendix B visualizes the overlap among four indicators of distress using an upset plot. The left-side bars report the number of observations meeting each individual criterion, with substantial partial default being the most common (992 observations), followed by significant arrears on external debt (722), default spells (699), and high IMF loan reliance (503). The most frequent combination of indicators is the joint occurrence of substantial partial default and external debt arrears (409). Among episodes meeting only one criterion, the largest number stems from heavy IMF borrowing (319), followed by default spells (267), partial default (219), and arrears (15). Notably, 881 observations satisfy multiple distress conditions, including 28 observations that meet all four simultaneously.

Figure 17. Share of countries in external financial distress



Note: This figure plots the share of countries in external financial distress. A country is considered to be in external financial distress if it meets any of the following criteria: (i) a default or debt restructuring episode; (ii) a partial default ratio exceeding 0.5; (iii) external debt in arrears exceeding 10% of total external debt in the previous year; or (iv) IMF loans exceeding 200% of quota. There are 214 external financial distress episodes in total. The full list of countries in each group is provided in Tables 1–3.

4.3. Characteristics of External Financial Distress

Table 6 summarizes the key characteristics of external financial distress episodes across the three country groups. The overall frequency of distress episodes in the dataset is around a third (1,701 out of 5,076 observations), which is unsurprisingly high given that the definition is designed to capture milder forms of distress rather than only full-blown crises. The incidence of distress varies markedly across the tiers: third-tier EMDEs experience distress in 47% of observations, compared to 28% for second-tier and 25% for first-tier EMDEs. The average duration of a distress episode is 8 years.[17]

17. Figure B2 in Appendix B, which plots the distribution of episode lengths, shows that many of the episodes are, however, relatively short—approximately 35% last less than two years. Notably, 12 distress episodes for the third-tier group persist for at least 25 years, indicating chronic financial challenges in some of these economies.

Table 6. Properties of external financial distress

		All sample	First -tier	Second- tier	Third -tier	All sample	First -tier	Second- tier	Third -tier
		(Mean)				(Median)			
Frequency (%)		33.5	24.9	28.0	46.6				
Length (Year)		7.9	8.5	6.8	9.1	4.0	6.0	4.0	4.0
Partial default (%)	D	51.4	23.3	40.1	69.4	59.3	3.1	35.4	76.5
	N	7.2	1.4	7.1	12.2	0.2	0.0	0.7	3.4
External debts in arrears (%)	D	14.2	5.7	11.1	19.1	7.8	0.2	5.6	12.5
	N	0.8	0.2	1.0	1.2	0.0	0.0	0.1	0.3
IMF Loans (%)	D	151.5	242.8	178.5	99.5	112.3	193.1	149.0	78.9
	N	45.4	24.0	47.5	59.9	16.9	0.0	13.6	50.0
Real GDP per cap growth (%)	D	0.60	0.49	0.96	0.32	1.30	1.70	1.42	1.06
	N	2.03	2.76	2.05	1.39	2.57	3.15	2.59	1.95
Observations	D	1,701	255	666	780				
	N	3,375	771	1,710	894				
	Total	5,076	1,026	2,376	1,674				

Note: "N" denotes that a country was not in external financial distress in the corresponding year, while "D" indicates that it was. The partial default ratio is calculated as the ratio of interest and principal in arrears to the sum of debt service and arrears. External debt in arrears is expressed as a share of total external debt in the previous year. IMF loans denote the use of IMF fund credit and loans as a percent of quota.

As expected by construction, distress indicators—partial default, external arrears, and IMF loans—are significantly elevated during periods of distress. On average, the partial default ratio reaches 51% in distress years, nearly seven times higher than the 7% observed in non-distress years. Similarly, the average share of external debt in arrears rises to 14% during distress, compared to just 1% otherwise. The IMF loan-to-quota ratio also increases markedly, averaging 152% in distress years versus 45% in non-distress periods. Median values reveal even starker contrasts: the partial default ratio and arrears share reach 59% and 8%, respectively, in distress years, but fall close to zero in non-distress years.

The table also reveals important cross-group variation in the severity of distress. The second- and third-tier groups display significantly higher partial default ratios and arrears than the first-tier group. During distress years, the average partial default ratio is 69% for third-tier and 40% for second-tier economies, compared to just 23% for the first-tier group. In median terms, the gap is even wider: 77% for the third tier, 35% for the second tier, and only 3% for the first tier. Similarly, external arrears during distress years average 19% and 11% for third- and second-tier EMDEs (median: 13% and 6%), while only reaching 6% (median: 0.2%) for first-tier EMDEs. Interestingly, while the average IMF loans-to-quota ratio during distress is highest for first-tier countries (243%), this is heavily influenced by outliers such as Argentina. More tellingly, second- and third-tier EMDEs show high IMF loan reliance even in non-distress periods, underscoring chronic dependence.

Finally, distress episodes are associated with significant economic slowdowns across all country groups. Real GDP per capita growth averages just 0.6% in distress years, compared to 2% in non-distress years.

This drop is especially pronounced for first-tier economies, which typically experience stronger growth during stable periods; their average growth falls from 2.8% in non-distress years to just 0.5% during distress. For second- and third-tier groups, growth also slows notably, falling from 2.1% to 1.0% and from 1.4% to 0.3%, respectively. These figures underscore the real economic costs of external financial distress and reinforce the importance of early identification and mitigation efforts.

In Table 7, we present the statistical properties of external financial distress episodes using a transition matrix, which illustrates the likelihood that a country moves between distress ("D") and non-distress ("N") states from one year to the next. The matrix provides a snapshot of the persistence of distress status and the probability of entering distress across different periods and country tiers. For instance, it shows that the unconditional probability of entering distress is about 6% in the full sample.[18] Three features are noteworthy. First, distress episodes are persistent: once in distress, a country is highly likely (89%) to remain in distress the following year. Second, the probability of entering distress varies considerably across the three groups—substantially higher for third-tier EMDEs (10%) than for first-tier EMDEs (4%)—highlighting the greater external vulnerability of the third-tier group. Third, these differences become even more pronounced in more recent periods. Figure 18 visualizes the divergence across groups and time. While the probability of entering distress has increased or remained stable for second- and third-tier groups, it has declined significantly for the first-tier group, suggesting that first-tier EMDEs have enhanced their resilience to external shocks.

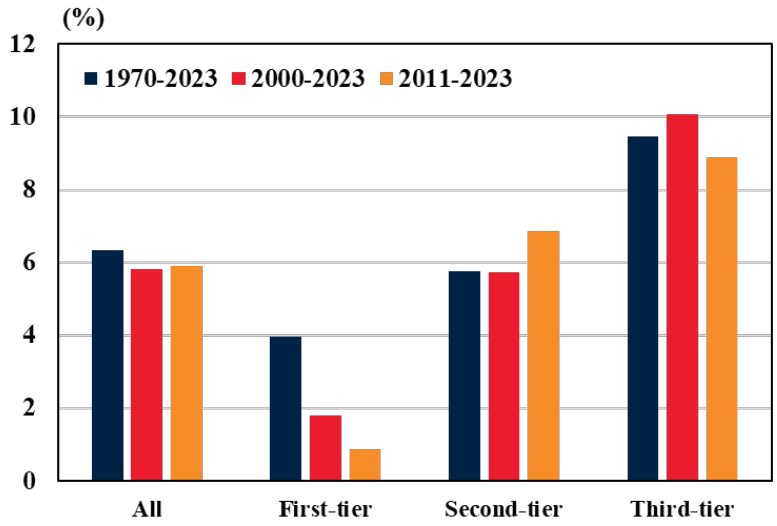
Table 7. Transition matrix of external financial distress

		1970-2023		2000-2023		2011-2023	
		Year T+1					
	Year T	N	D	N	D	N	D
All sample	N	93.7	6.3	94.2	5.8	94.1	5.9
	D	10.7	89.3	14.4	85.6	16.3	83.7
First-tier	N	96.0	4.0	98.2	1.8	99.1	0.9
	D	11.1	88.9	15.2	84.8	22.2	77.8
Second-tier	N	94.2	5.8	94.3	5.7	93.1	6.9
	D	12.2	87.8	16.2	83.8	14.0	86.0
Third-tier	N	90.5	9.5	89.9	10.1	91.1	8.9
	D	9.4	90.6	12.9	87.1	18.1	81.9

Note: "N" denotes that a country was not in external financial distress in the corresponding year, while "D" indicates that it was. Each cell reports the number of observations in year T+1 for the given column (N or D), expressed as a percentage of the number of observations in year T for the corresponding row.

18. This is notably higher than the unconditional probability of financial crises reported in the literature, which typically ranges from 3% to 4% (see, for example, Taylor 2014; Catão and Milesi-Ferretti 2014; and Sufi and Taylor 2022). This result is expected, as our definition of external financial distress is intended to capture less severe episodes than full-blown financial crises.

Figure 18. Unconditional probability of external financial distress



Note: This figure shows the unconditional probability that a country transitions from a non-distress state to an external financial distress state, across country groups and over different sample periods.

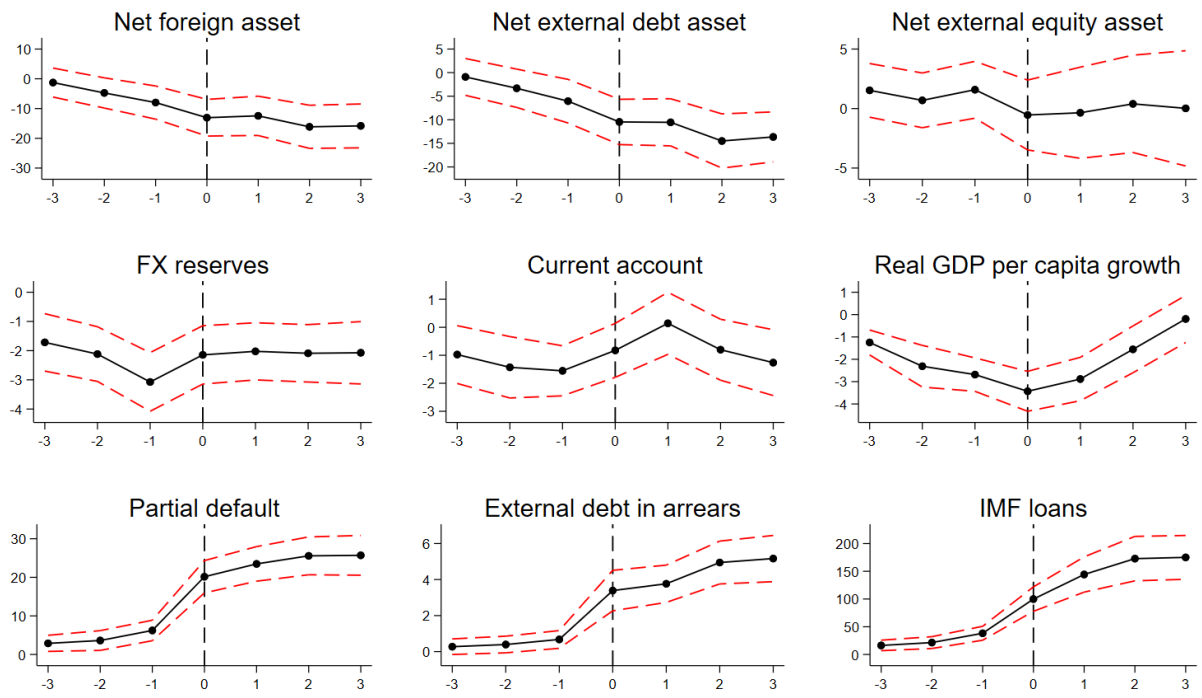
Finally, we examine the statistical differences in the dynamics of several relevant variables during periods of external financial distress relative to non-distress periods. Following Gourinchas and Obstfeld (2012) and Catão and Milesi-Ferretti (2014), we run the following fixed-effects panel specification for a set of variables:

$$y_{it} = \alpha_i + \delta_t + \sum_{s=-3}^{3} \beta_s D_{t+s} + \varepsilon_{it}, \tag{3}$$

where α_i and δ_t denote country and time fixed effects, respectively, and D_{t+s} is a dummy variable equal to 1 if country i is s years away from the start of an external financial distress episode in period t. We define an event window of 7 years, spanning from 3 years before to 3 years after the onset of distress. Distress observations that fall outside of this window are excluded. In addition, distress observations that occur within the three years preceding the onset of a new episode, as well as non-distress observations in the three years following the onset are dropped to isolate the dynamics of interest. The coefficients β_s thus capture the conditional effect of external financial distress on variable y relative to non-distress periods. The inclusion of both country and time fixed ensures that these estimates reflect deviations from the country-specific as well as the global mean (Catão and Milesi-Ferretti 2014).

Figure 19 presents the estimates of β_s for selected variables before and during external financial distress episodes, along with 90% confidence intervals. Several important patterns emerge from the analysis. First, there is a clear deterioration in external balance sheet indicators leading up to distress. Both net foreign assets and net external debt positions begin to decline prior to the onset of distress and continue to worsen thereafter, indicating rising external vulnerability. The absence of a similar pattern in external equity positions suggests that the distress is largely driven by external debt accumulation. The estimates for FX reserves and the current account indicate that countries enter distress periods with FX reserves around 3% of GDP below the mean and current account deficits roughly 1.5% of GDP larger than average.

Figure 19. Empirical regularities before and during external financial distress



Note: This figure presents the estimated dynamics of key macroeconomic and financial indicators before and after the onset of external financial distress, relative to non-distress periods. Estimates control for both country and time fixed effects and are shown with 90% confidence intervals. The event window covers three years before to three years after the start of a distress episode.

Second, distress episodes are marked by sharp increases in distress indicators. Partial default ratios, external debt in arrears, and IMF loan reliance all rise significantly at the onset of distress and remain elevated, confirming that distress is associated with severe repayment challenges and heightened reliance on official external financing. Third, real GDP per capita growth begins to contract ahead of distress and remains weak throughout, underscoring the macroeconomic costs associated with external financial distress. At the onset of distress, growth is about 3 percentage points below non-distress levels. Taken together, these dynamics suggest that external financial distress episodes are preceded by sustained erosion of external positions and financial buffers with economic underperformance, followed by periods of acute repayment stress and weak economic growth.

5. NIIP and External Financial Distress

In the previous two sections, we documented two key descriptive findings. First, we observed a deterioration in the NIIP for second- and third-tier EMDEs. Second, we found that many of these EMDEs are experiencing external financial distress. Building on these findings, this section presents an empirical analysis that explores the potential link between NIIP and the likelihood of external financial distress.

Specifically, we assess whether the NIIP has predictive power for the onset of distress episodes by estimating the probability of such events using two econometric models: the logit and probit models. These models are commonly used for binary outcome analyses, where the dependent variable takes the value of one or zero depending on the occurrence of the event.[19] In our case, the dependent variable equals one when a country enters external financial distress and zero otherwise. Following Catão and Milesi-Ferretti (2014), we exclude ongoing distress observations from the sample, as our objective is to estimate the probability of entering distress conditional on a country being in a non-distress state, based on its NIIP. While we do not claim a causal relationship, we mitigate potential endogeneity concerns by using lagged explanatory variables. This approach aligns with our objective of assessing the predictive power of NIIP in forecasting external financial distress at least one year in advance.

Tables 8 and 9 present the results from a series of logit and probit regressions, respectively, that assess the predictive power of various macro-financial indicators for external financial distress. The results are highly consistent across the two estimation methods. Beginning with the most basic specification including only NIIP, we sequentially add controls for economic growth and the current account balance, followed by measures of financial development, capital account openness, and institutional quality to assess whether stronger fundamentals mitigate the likelihood of distress.[20] Across all specifications in Columns (1)-(8), the NIIP to GDP ratio consistently emerges as a significant predictor of distress. The coefficients on NIIP are negative and highly statistically significant, indicating that lower (more negative) NIIP is associated with a higher probability of experiencing external financial distress. The magnitude of the coefficient decreases somewhat as additional controls are introduced in subsequent specifications, but it remains significant even in the fully specified model in Columns (4) and (8). This robustness underscores the strong informational content of NIIP in signaling rising external vulnerabilities.

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19. The primary distinction between the logit and probit models lies in their underlying distributional assumptions. The probit model assumes a normal distribution, whereas the logit model follows a logistic distribution, which has thicker tails compared to the normal distribution. This difference in distributional assumptions can influence estimation results, making it difficult to determine a priori which model is more appropriate for a given dataset. To ensure robustness, we employ both models.

20. Adding financial development, capital account openness, and institutional quality reduces the number of observations substantially due to the limited availability of these variables—financial development (1980–2021), capital account openness (1970–2022), and institutional quality (1984–2023). To address this, we also report regressions that restrict the sample to the same set of observations as those used when including these variables. This allows us to confirm that differences in coefficient magnitudes or significance levels are driven primarily by the inclusion of additional controls rather than by changes in sample composition. Institutional quality is measured using the political risk rating from the PRS Group's International Country Risk Guide (ICRG), which assesses political stability based on factors such as government stability, socioeconomic conditions, investment profile, conflict, corruption, law and order, and bureaucratic quality. The World Bank's Worldwide Governance Indicators (WGI) are not employed because of their more limited coverage (1996–2023).

Table 8. External financial distress predictions, logit estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NIIP	-1.113***	-0.581***	-0.532**	-0.739**				
	(0.171)	(0.203)	(0.261)	(0.294)				
Net external debt assets					-1.240***	-0.748***	-1.006***	-0.903**
					(0.260)	(0.280)	(0.333)	(0.367)
Net external equity assets					-0.617	-0.130	0.031	-0.319
					(0.402)	(0.408)	(0.467)	(0.496)
FX reserves					-8.892***	-8.237***	-7.315***	-5.344**
					(1.443)	(1.431)	(1.947)	(2.178)
Real GDP growth (3Y MA)		-11.949***	-13.186***	-10.554**		-10.613***	-11.867***	-10.843**
		(2.624)	(4.376)	(4.466)		(2.646)	(4.535)	(4.579)
CA balance (3Y MA)		-8.167***	-9.631***	-8.357***		-8.950***	-10.268***	-9.160***
		(1.472)	(2.192)	(2.205)		(1.775)	(2.408)	(2.415)
Financial development				-2.582**				-1.638
				(1.260)				(1.332)
Capital account openness				-0.194				-0.003
				(0.407)				(0.437)
Institutional quality				-2.889*				-1.924
				(1.593)				(1.648)
chi-squared (country effects=0)	2.23	0.72	3.79	1.73	5.53	2.18	5.06	2.97
p-value (country effects=0)	0.13	0.39	0.05	0.19	0.02	0.14	0.02	0.08
chi-squared (year effects=0)	104.08	94.33	55.98	57.01	91.11	83.03	53.68	54.96
p-value (year effects=0)	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.01
Pseudo R-squared	0.11	0.14	0.14	0.17	0.14	0.18	0.17	0.18
Observations	2,753	2,506	1,493	1,493	2,755	2,480	1,485	1,485
AUROC	0.748	0.781	0.775	0.796	0.784	0.813	0.801	0.806
Standard error	0.018	0.017	0.024	0.021	0.017	0.016	0.022	0.021

Note: *NIIP* denotes the net international investment position. *Net external debt assets* are the sum of net external portfolio debt assets and net other investment assets, while *net external equity assets* comprise net portfolio equity assets and net foreign direct investment assets. *Financial development* refers to the IMF Financial Development Index (ranges from 0 to 1). *Capital account openness* is measured by the Chinn-Ito Index (range from 0 to 1). *Institutional quality* is the ICRG's political risk rating (rescaled to range from 0 to 1). *3Y MA* indicates a three-year moving average. NIIP, net external debt assets, net external equity assets, FX reserves, and CA balance are scaled by GDP. Columns (3) and (7) restrict the sample to the same observations as Columns (4) and (8), indicating that differences in coefficient magnitudes or significance levels are driven mainly by the inclusion of additional variables rather than by sample composition. Robust standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 9. External financial distress predictions, probit estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NIIP	-0.574***	-0.299***	-0.248*	-0.334**				
	(0.089)	(0.104)	(0.135)	(0.147)				
Net external debt assets					-0.683***	-0.417***	-0.511***	-0.443**
					(0.130)	(0.143)	(0.177)	(0.190)
Net external equity assets					-0.296	-0.029	0.059	-0.108
					(0.194)	(0.200)	(0.237)	(0.248)
FX reserves					-4.418***	-4.136***	-3.580***	-2.631***
					(0.653)	(0.675)	(0.887)	(0.977)
Real GDP growth (3Y MA)		-6.450***	-6.701***	-5.652***		-5.828***	-6.227***	-5.802***
		(1.312)	(2.082)	(2.120)		(1.336)	(2.171)	(2.194)
CA balance (3Y MA)		-4.298***	-4.995***	-4.481***		-4.716***	-5.250***	-4.815***
		(0.769)	(1.107)	(1.105)		(0.903)	(1.218)	(1.209)
Financial development				-1.302**				-0.873
				(0.537)				(0.570)
Capital account openness				-0.083				0.007
				(0.189)				(0.203)
Institutional quality				-1.434*				-0.946
				(0.735)				(0.768)
chi-squared (country effects=0)	1.76	0.74	3.73	1.52	5.47	2.63	5.77	3.24
p-value (country effects=0)	0.18	0.39	0.05	0.22	0.02	0.10	0.02	0.07
chi-squared (year effects=0)	106.38	98.43	57.08	58.55	94.03	88.09	54.41	56.17
p-value (year effects=0)	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01
Pseudo R-squared	0.11	0.14	0.14	0.17	0.14	0.18	0.17	0.18
Observations	2,753	2,506	1,493	1,493	2,755	2,480	1,485	1,485
AUROC	0.748	0.782	0.777	0.798	0.785	0.814	0.801	0.807
Standard error	0.018	0.017	0.023	0.020	0.017	0.016	0.021	0.020

Note: *NIIP* denotes the net international investment position. *Net external debt assets* are the sum of net external portfolio debt assets and net other investment assets, while *net external equity assets* comprise net portfolio equity assets and net foreign direct investment assets. *Financial development* refers to the IMF Financial Development Index (ranges from 0 to 1). *Capital account openness* is measured by the Chinn-Ito Index (range from 0 to 1). *Institutional quality* is the ICRG's political risk rating (rescaled to range from 0 to 1). *3Y MA* indicates a three-year moving average. NIIP, net external debt assets, net external equity assets, FX reserves, and CA balance are scaled by GDP. Columns (3) and (7) restrict the sample to the same observations as Columns (4) and (8), indicating that differences in coefficient magnitudes or significance levels are driven mainly by the inclusion of additional variables rather than by sample composition. Robust standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Further analysis in Columns (5) through (8) decomposes the NIIP into its three primary components: net external debt (portfolio debt and other investment), net external equity (portfolio equity and direct investment), and FX reserves. The results suggest that the predictive power of NIIP for external financial distress is mainly driven by net external debt and FX reserves. Higher net external debt liabilities are significantly associated with an increased likelihood of distress, reinforcing concerns that excessive external borrowing heightens vulnerability to shocks. In contrast, greater FX reserves are linked to a lower probability of distress, highlighting their role as a buffer against external volatility. However, no significant relationship is found between net external equity liabilities and distress. These findings are consistent with the broader literature, which underscores the stabilizing function of FX reserves and the risks inherent in heavy reliance on external debt.

Table 10 reports the marginal effects derived from specifications in columns (2) and (6) of Tables 8 and 9 for key variables.[21] These effects are evaluated at the 10th percentile, mean, and 90th percentile to assess potential nonlinearities in the relationship between explanatory variables and the likelihood of external financial distress. A one standard deviation decrease in the NIIP-to-GDP ratio at the mean raises the probability of distress by 1.3 percentage points in both logit and probit models, with similar effects across the distribution. Given that the unconditional probability of distress is about 6%, this is a sizable increase. Net external debt liabilities also show a strong and statistically significant effect: a one standard deviation increase raises the probability of distress by 1.1–1.2 percentage points. In contrast, the marginal effects of net external equity liabilities are close to zero and statistically insignificant, reinforcing the view that equity-type liabilities do not pose comparable risks from an external vulnerability perspective.

Table 10. Marginal effects estimated from logit and probit models

		Marginal Effects (Logit) at			Marginal Effects (Probit) at		
	S.D.	P10	Mean	P90	p10	Mean	p90
NIIP	0.38	-0.042**	-0.035***	-0.030***	-0.042**	-0.035***	-0.031***
Net external debt assets	0.26	-0.050**	-0.043***	-0.038***	-0.054***	-0.047***	-0.041***
Net external equity assets	0.24	-0.008	-0.008	-0.008	-0.003	-0.003	-0.003
FX reserves	0.13	-0.805***	-0.426***	-0.165***	-0.746***	-0.429***	-0.175***

Note: Marginal effects are derived from the specifications in columns (2) and (6) of Tables 8 and 9 for key variables shown. *NIIP* denotes the net international investment position. *Net external debt assets* are the sum of net external portfolio debt assets and net other investment assets, while *net external equity assets* comprise net portfolio equity assets and net foreign direct investment assets. These variables are scaled by GDP. S.D. indicates standard deviations for each variable. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

The most pronounced effects are observed for FX reserves. A one standard deviation increase in FX reserves at the mean lowers the probability of external financial distress by 5.5 percentage points in both models, indicating a powerful stabilizing effect. The impact is even greater at the lower end of the reserves distribution: When reserves are at the 10th percentile, the same increase reduces the probability of distress by about 10 percentage points. This sharp nonlinearity underscores the importance of reserve adequacy for vulnerable economies. In contrast, the marginal effects are more muted at higher reserve levels, suggesting diminishing returns to reserve accumulation in already well-buffered countries. These findings highlight

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21. We report the marginal effects from these specifications, as they use the full sample while including reasonable controls. The marginal effects estimated from the specifications in Columns (4) and (8) of Tables 8 and 9 are presented in Table B2 in Appendix B, and the results are broadly similar.

the importance of maintaining adequate FX reserves, particularly for countries with high external vulnerabilities, as they serve as a crucial buffer in mitigating external financial distress risks.

Overall, our findings align with existing literature on financial crises, which emphasizes the critical role of external balance sheets in determining financial stability. They underscore the importance of maintaining sustainable external debt levels and adequate reserves to enhance resilience against adverse external shocks. Moreover, the nonlinear effects suggest that policy makers should pay closer attention to countries with already fragile external positions, as their probability of experiencing financial distress is more sensitive to changes in NIIP and FX reserves than those of more financially stable economies.

Turning to macroeconomic fundamentals and structural variables, real GDP per capita growth enters negatively and significantly in all specifications, implying that countries with weaker growth trajectories are more prone to external financial distress. The current account balance as a share of GDP is similarly negative and significant, supporting the idea that a greater need for external financing can contribute to external vulnerability. The sign and significance of the current account balance are also consistent with studies that have found it to be a significant predictor of external crises (Milesi-Ferretti and Razin, 2000; Catão and Milesi-Ferretti, 2014).[22]

We find some evidence that financial development and improvements in institutional quality help reduce the likelihood of external financial distress, although their coefficients lose statistical significance once NIIP is decomposed into its three primary components.[23] Institutional quality, however, appears to play a more nuanced role. Figure 20 shows that the marginal effect of NIIP on the probability of external financial distress varies systematically with the level of institutional quality.[24] When institutional quality is low, the marginal effect of NIIP is large, negative, and statistically significant, indicating that weak institutions amplify the vulnerabilities associated with deteriorating NIIP positions. In contrast, when institutional quality is high, the marginal effect becomes much smaller and statistically insignificant, suggesting that strong institutions limit or neutralize the impact of NIIP on distress risk. Similar patterns hold for net external debt assets (Figure 21), underscoring that the influence of external balance sheet positions on financial distress is conditional on the strength of domestic institutions.

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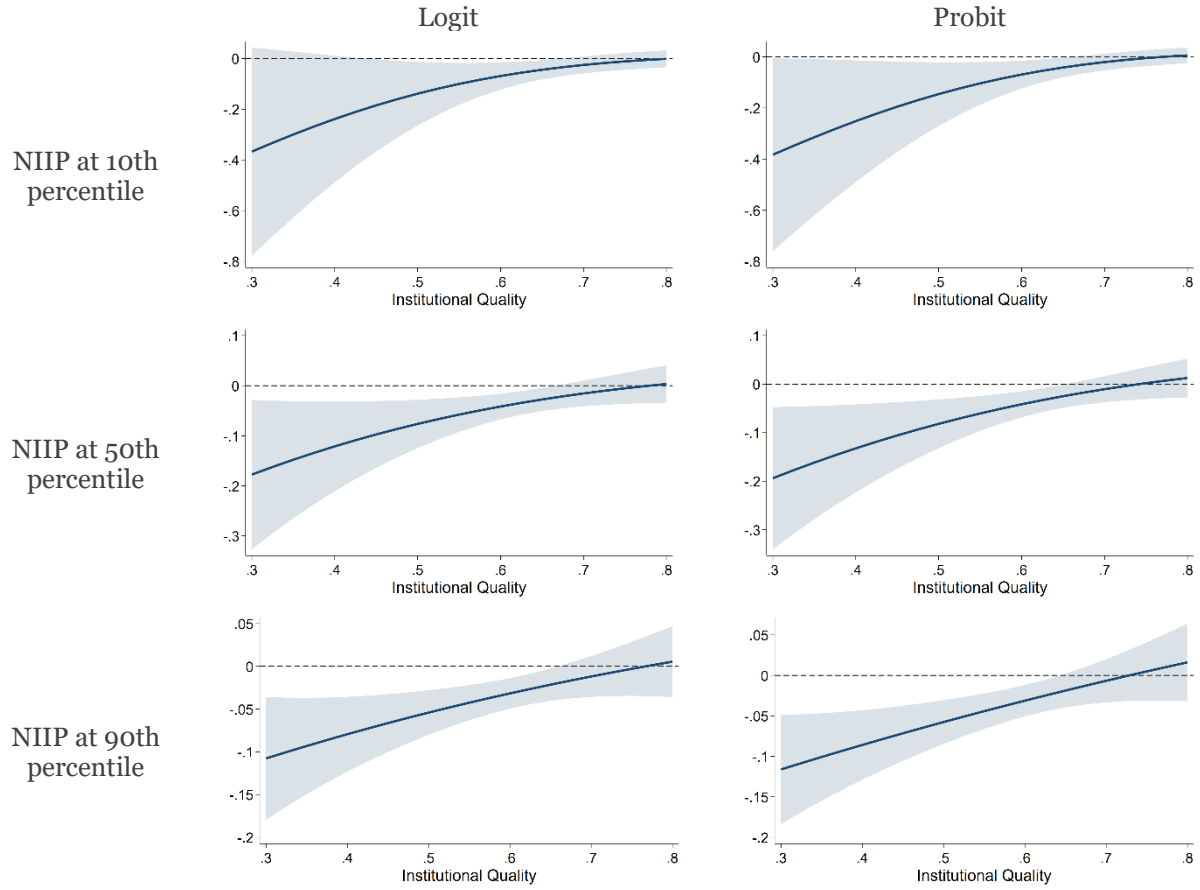
22. Adding a few additional macroeconomic variable indicators does not materially change the results, and these variables generally turn out to be statistically insignificant. For example, the 3-year moving average of the terms of trade—obtained from the IMF's WEO database—is positive and statistically significant when included alone, but its coefficient becomes much smaller and statistically insignificant once real GDP per capita growth and the current account balance are added.

23. The reduction in the statistical significance of these variables, alongside the significant change in the coefficient magnitude of FX reserves, may reflect collinearity: FX reserves are likely correlated with financial development and institutional quality, since financially developed economies with stronger institutions tend to accumulate larger reserve buffers.

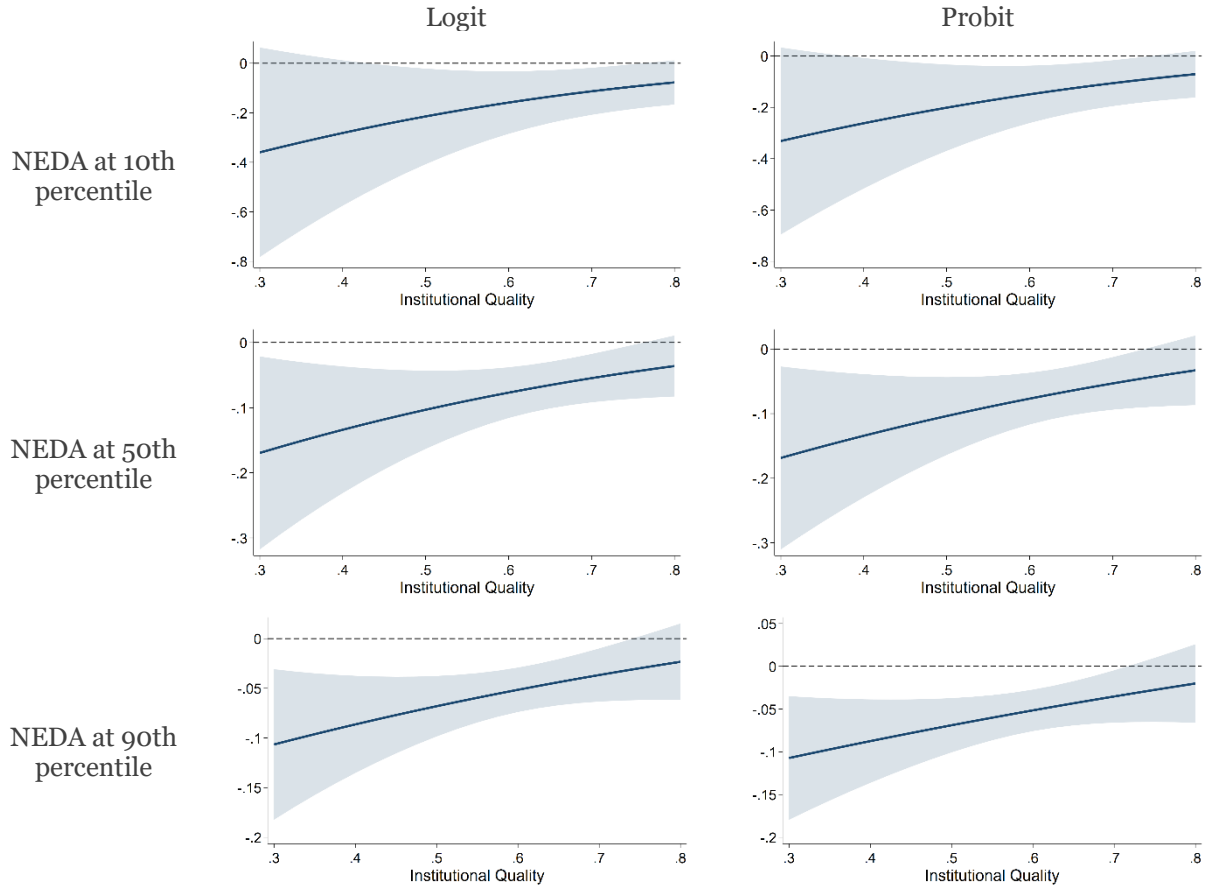
24. We do not observe such conditional effects for financial development and capital account openness.

Figure 20. Marginal effect of NIIP on the probability of external financial distress



Note: NIIP denotes the net international investment position, scaled by GDP. Institutional quality is measured by the ICRG political risk rating. Shaded areas are 90% confidence intervals, constructed using the delta method.

Figure 21. Marginal effect of NEDA on the probability of external financial distress



Note: NEDA denotes the net external debt assets, defined as the sum of net external portfolio debt assets and net other investment assets, scaled by GDP. Institutional quality is measured by the ICRG political risk rating. Shaded areas are 90% confidence intervals, constructed using the delta method.

The consistent significance of time fixed effects underscores the role of common global factors—such as shifts in global financial conditions or swings in commodity prices—that influence distress probabilities across countries in a given year. Country fixed effects, on the other hand, become less significant when fundamental or structural variables are added, suggesting that these variables capture part of the cross-country heterogeneity previously absorbed by the fixed effects.[25] We further evaluate model performance using the area under the Receiver Operating Characteristic curve (AUROC), a standard metric for evaluating binary classification models. Our results suggest that even with a relatively simple specification, the model achieves reasonable predictive performance in identifying episodes of external financial

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25. The results remain robust when these country fixed effects are excluded.

distress.[26] Finally, to test the robustness of our findings, we confirm that the results are robust to alternative definitions of external financial distress (see Appendix A.2).[27]

6. Conclusions

In this paper, we first document significant differences in the evolution of external balance sheets across EMDEs, with a focus on heterogeneity across three country groups. While first-tier EMDEs—characterized by larger economic size, higher income levels, stronger institutions, and greater financial integration—have generally improved their external positions and reduced reliance on official support, many other EMDEs continue to face substantial external vulnerabilities. Since the GFC, these second- and third-tier EMDEs have experienced a rising buildup of external imbalances, reflected in increasing external debt liabilities and declining FX reserves. We then identify external financial distress episodes based on multiple indicators—including sovereign defaults, arrears, partial defaults, and reliance on IMF lending—and show that distress remains widespread in these second- and third-tier EMDEs. Our empirical analysis further demonstrates that a country's NIIP—particularly its external debt liabilities and FX reserves—has strong predictive power for the onset of external financial distress. Moreover, while financial development and institutional quality are generally linked to a lower likelihood of external financial distress, our results show that the impact of NIIP and external debt depends critically on institutional quality: the adverse effect of weak external positions is amplified under weak institutions but diminishes and becomes statistically insignificant under strong institutions. These results are robust to different model specifications and alternative definitions of distress.

The vulnerability of EMDEs to external shocks has been a central theme in international macroeconomics. Over the past two decades, a narrative has emerged emphasizing the progress EMDEs have made in strengthening macroeconomic fundamentals and building resilience to external shocks. However, recent global disruptions—including the COVID-19 pandemic, the Russian Federation's invasion of Ukraine, tightening global financial conditions, and rising trade policy uncertainty—raise concerns about EMDEs' vulnerability to a series of adverse shocks. On the one hand, our findings support the view that many EMDEs, particularly those in the first-tier group, have become more resilient. The incidence of external crises, such as sovereign defaults, also has declined. On the other hand, we challenge this view by documenting that a substantial number of EMDEs continue to grapple with external financial distress. For these countries, distress is characterized not only by full-blown crises but also by persistent repayment difficulties and heavy reliance on IMF lending. The ongoing deterioration in NIIP—especially in the form of rising external debt and declining reserves—signals EMDEs' elevated vulnerability to future shocks.

These findings carry several implications for policy makers and researchers. First, they highlight the importance of recognizing heterogeneity within EMDEs. Aggregates that group all EMDEs together may obscure crucial differences in external vulnerability. Second, while the literature often focuses on either

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26. The AUROC measures the model's ability to correctly distinguish between episodes of external financial distress and non-distress. A value of 0.5 implies no predictive power—equivalent to random guessing—while values above 0.5 indicate some degree of predictive accuracy. A threshold of 0.7 is generally considered acceptable for effective classification (Schularick and Taylor, 2012).

27. Given the long time dimension of our panel, any bias from the incidental parameter problem in logit and probit models with fixed effects is likely small. Nevertheless, we also estimate a linear probability model as a robustness check. The results, presented in Table B3 and Figure B7 in Appendix B, are broadly consistent.

well-established emerging markets or low-income developing countries, our results draw attention to the under-studied group of frontier markets—countries that have deepened financial integration over the last decade but remain externally fragile. Third, the emphasis on full-blown crises in much of the literature may understate broader vulnerabilities. Our broader definition of external financial distress reveals that many EMDEs hover near crisis thresholds, underscoring the value of early-warning indicators. Fourth, our results reinforce the importance of monitoring both the level and composition of external balance sheets, particularly the adequacy of FX reserves. Finally, we find that financial development and improvements in institutional quality are associated with a lower likelihood of external financial distress. In particular, stronger institutions mitigate the risks associated with weak external positions, while weak institutions amplify them, highlighting the need to strengthen institutional frameworks alongside external balance-sheet management.

Looking ahead, the possibility of renewed global financial stress—via capital flow reversals or increased risk aversion—makes it critical for vulnerable countries to rebuild external buffers. As global risks persist, rebuilding buffers, maintaining prudent external positions, and reinforcing institutional strength should remain policy priorities for EMDEs seeking to guard against renewed financial pressures—all the more so in an environment where escalating geopolitical tensions and pressures for global trade and financial fragmentation could raise the likelihood of higher global risk aversion, as well as real and financial market shocks.

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APPENDIX A. ROBUSTNESS

A.1. Robustness to Alternative Country Grouping

The classification of EMDEs into three tiers is inherently subjective and open to debate. To assess the robustness of our key descriptive findings, we test whether modest changes in group composition materially affect the results. Our central narrative emphasizes diverging trends in NIIP and the prevalence of external financial distress between first-tier EMDEs and the rest. Since we argue that these differences are evident even between first-tier EMDEs and the relatively well-established second-tier EMDEs, we focus our robustness checks on comparisons between these two groups. Specifically, we examine whether our descriptive findings hold when the composition of the second-tier group is adjusted to include only countries with relatively higher income and better access to international financial markets.

We consider two alternative classifications. The first excludes countries in Sub-Saharan Africa (SSA). Many SSA countries face structural challenges, including lower income levels, limited access to international markets, and weaker institutional quality. The second-tier group contains a much higher number of SSA countries—10 compared to just 1 in the first-tier group. Thus, excluding SSA countries serves as a conservative test of our argument, as it removes many of the most vulnerable countries from the second-tier group. This adjustment yields a sample of 18 first-tier and 34 second-tier EMDEs.

Second, while our baseline classification relies on the most recent data on income groups and market index inclusion, we test robustness by applying classifications defined shortly after the GFC. Specifically, we use the World Bank income group classifications for 2011–2012, S&P Dow Jones Indices as of September 2011, FTSE Equity Country Classification as of June 2012, MSCI Market Classification as of May 2011, and JPMorgan's Emerging Market Bond Index Global as of November 2012. In addition, we exclude candidate status designations—OECD candidate condition for the first-tier group and EU candidate condition for the second-tier group. This alternative classification excludes countries that, at the time, had lower income or limited market access, resulting in a sample of 18 first-tier and 33 second-tier EMDEs.

Figure B3 confirms the robustness of our main descriptive findings when SSA countries are excluded. Panel (a) shows a persistent divergence in the NIIP between first-tier and second-tier EMDEs: the former have consistently improved their external balance sheets, while the latter have experienced a marked deterioration since the GFC. Panel (b) illustrates that changes in the composition of external portfolios between 2010 and 2023 differ notably across two groups—second-tier EMDEs have accumulated substantially more external liabilities than assets, whereas first-tier EMDEs have seen a greater buildup of external assets relative to liabilities. Panel (c) reveals that the gap between external debt and FX reserves has widened for second-tier EMDEs, while first-tier EMDEs have maintained a stable debt-to-reserve profile since the GFC. Panel (d) shows that external financial distress has remained widespread among second-tier EMDEs throughout the sample period, whereas the share of first-tier EMDEs in distress has declined significantly in recent years. Collectively, these results demonstrate that our core findings—concerning diverging external positions and vulnerability between first-tier EMDEs and other EMDEs—are not driven by the inclusion of SSA countries. Similarly, Figure B4 confirms the robustness of our findings under an alternative country classification, reaffirming that our main narrative holds under different grouping criteria.

A.2. Robustness to External Financial Distress Definition

We next examine the robustness of our results to alternative definitions of external financial distress. We consider three variations. First, we relax the baseline criteria by lowering the thresholds for the following indicators: (i) a partial default ratio above 0.4; (ii) external debt in arrears exceeding 8% of total external debt in the previous year; and (iii) IMF loans surpassing 150% of quota. This relaxed definition identifies 229 episodes, increasing the frequency of distress observations from 34% to 40%. Second, we apply a more stringent definition by raising these thresholds to 0.6, 12%, and 250%, respectively. This tighter specification identifies 194 episodes, reducing the distress frequency to 29%. Finally, we test robustness by excluding the post-pandemic period to ensure our findings are not driven by the atypical conditions of the COVID-19 period.

We begin by examining whether our core narrative—that many EMDEs, particularly those in the second- and third-tier groups, continue to experience persistent external financial pressures—holds under alternative definitions of distress. Figure B5 confirms that the incidence of external financial distress remains prevalent, even when the criteria are adjusted, standing in contrast to the sharp decline in sovereign default and full-blown crisis episodes. Notably, the early 1980s and 2020 emerge as key periods with a surge in new distress episodes, the latter largely reflecting the global shock induced by the COVID-19 pandemic.

Figure B6 illustrates the share of countries in distress across the three tiers using both looser (Panel a) and more stringent (Panel b) definitions. Two key observations emerge. First, the descriptive pattern remains robust: while the share of first-tier EMDEs in distress has declined considerably over time, a substantial share of second- and third-tier EMDEs remain in distress. Second, tightening the definition substantially reduces the number of countries classified as distressed in recent years—particularly among second- and third-tier EMDEs—indicating that a stricter definition captures more severe episodes. This reinforces the prevailing narrative of improved resilience among EMDEs to external shocks, while also revealing that many EMDEs remain vulnerable and sit near the threshold of distress, especially when broader indicators are considered.

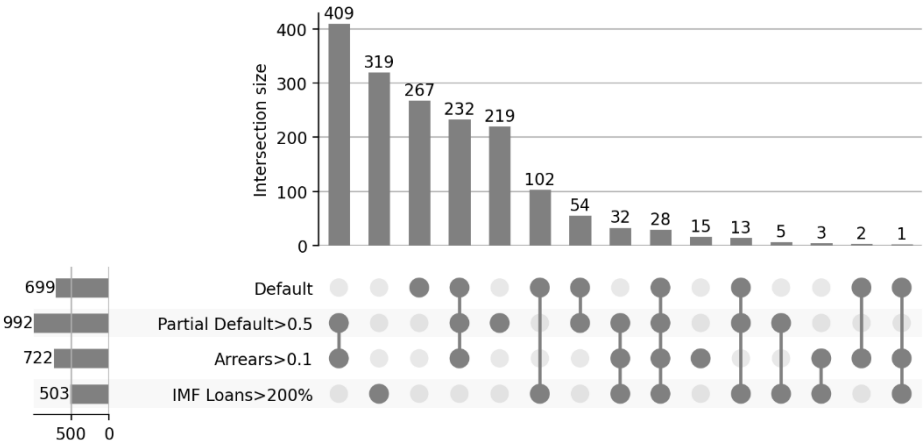
We now assess the robustness of our empirical findings using alternative distress definitions and sample periods. Table B4 presents the logit and probit estimates with the NIIP-to-GDP ratio, while Table B5 includes net external debt, net external equity, and FX reserves. In both tables, columns (1) and (2) use a relaxed distress definition, columns (3) and (4) apply a more stringent definition, and columns (5) and (6) exclude the post-pandemic period. Across all specifications, our core results remain robust. Table B4 confirms that the NIIP-to-GDP ratio is a strong and statistically significant predictor of external financial distress, with consistently negative and significant coefficients. Similarly, Table B5 shows that higher net external debt liabilities increase the likelihood of distress, while greater FX reserves reduce it. Weak GDP growth and current account deficits also continue to be significant predictors of distress across models. By contrast, financial development is no longer statistically significant. Finally, the dependence of the marginal effects of NIIP and net external debt assets on institutional quality persists (see Figures B8 and B9).

Taken together, the robustness checks provide strong support for the reliability of our baseline results. The predictive power of external balance sheet indicators—particularly net external debt and FX reserves—remains consistent across different definitions of external financial distress and sample periods. Even when we tighten or relax the distress thresholds or exclude the post-pandemic years, the signs, magnitudes, and statistical significance of the key coefficients remain largely unchanged. Importantly, the AUROC values

across most specifications exceed 0.75, confirming that the models retain solid classification performance under alternative assumptions. These results underscore the importance of monitoring external debt accumulation and reserve adequacy as central elements of early warning frameworks for external financial distress.

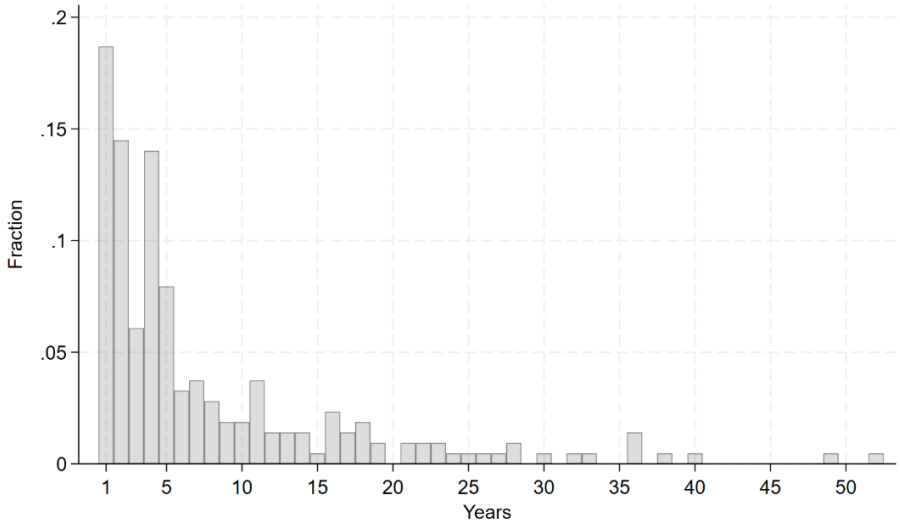
APPENDIX B. ADDITIONAL FIGURES AND TABLES

Figure B1. Intersection of external financial distress criteria



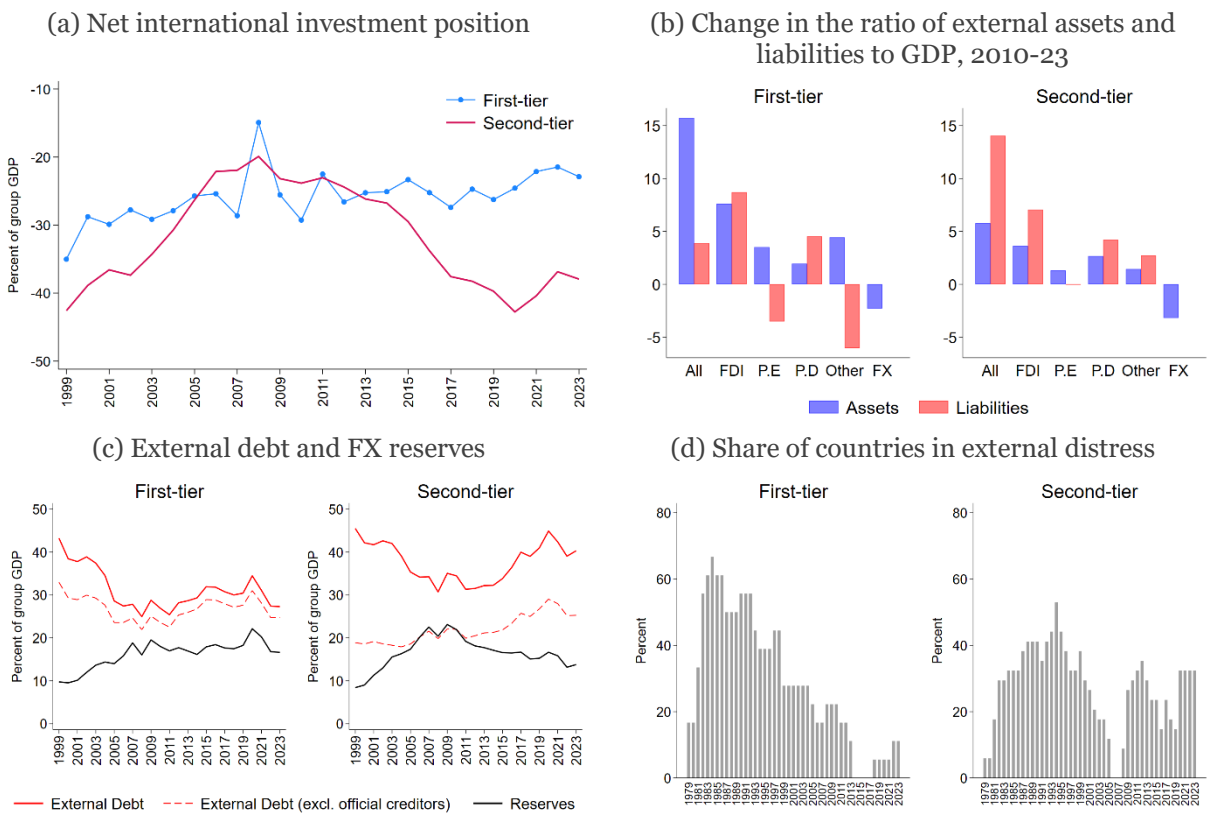
Note: This upset plot visualizes the overlap among four indicators of external financial distress. A country is considered to be in external financial distress if it meets any of the following criteria: (i) it is in a default spell (Graf von Luckner et al., 2025) (Default); (ii) it has a partial default ratio exceeding 0.5 (Partial Default > 0.5); (iii) it has external debt in arrears exceeding 10% of total external debt in the previous year (Arrears > 0.1); or (iv) it has IMF loans exceeding 200% of quota (IMF Loans > 200%). The horizontal bars on the left show the number of observations that meet each individual criterion, regardless of overlap. The vertical bars indicate the number of observations that fall into each specific combination of criteria, as represented by the connected dark circles below. The total number of observations that meet at least one criterion (i.e., total external financial distress observations) is 1,701.

Figure B2. Histogram of external financial distress episode length



Note: This histogram shows the distribution of the length of external financial distress episodes. A country is considered to be in external financial distress if it meets any of the following criteria: (i) it is in a default spell (Graf von Luckner et al., 2025); (ii) a partial default ratio exceeding 0.5; (iii) external debt in arrears exceeding 10% of total external debt in the previous year; or (iv) IMF loans exceeding 200% of quota.

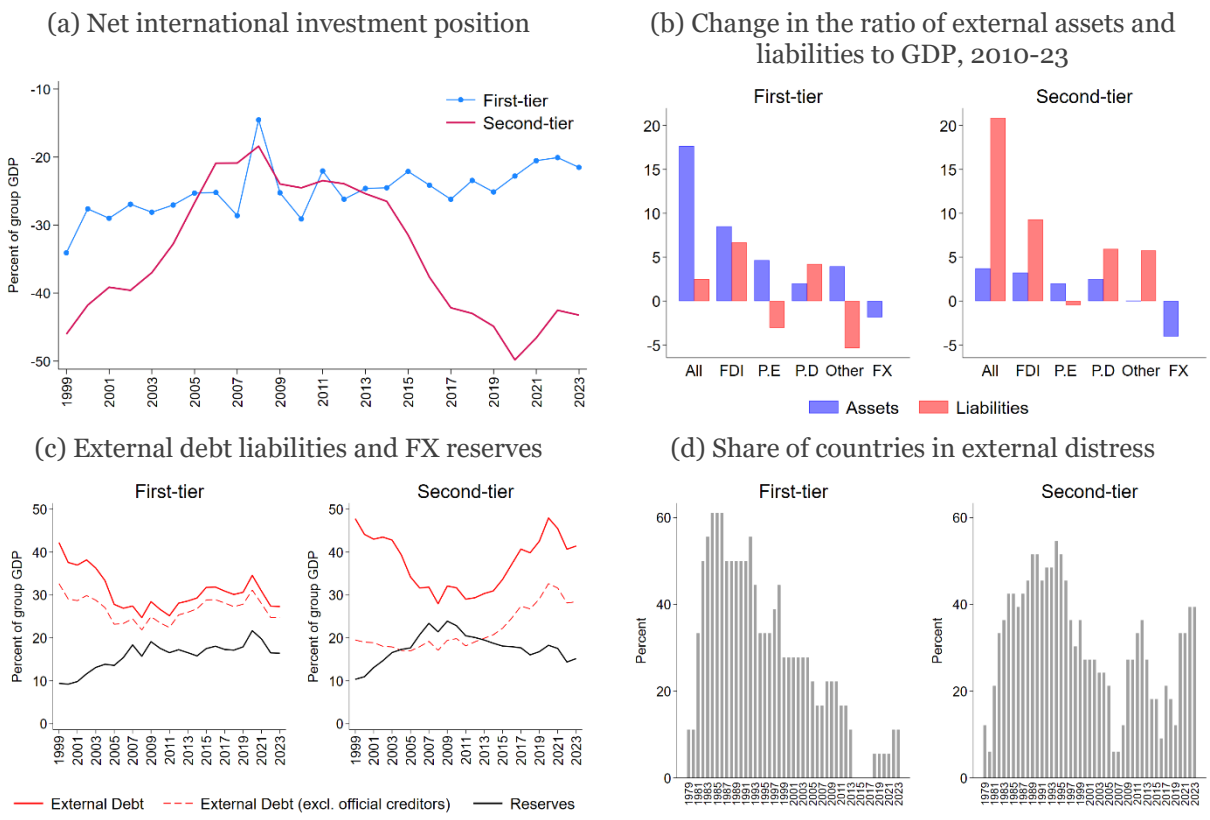
Figure B3. Comparison between first- and second-tier EMDEs, excluding SSA



Note: This figure excludes countries in Sub-Saharan Africa (SSA). Panel (a) plots the aggregated net international investment position (NIIP) for each group as a share of the group's aggregated GDP. Panel (b) shows the average change in the ratio of external assets and liabilities to GDP by category between 2010 and 2023. P.E refers to portfolio equity assets or liabilities; P.D refers to portfolio debt assets or liabilities; FX denotes foreign exchange reserve assets. Panel (c) plots the aggregated external debt liabilities, external debt liabilities excluding official creditors, and FX reserves for each group as a share of the group's aggregated GDP. External debt liabilities are the sum of external portfolio debt liabilities and other investment liabilities. Panel (d) presents the share of countries in external financial distress.

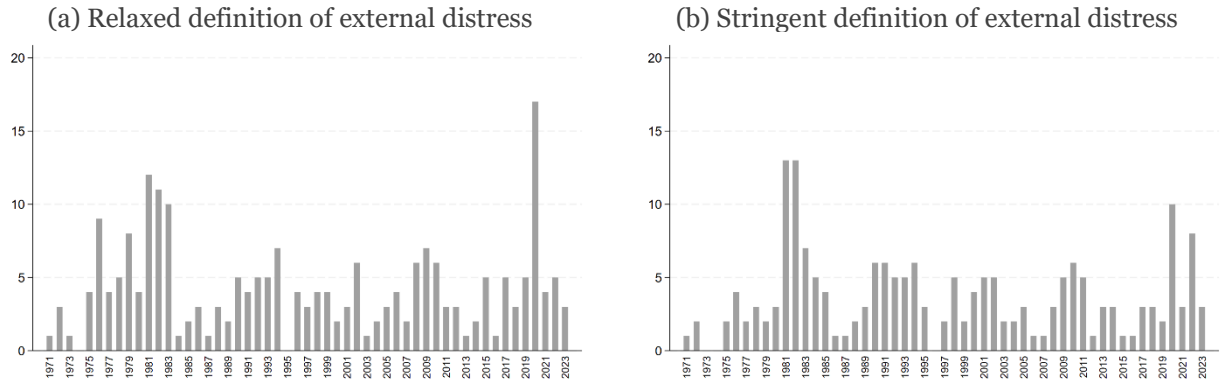
Source: authors' calculations based on the updated EWN database and Graf von Luckner et al (2025).

Figure B4. Comparison between first- and second-tier EMDEs with alternative grouping



Note: This figure uses an alternative country classification based on groupings defined shortly after the GFC. Panel (a) plots the aggregated net international investment position (NIIP) for each group as a share of the group's aggregated GDP. Panel (b) shows the average change in the ratio of external assets and liabilities to GDP by category between 2010 and 2023. P.E refers to portfolio equity assets or liabilities; P.D refers to portfolio debt assets or liabilities; FX denotes foreign exchange reserve assets. Panel (c) plots the aggregated external debt liabilities, external debt liabilities excluding official creditors, and FX reserves for each group as a share of the group's aggregated GDP. External debt liabilities are the sum of external portfolio debt liabilities and other investment liabilities. Panel (d) presents the share of countries in external financial distress.
Source: authors' calculations based on updated EWN database and Graf von Luckner et al (2025).

Figure B5. Incidence of external financial distress using alternative definitions

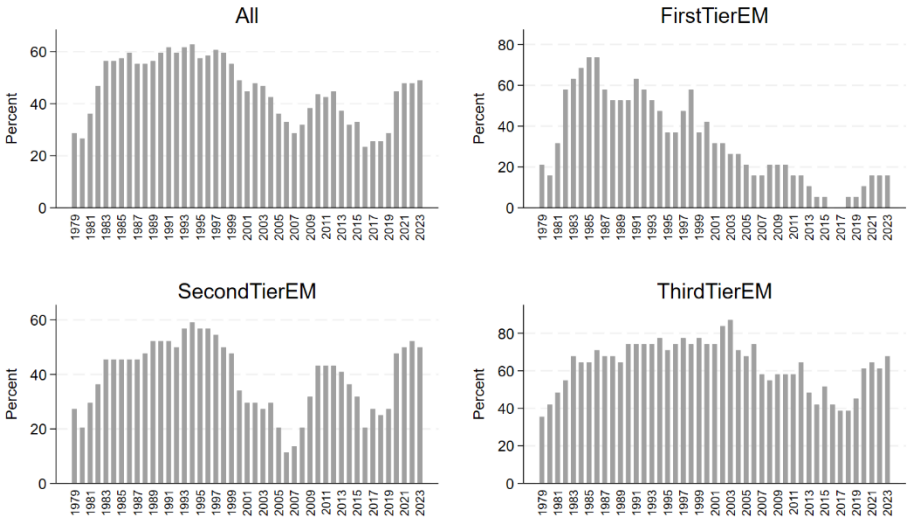


Note: This figure plots the annual incidence of external financial distress episodes in our sample for alternative definitions of external financial distress. Under the relaxed definition, a country is considered to be in external financial distress if it meets any of the following criteria: (i) a default or debt restructuring episode; (ii) a partial default ratio exceeding 0.4; (iii) external debt in arrears exceeding 8% of total external debt in the previous year; or (iv) IMF loans exceeding 150% of quota. Under the stringent definition, a country is considered to be in external financial distress if it meets any of the following criteria: (i) a default or debt restructuring episode; (ii) a partial default ratio exceeding 0.6; (iii) external debt in arrears exceeding 12% of total external debt in the previous year; or (iv) IMF loans exceeding 250% of quota.

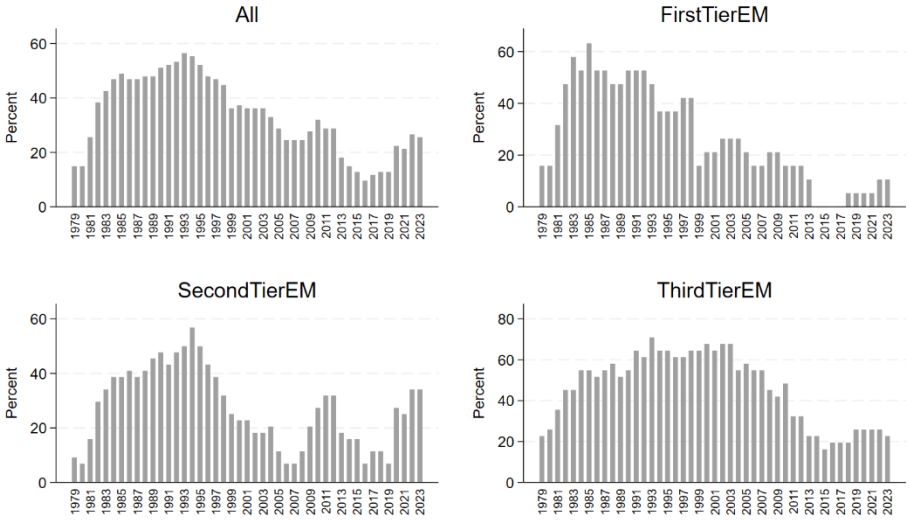
Source: authors' calculations based on IMF, International Financial Statistics and Graf von Luckner et al (2025).

Figure B6. Share of countries in external financial distress with alternative definitions

(a) Relaxed definition of external financial distress



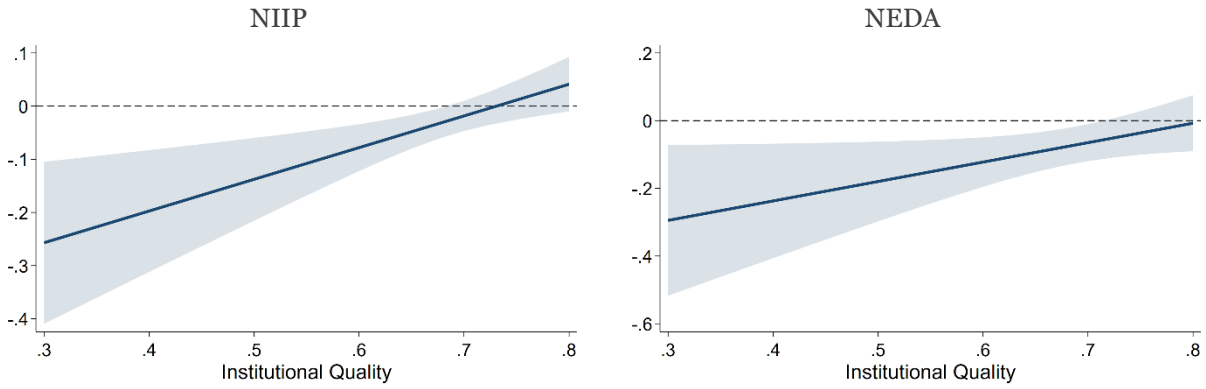
(b) Stringent definition of external financial distress



Note: This figure plots the share of countries in external financial distress for alternative definitions of external financial distress. Under the relaxed definition, a country is considered to be in external financial distress if it meets any of the following criteria: (i) it is in a default spell (Graf von Luckner et al., 2025); (ii) a partial default ratio exceeding 0.4; (iii) external debt in arrears exceeding 8% of total external debt in the previous year; or (iv) IMF loans exceeding 150% of quota. Under the stringent definition, a country is considered to be in external financial distress if it meets any of the following criteria: (i) a default or debt restructuring episode; (ii) a partial default ratio exceeding 0.6; (iii) external debt in arrears exceeding 12% of total external debt in the previous year; or (iv) IMF loans exceeding 250% of quota.

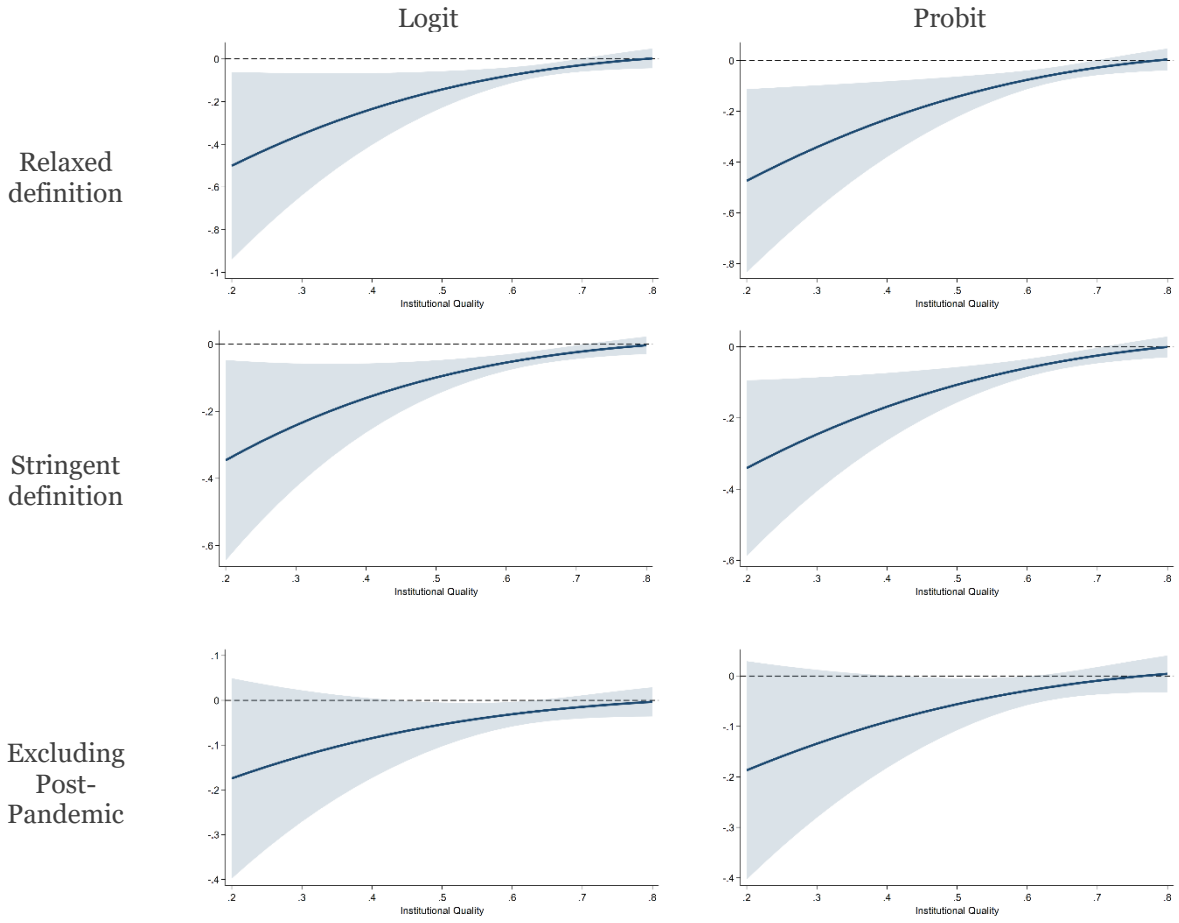
Source: authors' calculations based on IMF, International Financial Statistics and Graf von Luckner et al (2025).

Figure B7. Marginal effect on the probability of external financial distress



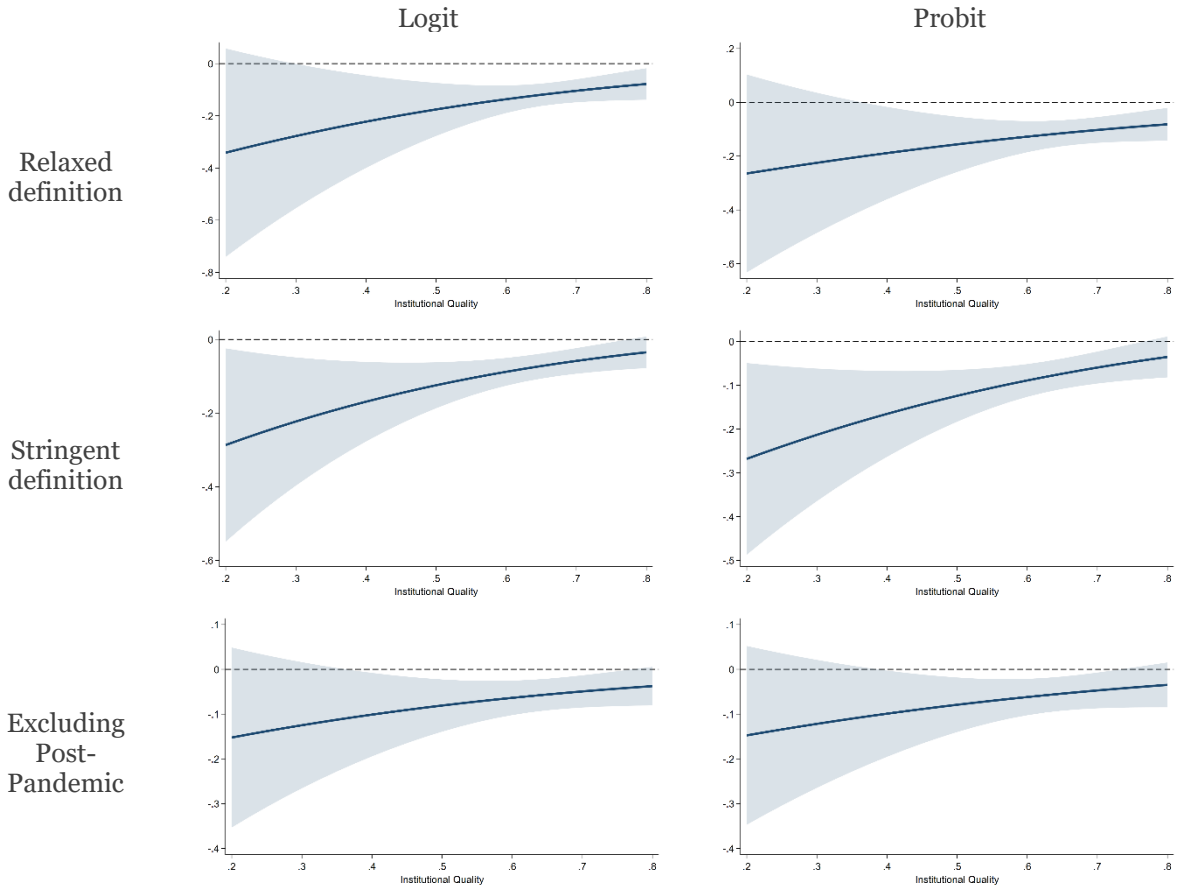
Note: Marginal effects are derived from the specifications in columns (5) and (10) of Tables B3. *NIIP* denotes the net international investment positions, scaled by GDP. *NEDA* denotes the net external debt assets, defined as the sum of net external portfolio debt assets and net other investment assets, scaled by GDP. Institutional quality is measured by the ICRG political risk rating. Shaded areas are 90% confidence intervals, constructed using the delta method.

Figure B8. Marginal effect of NIIP on the probability of external financial distress



Note: *NIIP* denotes the net international investment positions, scaled by GDP. Institutional quality is measured by the ICRG political risk rating. Marginal effects are evaluated at the 50th percentile of NIIP. Shaded areas are 90% confidence intervals, constructed using the delta method.

Figure B9. Marginal effect of NEDA on the probability of external financial distress



Note: *NEDA* denotes the net external debt assets, defined as the sum of net external portfolio debt assets and net other investment assets, scaled by GDP. Institutional quality is measured by the ICRG political risk rating. Marginal effects are evaluated at the 50th percentile of NEDA. Shaded areas are 90% confidence intervals, constructed using the delta method.

Table B1. List of countries

Financial centers (24)	Andorra; Bahamas, The; Bahrain; Barbados; Belgium; Bermuda; Cayman Islands; Curaçao; Cyprus; Gibraltar; Hong Kong SAR, China; Ireland; Isle of Man; Luxembourg; Macao SAR, China; Malta; Mauritius; Netherlands; Panama; San Marino; Singapore; Switzerland; Turks and Caicos Islands; United Kingdom
Advanced economies (25)	Australia; Austria; Canada; Croatia; Czechia; Denmark; Estonia; Finland; France; Germany; Greece; Iceland; Israel; Italy; Japan; Korea, Rep.; Latvia; Lithuania; New Zealand; Norway; Portugal; Slovak Republic; Slovenia; Spain; Sweden
Emerging markets and developing economies (148)	Afghanistan; Albania; Algeria; Angola; Antigua and Barbuda; Argentina; Armenia; Azerbaijan; Bangladesh; Belarus; Belize; Benin; Bhutan; Bolivia; Bosnia and Herzegovina; Botswana; Brazil; Brunei Darussalam; Bulgaria; Burkina Faso; Burundi; Cabo Verde; Cambodia; Cameroon; Central African Republic; Chad; Chile; Colombia; Comoros; Congo, Dem. Rep.; Congo, Rep.; Costa Rica; Côte d'Ivoire; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt, Arab Rep.; El Salvador; Equatorial Guinea; Eritrea; Eswatini; Ethiopia; Fiji; Gabon; Gambia, The; Georgia; Ghana; Grenada; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hungary; India; Indonesia; Iran, Islamic Rep.; Iraq; Jamaica; Jordan; Kazakhstan; Kenya; Kiribati; Kosovo; Kuwait; Kyrgyz Republic; Lao PDR; Lebanon; Lesotho; Liberia; Libya; Madagascar; Malawi; Malaysia; Maldives; Mali; Marshall Islands; Mauritania; Mexico; Micronesia, Fed. Sts.; Moldova; Mongolia; Montenegro; Morocco; Mozambique; Myanmar; Namibia; Nauru; Nepal; Nicaragua; Niger; Nigeria; North Macedonia; Oman; Pakistan; Palau; Papua New Guinea; Paraguay; Peru; Philippines; Poland; Qatar; Romania; Russian Federation; Rwanda; Samoa; Saudi Arabia; Senegal; Serbia; Seychelles; Sierra Leone; Solomon Islands; Somalia; South Africa; South Sudan; Sri Lanka; St. Kitts and Nevis; St. Lucia; St. Vincent and the Grenadines; Sudan; Surinam; Syrian Arab Republic; São Tomé and Principe; Tajikistan; Tanzania; Thailand; Timor-Leste; Togo; Tonga; Trinidad and Tobago; Tunisia; Turkmenistan; Tuvalu; Türkiye; Uganda; Ukraine; United Arab Emirates; Uruguay; Uzbekistan; Vanuatu; Venezuela, RB; Viet Nam; West Bank and Gaza; Yemen, Rep.; Zambia; Zimbabwe

Note: The list of financial centers is taken from Lane and Milesi-Ferretti (2018). Advanced economies and emerging markets and developing economies are based on the World Bank's classifications for 2024-25.

Table B2. Marginal effects estimated from logit and probit models

	Marginal Effects (Logit) at			Marginal Effects (Probit) at		
	P10	Mean	P90	p10	Mean	p90
NIIP	-0.048**	-0.038***	-0.031***	-0.042**	-0.035**	-0.030***
Net external debt assets	-0.056**	-0.047***	-0.040***	-0.054**	-0.046**	-0.040***
Net external equity assets	-0.018	-0.017	-0.016	-0.012	-0.011	-0.011
FX reserves	-0.420*	-0.276**	-0.154***	-0.392**	-0.272**	-0.160***

Note: Marginal effects are derived from the specifications in columns (4) and (8) of Tables 8 and 9 for key variables shown. *NIIP* denotes the net international investment position. *Net external debt assets* are the sum of net external portfolio debt assets and net other investment assets, while *net external equity assets* comprise net portfolio equity assets and net foreign direct investment assets. These variables are scaled by GDP. Standard deviations (S.D.) are computed from pooled regressions with fixed effects for each variable. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table B3. External financial distress predictions, OLS estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
NIIP	-0.072***	-0.049***	-0.041**	-0.042**	-0.394***					
	(0.014)	(0.015)	(0.019)	(0.019)	(0.146)					
Net external debt assets (NEDA)						-0.094***	-0.070***	-0.075**	-0.065**	-0.425*
						(0.022)	(0.023)	(0.031)	(0.031)	(0.230)
Net external equity assets						-0.008	-0.000	0.007	-0.017	-0.017
						(0.022)	(0.024)	(0.028)	(0.029)	(0.030)
FX reserves						-0.182***	-0.142***	-0.084***	-0.042	-0.047*
						(0.026)	(0.027)	(0.027)	(0.028)	(0.027)
Real GDP growth (3Y MA)		-0.727***	-0.650***	-0.574**	-0.546**		-0.670***	-0.559**	-0.533**	-0.503**
		(0.169)	(0.235)	(0.233)	(0.233)		(0.170)	(0.238)	(0.237)	(0.239)
CA balance (3Y MA)		-0.397***	-0.428***	-0.367***	-0.364***		-0.351***	-0.378***	-0.356***	-0.331***
		(0.073)	(0.104)	(0.103)	(0.104)		(0.074)	(0.109)	(0.108)	(0.112)
Financial development (FD)				-0.091**	-0.129***				-0.087*	-0.160**
				(0.045)	(0.049)				(0.045)	(0.065)
Capital account openness (CAO)				-0.007	-0.014				-0.007	0.017
				(0.020)	(0.025)				(0.020)	(0.031)
Institutional quality (IQ)				-0.173**	0.018				-0.152*	0.004
				(0.083)	(0.091)				(0.086)	(0.104)
NIIP × FD [NEDA × FD for (10)]					-0.142					-0.347
					(0.162)					(0.293)
NIIP × CAO [NEDA × CAO for (10)]					-0.012					0.106
					(0.060)					(0.112)
NIIP × IQ [NEDA × IQ for (10)]					0.597**					0.574*
					(0.234)					(0.338)
F-statistic (country effects=0)	2.59	2.52	6.35	4.56	4.56	5.06	4.27	7.61	4.99	5.68
p-value (country effects=0)	0.11	0.11	0.01	0.03	0.03	0.02	0.04	0.01	0.03	0.02
F-statistic (year effects=0)	3.63	3.33	2.34	2.18	2.25	3.23	3.11	2.12	2.02	1.97
p-value (year effects=0)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R-squared	0.06	0.08	0.07	0.08	0.09	0.07	0.09	0.08	0.09	0.09
Observations	2,989	2,706	1,571	1,571	1,571	2,949	2,671	1,560	1,560	1,560
AUROC	0.761	0.787	0.757	0.793	0.795	0.779	0.803	0.774	0.795	0.799
Standard error	0.018	0.017	0.017	0.021	0.021	0.017	0.016	0.017	0.021	0.021

Note: *NIIP* denotes the net international investment position; *NEDA* is the sum of net external portfolio debt assets and net other investment assets; *net external equity assets* comprise net portfolio equity assets and net foreign direct investment assets; *Financial development* refers to the IMF Financial Development Index (ranges from 0 to 1); *Capital account openness* is measured by the Chinn-Ito Index (range from 0 to 1); *Institutional quality* is the ICRG's political risk rating (range from 0 to 1). *3Y MA* indicates a three-year moving average. NIIP, net external debt assets, net external equity assets, FX reserves, and CA balance are scaled by GDP. Robust standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table B4. Robustness: NIIP and external financial distress

	Logit						Probit					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
NIIP	-0.91***	-1.01***	-0.81***	-1.01***	-0.51**	-0.51	-0.50***	-0.51***	-0.43***	-0.51***	-0.25**	-0.21
	(0.20)	(0.33)	(0.19)	(0.27)	(0.23)	(0.35)	(0.11)	(0.16)	(0.10)	(0.14)	(0.12)	(0.17)
Real GDP per capita	-17.95***	-15.29***	-10.74***	-10.32**	-12.70***	-12.38**	-9.49***	-7.70***	-5.66***	-5.30**	-6.80***	-6.37***
growth (3Y MA)	(2.75)	(4.89)	(2.71)	(4.58)	(2.82)	(5.02)	(1.40)	(2.33)	(1.30)	(2.08)	(1.40)	(2.31)
CA balance	-7.91***	-8.20***	-5.47***	-5.54***	-8.66***	-9.42***	-4.09***	-4.33***	-2.79***	-2.86***	-4.59***	-5.08***
(3Y MA)	(1.56)	(2.23)	(1.39)	(1.89)	(1.56)	(2.39)	(0.83)	(1.16)	(0.70)	(0.94)	(0.79)	(1.14)
Financial development		-1.69		-0.53		-1.70		-0.87*		-0.37		-0.87
		(1.15)		(1.04)		(1.33)		(0.51)		(0.46)		(0.56)
Capital account		-0.35		-0.01		-0.12		-0.20		-0.00		-0.05
openness		(0.43)		(0.40)		(0.46)		(0.20)		(0.18)		(0.21)
Institutional quality		-3.79**		-3.49**		-3.01*		-1.92***		-1.62**		-1.51**
		(1.59)		(1.52)		(1.63)		(0.73)		(0.69)		(0.75)
χ^2 (country effects=0)	1.80	1.55	0.04	2.07	0.00	0.61	2.24	1.53	0.04	1.75	0.00	0.54
p-value	0.18	0.21	0.85	0.15	0.99	0.43	0.13	0.22	0.84	0.19	0.97	0.46
χ^2 (year effects=0)	83.70	53.13	80.36	37.23	75.47	32.25	89.62	54.11	83.40	42.45	79.93	37.45
p-value	0.00	0.02	0.00	0.37	0.00	0.40	0.00	0.02	0.00	0.18	0.00	0.20
Pseudo R^2	0.16	0.17	0.13	0.14	0.14	0.15	0.16	0.17	0.13	0.14	0.14	0.15
Observations	2,308	1,277	2,736	1,656	2,238	1,330	2,308	1,277	2,736	1,656	2,238	1,330
AUROC	0.789	0.784	0.722	0.729	0.782	0.788	0.792	0.789	0.726	0.732	0.783	0.791
Standard error	0.022	0.029	0.019	0.024	0.018	0.022	0.021	0.027	0.019	0.023	0.018	0.021

Note: Columns (1) and (2) use the relaxed distress definition, columns (3) and (4) apply the more stringent definition, and columns (5) and (6) exclude the post-pandemic period. *NIIP* denotes the net international investment position; *Financial development* refers to the IMF Financial Development Index (ranges from 0 to 1); *Capital account openness* is measured by the Chinn-Ito Index (range from 0 to 1); *Institutional quality* is the ICRG's political risk rating (range from 0 to 1). *3Y MA* indicates a three-year moving average. NIIP and CA balance are scaled by GDP. Robust standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table B5. Robustness: Components of NIIP and external financial distress

	Logit						Probit					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Net external debt	-0.92***	-1.13***	-0.94***	-1.13***	-0.73**	-0.75*	-0.51***	-0.60***	-0.52***	-0.58***	-0.39***	-0.35*
	(0.27)	(0.38)	(0.26)	(0.36)	(0.29)	(0.39)	(0.14)	(0.20)	(0.13)	(0.19)	(0.15)	(0.20)
Net external equity	-0.80**	-0.67	-0.70*	-0.77*	0.10	0.07	-0.44**	-0.33	-0.33*	-0.39*	0.10	0.08
	(0.40)	(0.58)	(0.38)	(0.46)	(0.49)	(0.64)	(0.20)	(0.28)	(0.18)	(0.22)	(0.23)	(0.30)
FX reserves	-7.74***	-5.89**	-8.56***	-6.50***	-8.14***	-5.69**	-4.10***	-3.05***	-4.03***	-3.17***	-3.92***	-2.47**
	(1.38)	(2.30)	(1.58)	(2.22)	(1.75)	(2.77)	(0.67)	(1.08)	(0.71)	(0.97)	(0.79)	(1.12)
Real GDP per capita	-17.14***	-15.91***	-9.15***	-10.58**	-11.16***	-12.15**	-9.19***	-8.09***	-4.92***	-5.47**	-6.12***	-6.29***
growth (3Y MA)	(2.88)	(5.08)	(2.81)	(4.79)	(2.82)	(5.09)	(1.46)	(2.45)	(1.34)	(2.17)	(1.42)	(2.38)
CA balance	-8.33***	-8.85***	-5.33***	-6.00***	-9.85***	-10.57***	-4.36***	-4.63***	-2.74***	-3.00***	-5.16***	-5.52***
(3Y MA)	(1.88)	(2.56)	(1.62)	(2.12)	(1.96)	(2.74)	(0.96)	(1.31)	(0.79)	(1.02)	(0.97)	(1.30)
Financial development		-0.79		0.58		-0.59		-0.42		0.14		-0.43
		(1.22)		(1.14)		(1.43)		(0.55)		(0.51)		(0.60)
Capital account openness		-0.14		0.20		0.13		-0.10		0.10		0.05
		(0.47)		(0.43)		(0.51)		(0.21)		(0.19)		(0.23)
Institutional quality		-2.82*		-2.47		-1.94		-1.42*		-1.12		-1.01
		(1.64)		(1.55)		(1.69)		(0.76)		(0.71)		(0.79)
χ^2 (country effects=0)	3.13	2.36	0.81	3.89	0.33	1.52	4.09	2.69	0.92	4.08	0.51	1.65
p-value	0.08	0.12	0.37	0.05	0.57	0.22	0.04	0.10	0.34	0.04	0.48	0.20
χ^2 (year effects=0)	77.21	54.29	76.26	38.28	56.80	28.95	83.13	56.37	80.21	43.80	61.94	33.23
p-value	0.00	0.02	0.00	0.32	0.06	0.57	0.00	0.01	0.00	0.15	0.02	0.36
Pseudo R^2	0.18	0.18	0.16	0.15	0.18	0.16	0.19	0.18	0.16	0.15	0.18	0.16
Observations	2,257	1,267	2,704	1,647	2,212	1,322	2,257	1,267	2,704	1,647	2,212	1,322
AUROC	0.824	0.801	0.755	0.739	0.810	0.795	0.825	0.804	0.759	0.742	0.812	0.797
Standard error	0.020	0.028	0.018	0.023	0.018	0.023	0.019	0.027	0.017	0.023	0.017	0.022

Note: Columns (1) and (2) use the relaxed distress definition, columns (3) and (4) apply the more stringent definition, and columns (5) and (6) exclude the post-pandemic period. *Net external debt* is the sum of net external portfolio debt assets and net other investment assets; *net external equity assets* comprise net portfolio equity assets and net foreign direct investment assets; *Financial development* refers to the IMF Financial Development Index (ranges from 0 to 1); *Capital account openness* is measured by the Chinn-Ito Index (range from 0 to 1); *Institutional quality* is the ICRG's political risk rating (range from 0 to 1). *3Y MA* indicates a three-year moving average. Net external debt assets, net external equity assets, FX reserves, and CA balance are scaled by GDP. Robust standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

APPENDIX C. COMPARISON TO THE IMF/WB'S DEBT SUSTAINABILITY FRAMEWORK

The IMF and World Bank conduct debt sustainability assessments through two frameworks: the Sovereign Risk and Debt Sustainability Framework for Market Access Countries (MAC-SRDSF) and the Debt Sustainability Framework for Low-Income Countries (LIC-DSF). These assessments are more comprehensive and forward-looking, as they combine quantitative indicators with expert judgment, country-specific characteristics, and extensive discussions with the authorities. By contrast, our classification of external financial distress is systematic and consistent across countries, relying solely on quantitative indicators and thresholds. While this ensures comparability across a broad set of economies and years, it does not capture the country-specific nuances embedded in IMF/WB assessments.

Table C1 compares our binary external financial distress measure with the most recent IMF/WB debt sustainability assessments, available as of March 2025 for 80 economies in our sample (38 under the MAC-SRDSF and 42 under the LIC-DSF). Under the MAC-SRDSF (Panel A), most countries we classify as in distress are also assessed as high or moderate risk by the IMF/WB, while those not in distress are usually assessed as low or moderate risk. Under the LIC-DSF (Panel B), distressed countries in our classification are similarly concentrated in the high- and moderate-risk groups. Three exceptions—Lao PDR, Congo, and Ethiopia—are assessed as in distress by the IMF/WB but not flagged by our measure. However, Congo and Ethiopia could also be classified as in distress if 2024 data were used, as their IMF loans exceeded 200% of quota in that year (200% for Congo and 434% for Ethiopia).

Overall, our classification is broadly consistent with IMF/WB assessments, capturing both severe crises and milder distress episodes. Our simple, systematic approach allows us to apply a uniform definition consistently across countries and over a longer historical period, complementing the IMF/WB's more deliberative and forward-looking framework.

Table C1. Comparison to the IMF/WB's debt sustainability analysis

(A) MAC-SRDSF

	Distress	High Risk	Moderate Risk	Low Risk	Total
Not in distress	0	1	15	11	27
Distress	0	6	3	2	11
Total	0	7	18	13	38

(B) LIC-DSF

	Distress	High Risk	Moderate Risk	Low Risk	Total
Not in distress	3	6	5	4	18
Distress	3	7	11	3	24
Total	6	13	16	7	42

Note: The risk of sovereign stress (MAC-SRDSF) and the risk of external debt distress (LIC-DSF) are used from the most recent assessment available as of March 2025.

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