How China's Currency Swap Arrangements Can Be Alternatives to IMF Lending?

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January 2026

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Abstract

The IMF's role as lender of last resort has long underpinned the U.S. dominance in global financial governance. Yet how China challenges this "unfair order", as it long claims, remains insufficiently documented. This paper addresses this gap through an event study analysis, comparing the impacts of IMF lending programs and China's currency swap arrangements—which serve as a less conditional alternative—on borrowers' monthly Exchange Market Pressure (EMP). Our results indicate that both instruments significantly mitigate EMP. However, nuanced dynamics are revealed: the mitigating impact of China's swap lines upon signing and utilization surpasses that of IMF programs in the post-2008 era. Moreover, we discern distinct transmission channels; while IMF interventions primarily stabilize markets through foreign reserve support (a channel also employed by China), the utilization of Chinese swap lines additionally induces a substitution effect in import patterns toward Chinese goods. Collectively, our findings prove that China's swap lines could erode the IMF's traditional role as a provider of macroeconomic stability to developing countries, thereby gradually internationalizing the renminbi and simultaneously expanding its geopolitical influence.

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"Washington's support for Argentina's ongoing negotiations with the IMF hinges on President Milei distancing himself from China, specifically by ending a currency swap agreement with Beijing."

-Mauricio Claver Carone, Trump's special envoy for Latin America, April 3rd, 2025

1 Introduction

The intensifying rivalry between China and the United States is quickly permeating global economic governance. The World Bank and the International Monetary Fund (IMF), in which the United States holds veto power, have long been a cornerstone of U.S. dominance in the international economic system.[1] China has made no secret that reforming the current "unfair" global economic governance system is a national strategy.[2] In practice, China has established alternative development finance institutions and initiatives—most notably the Asian Infrastructure Investment Bank (AIIB) and the Belt and Road Initiative—mirroring the roles of the World Bank and the Marshall Plan, respectively. While these have been extensively examined (Broz et al., 2020; Dreher et al., 2018, 2019, 2021; Ferry and Zeitz, 2024; Qian et al., 2023, 2025; Strange, 2023; Wellner et al., 2025), how China's rising currency swap arrangements challenge U.S. dominance within the global monetary system—paralleling the IMF's function in providing macroeconomic stability for developing countries—remains underexplored.

[1] A landmark case occurred during the 1956 Suez Crisis, when the United States threatened to withhold IMF financing—crucial for stabilizing the United Kingdom's deteriorating financial position—unless the British government agreed to withdraw its troops from the Suez Canal, marking a major turning point that signaled the United Kingdom's decline from its position as a global superpower (Eichengreen, 2011).

[2] See, for instance, Chinese President Xi Jinping's address at the landmark 20th National Congress of the Communist Party of China, where he stated that "China upholds true multilateralism, promotes greater democracy in international relations, and works to make global governance fairer and more equitable." More recently, in April 2025, China's Foreign Minister Wang Yi explicitly emphasized that "the World Bank shareholding review and IMF quota adjustment are immediate priorities in correcting the historical injustice of the seriously inadequate representation and voice of the Global South" during a "BRICS meeting", last accessed August 21st, 2025.

China's emergence as a key provider of bilateral rescue lending is striking, as it is increasingly acting to assist countries grappling with balance-of-payment crises. According to Franz et al. (2025), between 2000 and 2021, around 250 billion USD has been provided by China in short-term liquidity assistance to emerging market and developing economies. This significant volume highlights China's growing influence in the international financial system and its increasing reliance on bilateral mechanisms, such as currency swap agreements, as tools of economic statecraft. This is likely to lead to geopolitical tension between the US and China in expanding and protecting their sphere of influence and dominance on the global stage. This paper thus compares the impact and mechanisms of IMF lending programs and China's bilateral currency swap arrangements on EMP, a key measure of speculative pressure on a country's currency, in an attempt to investigate the power dynamics between China and the US in the international financial and monetary system.

We propose a unified dual-choice model to illustrate how borrowing countries decide between IMF lending and China's currency swap lines based on cost–benefit considerations, with particular emphasis on political costs. From this framework, we derive a series of key hypotheses about borrowing behavior under different political and economic scenarios faced by policymakers in recipient countries. We then test these hypotheses using an event-study analysis of monthly data, examining the effects of both IMF programs and China's rescue lending interventions on a country's EMP, a metric that is particularly relevant for assessing the effectiveness of international financial assistance. Our empirical findings reveal a nuanced and evolving relationship: while both instruments effectively reduce EMP, the impact of China's swap lines has grown to be comparatively stronger in the post-2008 era. Although both IMF lending and China's currency swaps aim to mitigate external pressures, they do so through different mechanisms. The IMF provides immediate liquidity injections and often imposes

structural reform programs, which can reduce EMP through both direct reserve increases and positive market signaling effects. China's currency swaps, on the other hand, offer contingent liquidity, primarily in RMB, which may reduce EMP indirectly by preserving existing foreign exchange reserves and simultaneously facilitating trade. Thus, our results capture not only the direct effects of liquidity support but also the broader market dynamics and policy responses triggered by these mechanisms.

More importantly, we uncover distinct transmission channels that reflect the divergent philosophies of the two lenders. IMF programs, with their hallmark conditionality, compel countries to undertake fiscal consolidation and curtail imports, whereas China's swap lines, which are largely free of such policy demands, influence trade patterns by encouraging a shift in imports toward Chinese goods. These results collectively suggest that China's interventions are not merely supplementing the existing financial safety net but are actively challenging the IMF's traditional role, expanding China's own geopolitical influence, and advancing the internationalization of the renminbi via international trade.

This paper contributes to the growing literature in several ways. First, it adds to the expanding field of geoeconomics and geopolitics on the currency dominance and financial hegemony of the great power rivalry between the US and China. The competition between these two powers in development finance has been well documented (Broz et al., 2020; Cormier, 2023; Dreher et al., 2018, 2019, 2021; Ferry and Zeitz, 2024; Kern and Reinsberg, 2022; Qian et al., 2023, 2025; Strange, 2023). However, much less is known about how they compete for spheres of influence in the international monetary system, especially with respect to developing countries. The most closely related studies, Franz et al. (2025) and Horn et al. (2021), provide comprehensive analyses of the size, terms, and destinations of Chinese official lending. However, they do not estimate the effects of such lending on the financial distress of recipient countries, nor do they

compare its impact with that of IMF lending. Moreover, much of the existing literature focuses primarily on micro-level data—such as project-level financing or local economic outcomes—which risks overlooking broader macroeconomic consequences. Yet it is precisely these macro-level dynamics—such as exchange rate stability, reserve adequacy, and balance-of-payments pressures—that are most consequential for understanding the geopolitical rivalry between the United States and China at the level of high politics. A related and growing body of research examines sovereign debt owed by developing countries to China and how it is reshaping the landscape of sovereign debt restructuring (Ballard-Rosa et al., 2025; Chen, 2023; Ferry and Zeitz, 2024). This literature, however, focuses largely on restructuring outcomes rather than on countries' initial choices between alternative sources of macro-level liquidity. A smaller set of studies specifically investigates China's currency swap lines. For example, Liao and McDowell (2015) and McDowell (2019) analyze the effect of China's swap arrangements on the RMB internationalization and promoting trade and investment, but neither directly compares them with IMF lending, and the latter provides limited empirical evidence on their effectiveness. By examining these systemic macroeconomic effects, this paper offers a more comprehensive account of how economic competition translates into shifts in global power and influence. This paper thus significantly advances the understanding of the evolving global financial architecture by demonstrating that China is emerging as a potential challenger to the IMF's traditional role as an international lender of last resort. Particularly, we are among the first to document that the impact of China's swap line signings and utilizations is larger than that of IMF interventions in the post-2008 period. These nuanced findings suggest a competitive co-existence, offering a new perspective on the dynamics of global financial governance.

Second, our study extends the literature on the borrowing behavior of developing countries. Existing research largely treats sovereign borrowing as a supply-side phe-

nomenon, emphasizing constraints imposed by global liquidity conditions or domestic institutional limitations (Ballard-Rosa et al., 2021; Beazer and Woo, 2016; Brooks et al., 2022; Schneider and Tobin, 2020; Zeitz, 2022). Lipscy and Lee (2019) further find that in the absence of an external lender such as the IMF, countries tend to rely on self-insurance by accumulating excessive foreign exchange reserves, a strategy that is widely regarded as a costly and inefficient use of national savings. By contrast, Mosley and Rosendorff (2023) are among the first to analyze sovereign borrowing from a demand-side perspective, demonstrating that governments prefer to disclose less information tend to rely on less public forms of borrowing, such as private bank loans rather than bonds, and bilateral rather than multilateral official lending. They also assume that political leaders implicitly solve an optimization problem, balancing the benefits of financing against the political costs of fiscal transparency. Our theoretical model builds on but also enriches this perspective by explicitly modeling how government optimize their benefits and deriving testable hypotheses about how borrowing choices vary across political and economic conditions. Moreover, we extend their financing instruments by incorporating bilateral currency swap lines, which have emerged as an increasingly important source of short-term external liquidity amid a broader preference from multilateral to bilateral financing. Taken together, our first two contributions underscore the significance of this study for both academic research and policy debates. As competition and choice expand for developing countries, these dynamics have important implications for the reform of the IMF. Outside options matters for international organizations decision-making and reform (Lim and Vreeland, 2013; Voeten, 2001; Vreeland and Dreher, 2014). For the IMF, the existence of regional financing arrangements—even though they are typically smaller in scale—allows borrowing states to gain leverage in negotiations over IMF conditional lending (Clark, 2022). Beyond its policy conditionality, the IMF has long been criticized for lagging behind in institutional reform, due in

part to limited competitive pressure and persistent congressional veto power exercised by the United States. Thus when countries can choose between China's currency swap lines and IMF lending, this competition may catalyze institutional reform within the IMF, which has historically been less responsive to governance reform pressures than institutions such as the World Bank (Lipscy, 2015).

Third, our study makes a valuable contribution to the existing literature on assessing the effect of various elements of the global financial safety net (GFSN) for developing countries, particularly IMF and central bank swap arrangements. The role of the IMF in alleviating financial crises and promoting economic development has not been clearly established or even remains controversial (Przeworski and Vreeland, 2000; Stiglitz, 2002; Vreeland, 2003; Stone, 2004; Bird et al., 2004; Joyce, 2014; Scheubel and Stracca, 2019). Our research adds to an important strand of the literature that finds the IMF has indeed played a useful role in mitigating financial crises in developing countries (Eichengreen et al., 2008; Dreher et al., 2009; Papi et al., 2015). By employing monthly EMP data, we differ from much of the existing literature, which often relies on lower-frequency data or focuses primarily on microeconomic outcomes. The EMP index has a long and rich history in international finance, widely used to assess exchange rate stability, identify currency crises, and evaluate the effectiveness of policies aimed at mitigating currency pressures. Pioneering work by Girton and Roper (1977) introduced the concept, linking exchange rate changes and reserve movements. Subsequent research, particularly in the wake of currency crises in the 1990s, refined and popularized the measure. Eichengreen et al. (1995) and Obstfeld and Rogoff (1995) are foundational papers that extensively utilize and discuss variants of the EMP index in analyzing speculative attacks. The versatility of EMP in capturing various forms of external pressure makes it an indispensable tool for our comparative analysis of IMF and Chinese rescue lending. Our more granular analysis enables a more precise

identification of the timing and immediate effects of these interventions. On the other hand, a growing body of literature seeks to assess the impact of central bank swap arrangements which tend to be more efficient and accessible than the IMF. For instance, Goldberg et al. (2010) finds that during the 2008 Great Financial Crisis, the currency swap arrangements with the US Federal Reserve were effective at reducing the dollar funding pressures abroad and stresses in money markets and thus are an important part of a toolbox for dealing with systemic liquidity disruptions for foreign central banks. Similarly, Aizenman et al. (2022) reveals that, during the COVID-19 pandemic, the announcements of expansions in U.S. Federal Reserve liquidity facilities, or of auctions utilizing these facilities, led to appreciations of partner currencies against the U.S. dollar and even benefited more vulnerable economies. However, this line of research has primarily focused on developed economies or on swap lending by the Federal Reserve. But very few studies investigated the impact of China's currency central bank swap on mitigating financial stress for developing countries. We extend both lines of research by integrating the bilateral currency swap agreements by China can also serve as an important instrument for developing countries, and thus could be an alternative for IMF lending in mitigating currency crises.

Lastly, our research contributes to the literature on the mechanisms and policy implications associated with different forms of international rescue lending, including China's bilateral currency swap arrangements, which remain underexplored and often analyzed in a fragmented manner. On one side, studies on swap line mechanisms have typically emphasized a narrow set of channels. For instance, much of the existing work has focused on international capital flows (Goldberg and Ravazzolo, 2022; Goldberg and Krogstrup, 2023) or asset pricing (Bahaj and Reis, 2022). More recently, Bahaj and Reis (2025) demonstrates that RMB payments through SWIFT increased significantly after countries entered into swap agreements with China, an effect not attributable to

rising economic integration with China. Yet, these studies tend to examine swap lines from a single perspective. Our findings suggest that China's currency swaps operate not merely as payment facilitators, but rather as a systemic instrument that combines crisis prevention with the internationalization of the RMB through trade. On the other side, the literature on the mechanisms through which IMF programs influence crisis management is also relatively limited. While Dreher and Walter (2010) firstly shows that IMF interventions can help developing countries prevent financial crises measured by EMP, they do not explore the channels through which conditional lending shapes policy outcomes. Chapman et al. (2017) find that the impact of IMF lending on alleviating sovereign bond market pressures is highly conditional on factors such as loan size and conditionality, and thus mostly highlights substantial heterogeneity in the effectiveness of IMF programs. By bridging these two strands of research, our study reveals that IMF lending is consistently associated with fiscal consolidation measures (mainly through reduced imports, lower fiscal deficits, and declining government debt), reflecting the Fund's hallmark conditionality. In contrast, China's swap lines, though effective in alleviating exchange market pressure (EMP) and strengthening reserves, exhibit little evidence of being linked to contractionary fiscal policies. This distinction underscores China's alternative approach to financial assistance—one that imposes fewer explicit demands for domestic policy adjustment. Consequently, countries in distress face divergent choices: turning to the IMF, with its policy conditionality and emphasis on fiscal retrenchment, or to China, whose swap lines preserve a greater degree of policy space while simultaneously advancing RMB internationalization.

The remainder of the paper is organized as follows. Section 2 provides background information on China's currency swap lines and discusses their comparability with IMF lending. Section 3 develops a unified theoretical framework and derives four main hypotheses. Section 4 introduces the data, defines the key variables, and presents

several representative case studies. Section 5 tests the main hypotheses, followed by a mechanism analysis that explores the underlying channels in section 6. Section 7 presents a range of heterogeneity analyses, placebo tests, and robustness checks. Section 8 concludes and outlines directions for future research.

2 China's Currency Swap Arrangement and IMF lending

Currency swap arrangements have a long history, dating back at least to the 1960s, when the U.S. Federal Reserve used them to defend the Bretton Woods system by providing dollar liquidity to countries facing balance-of-payments pressures (McDowell, 2019). China first introduced swap lines with Asian countries following the 1997 Asian Financial Crisis, although these early arrangements were denominated in U.S. dollars. Following the U.S. revival of currency swap lines during the 2008 Global Financial Crisis, PBoC signed its first RMB swap agreements with the Bank of Korea and the Hong Kong Monetary Authority in December 2008. Each agreement was valued at RMB 180 billion (approximately USD 26 billion at the time), reflecting the close trade relationships among the parties. In the years that followed, the program expanded rapidly. As of May 31 2025, the PBoC maintains more than 32 active swap lines with an estimated total size of around RMB 4.5 trillion (over USD 600 billion), covering a wide range of economies across Asia, Africa, Latin America, and Europe (See Figure 1).

However, China's currency swap fundamentally differs from the swap lines US Fed's goals which is mainly to provide US dollar liquidity for those countries with dollar exposure, as the USD is already the global dominant currency. Moreover, the US only signs contracts with several very developed countries, such as the Bank of Japan, Bank

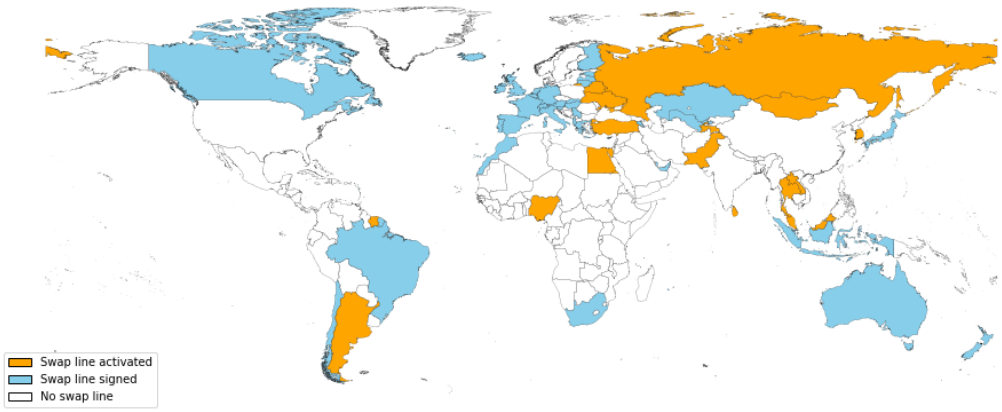

Figure 1: The Geography of China's Signed and Activated Swap Lines

of England, and a handful of emerging-market central banks considered systemically important, such as those of Brazil, Mexico, and South Korea. For the rescue funding for developing countries, the US prefers to have the IMF, over which the US has veto power over, to provide institutionalized rescue funding. For China, the objectives of these swaps extend beyond liquidity support but more focused on promoting the internationalization of the renminbi (RMB) and China's influence in developing countries via supporting the real economy. This is fundamentally because China has not yet liberalized its capital account, and thus the Chinese RMB is not fully convertible and thus make internationalization of RMB is not feasible. The establishment of bilateral local currency swap agreements allows foreign central banks and financial institutions to obtain RMB liquidity, which can then be used for trade settlement and cross-border investment in RMB. In effect, while full liberalization of the capital account remains unfeasible in the short term, swap agreements function as a transitional institutional arrangement—opening a controlled "window" through which overseas entities can access RMB liquidity, thereby supporting the gradual and managed advancement of RMB internationalization which is the typical way of PBOC's reform, such as with bond market Clayton et al. (2025). In other words, by allowing partner central banks to provide RMB

liquidity to their domestic banks and firms, these agreements facilitate the settlement of trade and investment in RMB rather than in U.S. dollars. This has been particularly important for developing economies that face recurring balance-of-payments difficulties and for countries with growing trade and financial ties with China. Argentina and Pakistan, for example, have repeatedly drawn on their RMB swap lines to supplement reserves during financial crises. Argentina reportedly used RMB 35 billion (about USD 5 billion) in 2023 alone to stabilize its reserves, while Pakistan rolled over and expanded its RMB swap line to help meet external financing needs. These cases highlight how China's swaps have evolved from symbolic agreements into a tangible form of crisis finance and particularly China's influence in developing countries.

Another critical distinction is conditionality. The Fed's swaps are generally short-term and carry implicit expectations of macroeconomic prudence, and IMF programs that often accompany them require fiscal and structural reforms. China's swaps, by comparison, are typically provided without explicit policy conditions, offering countries greater flexibility in using them. This has made them attractive to governments that face recurring crises but prefer to avoid the austerity measures associated with IMF support.

More importantly, the US currency swap lines usually operate on a temporary basis, activated primarily during episodes of financial distress. These arrangements generally have maturities of around six months, underscoring their emergency and short-term character. By contrast, the People's Bank of China (PBoC) has tended to conclude swap agreements with considerably longer horizons, most commonly three to five years, mirroring IMF lending. This extended duration reflects not only a more sustained commitment to providing RMB liquidity but also a strategic orientation toward institutionalizing long-term monetary cooperation with partner economies.

Taken together, these patterns underscore distinct differences between China's cur-

rency swap arrangements and those provided by the US Fed. The U.S. Federal Reserve's swaps reinforce the dollar-centered order by acting as a stabilizing backstop for advanced economies and systemic markets, while China's swaps expand the role of the RMB by targeting developing economies and embedding geopolitical ambition and internationalization of the RMB by combining providing financial stability and facilitation of trade and investment. As such, China's network grows—both in scale and in actual usage—it represents an emerging challenge to the traditional dominance of the IMF in providing rescue funding for developing countries.

This does not come as a surprise. China's relationship with the International Monetary Fund (IMF) has historically been ambivalent, reflecting both its role as a major stakeholder in the existing international financial architecture and its dissatisfaction with elements of the Fund's governance structure. Since joining the IMF in 1980, China has gradually increased its quota share and voting power, particularly after the 2010 quota and governance reforms, which elevated China to the third-largest shareholder after the United States and Japan. Nevertheless, China has long argued that the IMF's governance arrangements continue to disproportionately reflect the interests of advanced economies, particularly given that the United States retains veto power over major decisions and Europe continues to dominate the allocation of executive board seats. According to the IMF's own data, China's gross GDP is projected to be more than 4.5 times that of Japan by 2025, while its voting share remains lower than Japan's.[3] This misalignment between formal voting power and China's growing economic weight has been a central source of tension in China–IMF relations.

At the practical level, China's stance toward the IMF has been mixed. On the one hand, China has consistently supported the IMF's role as a global lender of last resort and as a core international financial institution. Chinese leaders regularly meet

[3]See, "IMF Voting Power" and "IMF GDP Prediction", last accessed December 21st, 2025.

with the heads of major international organizations, including the Managing Director of the IMF.[4] In addition, China has recently initiated the establishment of an IMF office in Shanghai to further strengthen cooperation with the Fund.[5] On the other hand, China has long been critical of the IMF for the politicisation of its programmes and for imposing lending conditionalities rooted in the Washington Consensus. China views these conditionalities as excessively intrusive and often counterproductive to developing countries. In contrast to the Fund's insistence on fiscal consolidation and structural reforms, China's currency swap arrangements are less explicitly tied to domestic policy conditionality. This contrast underscores China's dual approach: participation in the IMF system to make the best of its legitimacy, while simultaneously offering alternative mechanisms that reflect a different approach to international financial governance.

Specifically for renminbi internationalization and the expansion of RMB's global usage, China's various initiatives both complement and challenge the IMF's role, highlighting its broader ambition to shape a more multipolar international monetary system. China has promoted the greater use of Special Drawing Rights (SDRs) as a global reserve asset—a goal realized in 2016 when the renminbi was officially included in the SDR basket and now account for 12.28 percent weight. For China, this represented not only a symbolic achievement of international recognition but also a concrete step toward reducing what it perceives as the "exorbitant privilege" of the U.S. dollar. A more direct challenge to the IMF lies in China's bilateral currency swap arrangements, which operate in parallel with IMF lending mechanisms by providing contingent liquidity. These arrangements have the potential to reduce the Fund's influence in the developing world, as China's swap agreements differ significantly from those of the United States, which are concentrated primarily on developed economies. By contrast, 26 of the 38 countries

[4]For instance, every year China holds "1+10" Dialogue with Heads of Major International Economic Organizations which includes the IMF.

[5]IMF Launches Shanghai Center.

that have signed currency swap agreements with China are developing countries.[6].

From the perspective of developing countries, China's currency swap lines provide a meaningful alternative to IMF lending. On the one hand, IMF programs typically impose strict conditionality in the form of fiscal consolidation, structural reforms, and intensive monitoring. These requirements can constrain policy autonomy, provoke domestic political backlash, reduce government spending on education, and even disproportionately disadvantage women workers, particularly in developing countries with fragile political coalitions (Dreher et al., 2015; Kern et al., 2024; Stubbs et al., 2020; Vreeland, 2003). On the other hand, IMF conditionality has been shown to be applied unevenly, often in ways that favor countries with closer political ties to the United States (Dang and Stone, 2021; Forster et al., 2025; Stone, 2004; 2008, 2011). In either case, borrowing from the IMF is very likely to leave politicians worse off—either because harmful conditionality exacerbates economic and social costs, or because politically favored treatment increases dependence on U.S. influence. In contrast, China's currency swap lines are largely free of ex ante policy conditionality and are framed as technical liquidity cooperation arrangements rather than crisis-management programs, making them politically less visible and more compatible with governments' preferences for preserving policy sovereignty. These features are particularly salient in an environment where governments can choose among alternative sources of external finance (Mosley and Rosendorff, 2023). As a result, whereas IMF financing often serves as a lender of last resort that governments approach only under acute distress, China's swap lines may function as a more attractive and preemptive source of external liquidity for stabilizing markets without incurring the political and reputational costs associated with borrowing from IMF .

Interestingly, our preliminary text analysis shows that China appears to intention-

[6]See Table A.2

ally downplay the role of swap lines in maintaining macroeconomic stability. Instead, official announcements consistently emphasize the facilitation of bilateral trade and investment. Fewer than half of the announcements explicitly refer to macroeconomic stabilization as a purpose of the swap lines, as shown in Table 1, which highlights a clear asymmetry in the stated objectives of China's bilateral currency swap agreements across different country groups. While developing countries account for the majority of China's swap partners (26 out of 38), official announcements overwhelmingly emphasize trade facilitation and investment support rather than macroeconomic stabilization: all 26 developing-country agreements mention trade or investment, but fewer than half (11) explicitly refer to financial or macro-stability objectives. In contrast, although China has signed fewer swap agreements with developed countries, a larger proportion of these agreements acknowledge a macro-stability function (7 out of 12). This pattern suggests that China frames its swap lines with developing countries primarily as instruments for promoting bilateral economic exchange and RMB internationalization, rather than as substitutes for IMF-style crisis financing, even though in practice these arrangements may still provide contingent liquidity. A particularly notable case is Argentina, which has activated its swap line and used it as a bridge facility ahead of IMF SDR disbursements to ease short-term liquidity pressures. Yet, compared with all other announcements, Argentina is the only country with multiple swap agreements for which the stated purpose does not explicitly mention "maintaining macroeconomic stability."

3 Theoretical Framework: A Dual-Choice Optimization Model

Our theoretical framework is inspired by Mosley and Rosendorff (2023), who argue that, rather than focusing solely on the creditor side, it is equally important to examine how

Table 1: The Text Analysis of Stated Purposes in Swap Official Announcements

Stated Purpose	**Developing Countries**	**Developed Countries**
Trade	46	28
Investment	46	28
Financial Cooperation	27	20
Financial Stability	25	23
Economic Development	5	2
Total	**149**	**101**

Notes: This table summarizes the stated purposes of China's bilateral currency swap agreements based on official announcements released by the People's Bank of China. "Trade" refers to keywords emphasizing the facilitation of bilateral trade and "Investment" refers to keywords emphasizing the facilitation of bilateral investment. "Financial Cooperation" indicates the keywords emphasizing the facilitation of financial cooperation. "Financial stability" refers to the explicit maintenance of financial stability. "Economic Development" indicates the keywords related to boosting economic growth. Country classification follows the World Bank income categories. A full list of countries and coding details is provided in Table A.2.

borrowing governments make choices across various potential financial sources based on their cost–benefit calculations. Thus, to formalize the decision-making process of a borrowing country facing balance-of-payments difficulties, we construct a theoretical framework that captures the evolving dynamics of the global financial safety net. In this model, a sovereign borrower facing Exchange Market Pressure (EMP) must secure external liquidity to stabilize its currency. The central tension arises from the strategic choice between two distinct providers: the International Monetary Fund (IMF), representing the traditional, U.S.-led financial order, and China, representing an emerging alternative via bilateral currency swap lines.

3.1 A Model on Liquidity Asymmetry and Lender Choice

A critical assumption of our model is the asymmetry in the effectiveness of liquidity provided by the two lenders. The IMF disburses funds in U.S. dollars, which remains the dominant global reserve currency and the primary vehicle for international intervention. When a country faces severe Exchange Market Pressure (EMP), the crisis typically

manifests as an acute shortage of hard currency required to defend the exchange rate or service external debt. USD liquidity can be immediately deployed to intervene in foreign exchange markets or settle broad international obligations.

In contrast, the liquidity provided by China's swap lines is denominated in Renminbi (RMB), a currency that is not yet fully convertible and cannot be freely used to intervene in global markets to stabilize the local currency against the dollar. While RMB liquidity helps mitigate EMP indirectly, primarily by allowing the recipient to pay for imports from China without using scarce dollar reserves, it is a less direct substitute for the hard currency needed to stop a speculative attack. Furthermore, IMF programs carry a strong signaling effect of multilateral endorsement that restores investor confidence, a feature less inherent in bilateral swap arrangements. Consequently, we model the liquidity quality of IMF aid (q_M) as strictly superior to that of Chinese aid (q_C).

Let G be the total amount of external liquidity (the **Liquidity Gap**) required by a country facing Exchange Market Pressure (EMP). The government's task is to choose the optimal amounts of assistance from the IMF (A_M) and China swap line agreements (A_C), subject to the constraint $A_M + A_C = G$. The total loss function, L, captures three core trade-offs based on the distinct attributes of IMF and China aid:

1. **Crisis Mitigation Costs:** The effectiveness of liquidity assistance is determined by its quality. We define q_M and q_C as the liquidity quality factors ($q_M > q_C$, reflecting USD superiority). The loss is a quadratic function of the unmet liquidity need:

$$\text{Loss}_{\text{Crisis}} = \gamma \left(G - q_M A_M - q_C A_C\right)^2$$

   where γ is a parameter reflecting the country's sensitivity to crisis risk (i.e., the severity of the EMP).

2. **Political Costs:** The IMF imposes high conditionality, incurring a direct political

cost k_M per dollar of aid:

$$\text{Loss}_{\text{IMF}} = k_M A_M$$

3. **Trade Opportunity Costs:** China's swaps provide a marginal trade benefit βT_i per dollar, where T_i is the country's pre-existing trade volume with China. Choosing IMF aid means giving up this trade benefit, an opportunity cost. We model this as a negative loss (a benefit) associated with A_C:

$$\text{Loss}_{\text{China}} = -\beta T_i A_C$$

To sum up, the government minimizes the total loss function:

$$\min_{A_M, A_C} L = \gamma(G - q_M A_M - q_C A_C)^2 + k_M A_M - \beta T_i A_C \tag{1}$$

subject to the constraint $A_M + A_C = G$ and $A_M, A_C \geq 0$.

3.2 The Optimal Allocation

Substituting the constraint $A_C = G - A_M$ into the objective function (Equation 1) allows us to solve for the unconstrained optimal allocation of IMF aid, A_M^*. Let $\Delta q = q_M - q_C$ be the liquidity quality gap.

The first-order condition (FOC) is set to zero:

$$\frac{\partial L}{\partial A_M} = -2\gamma \Delta q \left[G(1 - q_C) - A_M \Delta q\right] + (k_M + \beta T_i) = 0$$

Solving for A_M^*:

$$A_M^* = \underbrace{\frac{G(1-q_C)}{q_M - q_C}}_{\text{Baseline Liquidity Demand}} - \underbrace{\frac{k_M + \beta T_i}{2\gamma(q_M - q_C)^2}}_{\text{Cost-Driven Reduction}} \tag{2}$$

The actual amount of assistance is then determined by the corner solutions: $A_M = \max(0, \min(G, A_M^*))$.

3.3 Hypotheses

The structure of the optimal allocation formula (Equation 2) yields several testable hypotheses regarding the factors that determine the choice between the IMF and China's currency swap line.

- **Hypothesis 1:** In case of extreme panic, i.e., $\gamma \to \infty$, the cost-driven reduction term approaches zero. Thus, A_M^* converges to its maximum value (the baseline demand). Intuitively, this suggests that in severe crises, the need for the highest-quality liquidity (q_M) dominates all other concerns, including conditionalities and trade benefits. **Thus, countries in desperate need of foreign liquidity still flock to the IMF.**

- **Hypothesis 2:** An increase in the direct political cost of IMF conditionality (higher k_M) **decreases** A_M^*. In other words, this reflects a substitution effect: as the "price" of IMF aid rises, the country shifts towards China's less-conditional swap lines.

- **Hypothesis 3:** An increase in the marginal trade benefit of Chinese aid (higher βT_i) **decreases** A_M^*. Countries with strong existing trade ties with China will value the trade synergy benefit more, leading them to increase their reliance on China's swaps (A_C increases).

- **Hypothesis 4:** As the RMB internationalizes and China's liquidity quality (q_C) increases (reducing Δq), the cost-driven reduction term grows rapidly (due to

Δq^2 in the denominator). This predicts that a convergence in liquidity quality dramatically **increases China's competitiveness**, enabling countries to switch away from the IMF more readily based on the lower cost and trade benefits.

4 Data, Variables, and Cases

The empirical analysis in this study relies on a comprehensive dataset of monthly observations for a broad panel of countries. Our key variables are constructed as follows.

4.1 Exchange Market Pressure (EMP)

The key dependent variable in this study is Exchange Market Pressure (EMP), which measures the intensity of speculative pressure on a country's currency. This approach acknowledges that central banks can respond to speculative attacks through a combination of exchange rate changes, foreign exchange interventions, and interest rate adjustments. As noted by Goldberg and Krogstrup (2023), viewing capital flow responses to global factors separately from the exchange rate or policy response provides an incomplete picture of the actual capital flow pressures at play. EMP is designed to capture the multiple ways in which governments can respond to currency crises: either by allowing their currency to devalue (or float), by directly intervening in the foreign exchange market (spending foreign reserves), or by tightening monetary policy (raising interest rates). A high EMP value indicates significant speculative pressure, reflecting greater strain on the exchange rate and the broader external sector. EMP indices, therefore, offer a revamped approach to understanding international capital flow pressures by combining observed exchange rate adjustments with estimates of incipient pressures masked by foreign exchange interventions and policy rate adjustments.

The EMP index is calculated on a monthly basis using a weighted index that in-

corporates three components: (1) Exchange Rate Changes (Δe_t): Fluctuations in the nominal exchange rate (e.g., local currency per USD). A depreciation of the local currency (an increase in) contributes positively to EMP. (2) Reserve Changes (Δr): Variations in foreign exchange reserves. A decrease in reserves (negative Δr) reflects central bank intervention to defend the currency and thus contributes positively to EMP. (3) Interest Rate Differentials (Δi): Changes in domestic interest rates relative to a stable reference country's interest rate. An increase in domestic interest rates relative to the benchmark reflects monetary policy tightening to curb capital outflows and stabilize the currency, thus contributing positively to EMP. The EMP index is typically constructed as a weighted average of these components. A common formulation, following prominent literature (e.g., Eichengreen et al., 1995; Obstfeld and Rogoff, 1995; Dreher and Walter, 2010), standardizes each component by its historical standard deviation to ensure that no single component dominates the index due to differences in volatility. The formula used in this study is:

$$EMP_t = \frac{\Delta e_t}{\sigma_{\Delta e}} - \frac{\Delta r_t}{\sigma_{\Delta r}} + \frac{\Delta i_t}{\sigma_{\Delta i}}$$

where σ denotes the historical standard deviation of each respective component over a chosen sample period. The negative sign for reserve changes implies that a decline in reserves (a common central bank response to defend the currency) increases EMP. Similarly, a rise in the domestic interest rate relative to the foreign rate, or a depreciation of the exchange rate, increases EMP. This method effectively addresses the issue of dimensional differences by giving higher weight to variables with lower volatility (Weymark, 1995).

The EMP index has a long and established history in the field of international finance, having been widely used to assess exchange rate stability and identify currency crises. From the pioneering work of Girton and Roper (1977) to the more recent ap-

plications by Dreher and Walter (2010) and Aizenman et al. (2022), the framework's robustness and relevance have been consistently validated. Notably, our construction of the EMP index is also informed by the methodology of Goldberg and Krogstrup (2023), which provides a robust theoretical foundation to ensure our measure accurately reflects both observed and incipient pressures on a currency. This makes EMP a well-supported and precise tool for our comparative analysis of IMF and Chinese rescue lending.

4.2 International Rescue Lending Variables

To analyze the impact of international rescue lending, we construct several key dummy variables capturing the signing and utilization of both IMF lending programs and China's bilateral currency swap agreements.

We construct two dummy variables for IMF lending. $IMF\ Lending$ is a binary variable that takes a value of 1 for the month an IMF lending agreement is signed with a recipient country, and 0 otherwise. This variable captures the immediate signaling effect and market perceptions associated with the formal commitment of IMF support. $IMF\ Lending\ Use$ is another binary variable set to 1 for months when a recipient country actually draws on IMF funds, and 0 otherwise. This variable reflects the direct liquidity injection and the material impact of IMF resources on the country's balance of payments. Data for these variables are compiled from Vreeland (2007) and IMF publicly available records, including Staff Reports and Stand-By Arrangement (SBA) or Extended Fund Facility (EFF) disbursement schedules, ensuring accurate timing of both signing and utilization events.

Similarly, we construct two dummy variables for China's swap lines. $CN\ Swap$ is a binary variable equal to 1 for the month a bilateral currency swap agreement is signed between the People's Bank of China (PBoC) and a recipient country's central bank, and 0 otherwise. This captures the pre-arranged credit line's announcement

Table 2: Summary Statistics

Key Variables	Observations	mean	std. dev.	min	max
EMP	73,790	-0.0004	0.0832	-4.169	6.296
CN Swap	118,296	0.0264	0.160	0	1
CN Swap Use	118,296	0.0101	0.0998	0	1
IMF Lending	123,230	0.215	0.411	0	1
IMF Lending Use	117,107	0.140	0.347	0	1
reserve_mon	80,861	3.041e+10	1.779e+11	-4.451e+07	3.993e+12

Notes: This table presents summary statistics for the key variables used in our analysis, covering the period from 2000 to 2024. EMP is our standardized dependent variable, Exchange Market Pressure. CN Swap and CN Swap Use are dummy variables representing the signing and utilization of China's bilateral currency swap agreements. IMF Lending and IMF Lending Use are dummy variables for the signing and utilization of IMF lending programs. reserve_mon measures monthly changes in foreign exchange reserves, a component of the EMP index.

effect. $CN\ Swap\ Use$ is a binary variable that takes a value of 1 for months when a recipient country actually draws on its established PBoC swap line, and 0 otherwise. This variable reflects the direct provision of Renminbi (RMB) liquidity. Information on China's swap agreements and their use is sourced from official announcements by the PBoC, recipient central banks, and specialized databases tracking China's overseas lending, such as those by Franz et al. (2025).

Our descriptive statistics in Table 2 reveal the relative prevalence of these rescue lending instruments within our dataset. Over 20% of the country-month observations in our sample are associated with the signing of an IMF lending agreement, with actual use of IMF funds occurring in 14% of these observations. Reflecting its status as a newer, but rapidly growing, player in the rescue lending landscape, China's bilateral swap line agreements are present in 2.6% of country-month observations for signing, and their actual utilization is observed in 1% of the observations (but the ratio is increasing from 2009 to 2017). These figures provide important context highlighting the established presence of the IMF versus the more recent, yet impactful, emergence of China's liquidity support.

4.3 EMP and Swap Line Drawing Cases: Argentina and Belarus

A preliminary event study of specific cases offers a more tangible illustration of our core findings. Figures 2 and 3 present a visual event study for two key cases: Argentina and Belarus. In both instances, the EMP index is plotted over time for a 12-month event window, with a red vertical line marking the specific month when the country utilized its bilateral currency swap line with China—July 2014 for Argentina and May 2015 for Belarus. As the figures demonstrate, in both cases, the Exchange Market Pressure shows a clear decline shortly after the swap line was activated. These illustrative plots visually reinforce the central argument that China's swap lines are an effective tool for mitigating external financial stress and provide an intuitive foundation for our formal regression results.

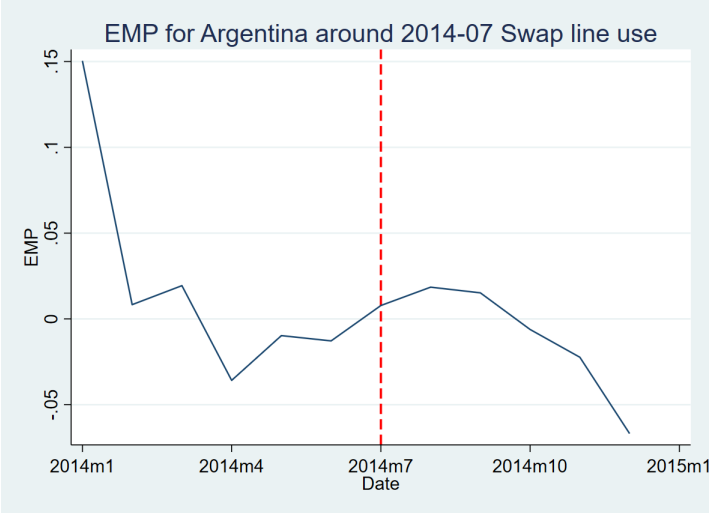

Figure 2: EMP case: Argentina before and after swap line drawing in July 2014

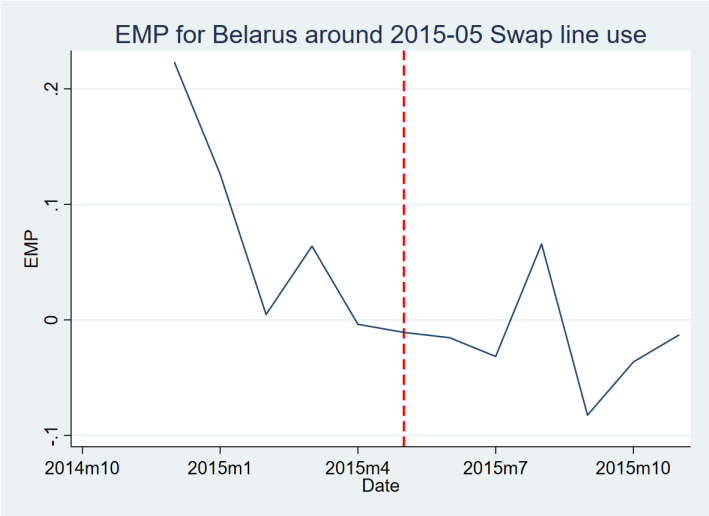

Figure 3: EMP case: Belarus before and after swap line drawing in May 2015

5 Empirical Design

5.1 Determinants of Assistance: *Ex-Ante* versus *Ex-Post* Conditionalities

Before analyzing the effectiveness of these rescue instruments on EMP, we first examine the determinants of a country's decision to seek assistance. This analysis serves to empirically validate the theoretical predictions derived in the previous model. Specifically, we test whether trade synergies, crisis severity, and cost of conditionality drive the choice between the IMF and China. To do so, we estimate two panel logit regressions using annual country-year observations, where the dependent variables are binary indicators of whether country i signed a currency swap agreement with China in year t, and whether country i signed a financial aid agreement with the IMF in year t. The results are displayed in Table 3.

The results reveal a distinct selection mechanism that directly confirms Hypothesis III regarding trade synergies. We find a positive and statistically significant coefficient for trade exposure to China (measured as total trade with China divided by GDP)

Table 3: The determinants of a country's decision to seek assistance

	(1)	(2)	(3)	(4)
Dep.var: Dummy	Swap Signing	Swap Use	IMF Signing	IMF use
tradeCN_toGDP	0.435***	0.704***	0.044	0.050
	(0.085)	(0.138)	(0.029)	(0.032)
realGDP growth	-0.081**	-0.181***	-0.084***	-0.098***
	(0.034)	(0.045)	(0.018)	(0.019)
Inst. Quality	-3.072	6.127	-3.909**	0.936
	(3.159)	(5.300)	(1.561)	(1.793)
reserve_L1	3.303***	1.986***	-1.059***	-0.792***
	(0.424)	(0.530)	(0.129)	(0.135)
Observations	622	298	1309	1019
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Notes: This table presents the results of panel logit regressions examining the determinants of a country's decision to sign or use China's currency swap lines versus IMF lending programs. The analysis uses annual country-year panel data. The dependent variables are binary indicators: Swap Signing and Swap Use take the value of 1 if a country signs or utilizes a swap agreement with China in a given year, respectively; IMF Signing and IMF Use take the value of 1 if a country signs or draws on an IMF lending arrangement. The key independent variables include: Trade Exposure to China, calculated as the sum of a country's imports from and exports to China divided by its GDP; Real GDP Growth, measuring the annual percentage growth rate of GDP; Institutional Quality, an index sourced from the International Country Risk Guide (ICRG) where higher values denote better governance; and Log Reserves, defined as the natural logarithm of the country's foreign exchange reserve levels. All regressions include country fixed effects to control for time-invariant unobservables. Robust standard errors are reported in parentheses. Significance levels are denoted as: *** p-value less than 0.01, ** p-value less than 0.05, * p-value less than 0.1.

in the China swap regression, whereas the coefficient for trade exposure in the IMF agreement regression is not significant. This divergence suggests that countries are indeed optimizing for the non-crisis benefits of the swap arrangements. For economies deeply integrated with China, the swap line functions not merely as a liquidity backstop but as a tool to facilitate trade settlement and capture economic synergies, consistent with our hypothesis that higher trade volumes with China increase the relative benefits of choosing China over the IMF.

Furthermore, our analysis of foreign reserves validates Hypothesis 1, which predicts a "Panic Effect" driven by liquidity quality. We find similar coefficients for the real

GDP growth but a stark contrast in the coefficient for reserve: it is negative in the IMF agreement regression but positive in the China swap regression. The negative relationship for the IMF indicates that countries with depleted reserves—those facing immediate insolvency or extreme panic—are significantly more likely to turn to the IMF. This supports Hypothesis I, confirming that the IMF remains the "Lender of Last Resort" for the most desperate cases where the superior quality of USD liquidity (q_M) dominates all other concerns. In contrast, the positive relationship for China suggests that its swap lines are utilized by countries that still retain a liquidity buffer, rather than those in a deep crisis.

Finally, the results shed light on the distinct conditionality structures of the two lenders, providing support for Hypothesis 2. In the China swap regression, the Institutional Quality coefficient is not statistically significant, confirming that China's lending is largely unrelated to the domestic governance of the borrower and imposes near-zero ex-ante conditionality. In contrast, the IMF agreement regression shows a negative coefficient for Institutional Quality, suggesting that countries with weaker governance are more prone to crises and thus more likely to seek IMF help. However, when we replace the dependent variable with the actual use of IMF funds, the effect of Institutional Quality becomes insignificant. This reversal highlights the ex-post conditionality of the Fund: while weak states may apply for aid out of desperation, they must often improve their institutional quality or commit to rigorous reforms to actually receive the disbursements. This "price" of conditionality drives countries that cannot afford to do so toward the less burdensome Chinese alternative.

5.2 The Impact on EMP across Sample Periods

Having established the determinants of lender choice, we now turn to the critical question of whether there are differences in outcome between IMF lending and China's swap

lines for developing countries. As the results in Section 5.1 confirmed that countries self-select into different rescue mechanisms based on their specific economic needs and constraints, this selection process raises an important empirical follow-up: once a country has chosen its preferred instrument, how effective is that instrument in actually stabilizing the currency? In this section, we evaluate the impact of both IMF lending and China's swap lines on Exchange Market Pressure (EMP) to determine if the "less conditional alternative" can match the stabilization power of the traditional lender of last resort.

Overall, our results provide evidence that both IMF lending and China's bilateral swap lines significantly reduce EMP in recipient countries. This finding underscores the expanding landscape of international financial assistance, where China is increasingly asserting its role as a key provider of liquidity. The results, detailed in Table 4 (showing both sample periods), allow for a more nuanced understanding of the evolving dynamics between traditional multilateral institutions and emerging bilateral frameworks.

The regression results reveal that both types of rescue lending instruments are effective in mitigating EMP. However, a critical insight emerges when comparing different sample periods. We observe that the effect of signing IMF lending agreement on EMP is notably smaller in the 2008-2024 period compared to the broader 2000-2024 full sample period. This temporal shift is particularly salient given that China initiated its bilateral currency swap agreements from 2008 onwards, marking its more active engagement in providing international liquidity support. Therefore, to precisely capture this evolving landscape, our analysis partitions the full sample into two distinct periods: 2000-2008 and 2008-2024. This division allows us to specifically examine the competitive dynamics and the changing efficacy of these instruments before and after China's more pronounced entry into the global rescue lending arena.

This diminishing effect of IMF lending in the later period (2008-2024) can be inter-

preted as evidence that China is indeed replacing part of the IMF's role as an international lender of last resort. As China's bilateral swap lines have become more prevalent and accessible, they offer an alternative source of financing for countries facing external financial distress. This availability of an alternative lender might lessen the immediate and acute market pressure that historically responded most strongly to IMF interventions, thereby diluting the IMF's singular impact on EMP. The market, now having more options, may not react with the same intensity to IMF agreements as it did when the IMF was the virtually uncontested primary emergency lender.

However, the effect of the actual use of IMF lending on EMP is still significant and even larger for 2008-2024 compared with 2000-2024. This suggests that while the signaling effect of a signed agreement may have weakened, the direct impact of the funds themselves remains critical, especially during the period of heightened competition.

Furthermore, a significant finding from our analysis of the 2008-2024 sample period is that the absolute magnitudes of the coefficients for China's swap line signing ($policy\_swap$) and actual use ($policy\_swapu$) are larger than those for IMF loan signing ($policy\_imf$) and use ($policy\_imfu$). This indicates that within this contemporary period, the market's response to China's interventions in terms of EMP reduction appears to be stronger than to the IMF's. This further solidifies the argument that China is playing a more prominent and impactful role in international financial assistance. Despite this observed shift and the comparatively larger effects of China's swap lines, our findings also cautiously suggest that China has not completely overshadowed the importance of the IMF. While China's influence is growing and its swap lines are effective in reducing EMP, the IMF continues to play a vital role in global financial stability. This suggests a more competitive, rather than outright substitutive, relationship between the two forms of rescue lending.

To assess the economic significance of these estimates, we interpret the coefficients

Table 4: The impact of IMF lending and China swap line event on EMP

Panel A: 2000-2024				
Event	EMP	EMP	EMP	EMP
policy_imf	-0.0062***			
	(0.0020)			
policy_imfu		-0.0029*		
		(0.0015)		
policy_swap			-0.0129**	
			(0.0061)	
policy_swapu				-0.0233***
				(0.0069)
Constant	0.0029**	0.0008	0.0148***	0.0271***
	(0.0014)	(0.0010)	(0.0043)	(0.0049)
Observations	4,284	3,838	790	365
R-squared	0.1607	0.1558	0.2658	0.3102
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES
Panel B: 2008-2024				
Event	EMP	EMP	EMP	EMP
policy_imf	-0.0050***			
	(0.0018)			
policy_imfu		-0.0036*		
		(0.0018)		
policy_swap			-0.0130**	
			(0.0061)	
policy_swapu				-0.0233***
				(0.0069)
Constant	0.0037***	0.0019	0.0143***	0.0271***
	(0.0013)	(0.0013)	(0.0044)	(0.0049)
Observations	2,665	2,430	775	365
R-squared	0.1825	0.1751	0.2650	0.3102
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Notes: This table presents the results of a linear regression event study on the effect of IMF lending and China's swap lines on Exchange Market Pressure (EMP), based on the event window of 12 months around each policy event (signing agreement or use of funds from IMF or China bilateral swap lines). The analysis uses monthly panel data with country and year fixed effects. The key independent variables are dummy variables set to 1 for the 6-month window after each respective policy event (signing or use of funds). Coefficients of "policy_imf" and "policy_imfu" capture the effects of IMF loan agreements and their utilization. Coefficients of "policy_swap" and "policy_swapu" capture the effects of China's bilateral swap line agreements and their utilization. Robust standard errors are reported in parentheses. Significance levels are denoted as: *** p-value less than 0.01, ** p-value less than 0.05, * p-value less than 0.1.

relative to the sample distribution of Exchange Market Pressure. The estimated coefficient for China's swap signing (-0.0129) implies that the establishment of a swap line reduces EMP by approximately 0.16 standard deviations (based on the sample standard deviation of 0.083). In comparison, the signing of an IMF agreement (-0.0062) reduces EMP by roughly 0.075 standard deviations. This suggests that, in the post-2008 era, the immediate stabilizing impact of a Chinese swap agreement is nearly double that of an IMF program.

The magnitude of this effect becomes even more tangible when benchmarked against a chronically distressed economy like Argentina. For context, the average monthly EMP for Argentina—a country characterized by recurrent financial instability—is 0.0143. Our estimates indicate that the signing of a Chinese swap agreement reduces EMP by 0.0129, a magnitude equivalent to 90% of Argentina's average monthly pressure. In practical terms, this implies that a single swap agreement has the potential to almost entirely offset the baseline exchange market pressure faced by a typical crisis-prone emerging market. Similarly, the IMF signing effect (0.0062) is substantial, countering approximately 43% of this baseline pressure. Collectively, these results confirm that both instruments are not only statistically significant but economically potent tools for crisis stabilization.

A further set of tests explores the temporal dynamics of China's swap lines by partitioning the post-2008 sample into distinct sub-periods. To precisely capture the evolving impact of China's growing role in global finance, we re-estimate our core regressions using a more recent sample from 2010–2024, and then again for the 2015–2024 period, and more recently 2020-2024. The results are displayed in Table 5. This granular analysis reveals a compelling trend: the magnitude of the coefficients for China's swap line signing and utilization becomes progressively larger (in absolute value) as the sample period gets closer to the present. This finding provides even stronger evi-

Table 5: The impact of China swap lines on EMP across different sample periods

Different sample periods for CN swap effects on EMP				
	(1)	(2)	(3)	(4)
Sample periods	2000-2024	2010-2024	2015-2024	2020-2024
CN Swap	-0.0006	-0.006***	-0.008**	-0.021*
	(0.0013)	(0.002)	(0.003)	(0.013)
CN Swap Use	-0.0015	-0.008***	-0.013**	-0.024*
	(0.0019)	(0.003)	(0.006)	(0.014)
Observations	28,498	14,867	8,034	1,297
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Note: This table presents the results of panel data analysis examining the impact of China's bilateral currency swap agreements on Exchange Market Pressure (EMP) across different time periods. The analysis uses a panel regression with country and year fixed effects. The key independent variables are: CN Swap: A dummy variable that equals 1 in the month a bilateral swap agreement is signed, and 0 otherwise. CN Swap use: A dummy variable that equals 1 in the month a recipient country draws on its swap line, and 0 otherwise. The table is segmented by the sample period to illustrate the evolving effectiveness of these swap lines. The columns represent different time frames: 2000-2024, 2010–2024, 2015–2024, and 2020–2024.

dence that the effectiveness of China's bilateral currency swaps has been increasing over time. This trend reflects the growing institutionalization and trust in China's financial instruments, as well as the expanding reliance of developing economies on these alternative sources of liquidity. These results underscore the accelerating shift in the global financial architecture and provide compelling evidence that China's role as a credible challenger to the IMF is not only established but is also strengthening over time.

6 Mechanism Analysis

6.1 The Impact via Foreign Reserves

Rather than just looking at the overall EMP index, which is a composite and somewhat abstract measure, we next analyze the more tangible impact on foreign exchange reserves. This allows us to investigate whether changes in reserves—a key component of

EMP—are a primary channel through which these rescue lending interventions operate. By isolating the effect on reserves, we can provide a clearer and more direct explanation for the observed reduction in EMP, thereby strengthening our central argument about the mechanisms of IMF and China's financial support.

The estimated results in Table 6 reveal that both instruments contribute to a higher growth rate of foreign reserves. This indicates their effectiveness in bolstering a country's external liquidity position, a critical factor in mitigating EMP. Notably, the actual use of China's swap agreements is associated with a larger increase in foreign reserves compared to the effects observed from IMF lending. This suggests that the drawing of China's swap lines can indeed significantly bolster the foreign reserve holdings of the recipient country, underscoring the practical and material liquidity support they provide. This larger reserve accumulation through swap utilization highlights a distinct mechanism through which China's bilateral framework contributes to external stability.

6.2 Compare the Differences in Various Channels between IMF and China's Currency Swap

To further understand the channels through which IMF and China's lending affect macroeconomic stability, we conducted a series of panel regressions on a set of intermediate variables, including imports, fiscal deficits, debt service, and trade composition. The results, summarized in Table X, reveal a fundamental divergence in the policy implications of the two lending instruments, confirming that IMF lending is tied to fiscal austerity while China's swaps are not. Moreover, our findings suggest that China's swaps have an additional, trade-related channel that facilitates its geopolitical ambitions.

As shown in Table 7, IMF lending programs are consistently associated with contractionary policy reforms. Specifically, we find that both the signing and the use of IMF

Table 6: The impact of IMF lending and China swap line event on growth in reserves

Panel A: 2000-2024				
	(1)	(2)	(3)	(4)
Event	Growth in reserves			
policy_imf	0.0153*			
	(0.0081)			
policy_imfu		0.0055		
		(0.0076)		
policy_swap			0.0186*	
			(0.0095)	
policy_swapu				0.0315**
				(0.0134)
Constant	-0.0016	0.0039	-0.0142**	-0.0251**
	(0.0057)	(0.0052)	(0.0067)	(0.0094)
Observations	4,410	4,000	790	365
R-squared	0.0881	0.1131	0.2063	0.2474
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES
Panel B: 2008-2024				
	(1)	(2)	(3)	(4)
Event	Growth in reserves			
policy_imf	0.0196*			
	(0.0099)			
policy_imfu		0.0179**		
		(0.0089)		
policy_swap			0.0188*	
			(0.0095)	
policy_swapu				0.0315**
				(0.0134)
Constant	-0.0097	-0.0093	-0.0134*	-0.0251**
	(0.0069)	(0.0062)	(0.0068)	(0.0094)
Observations	2,741	2,506	775	365
R-squared	0.1050	0.1295	0.2026	0.2474
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Note: This table presents the results of a linear regression event study on the effect of IMF lending and China's swap lines on the growth rate of foreign reserves, based on the event window of 12 months around each policy event (signing agreement or use of funds from IMF or China bilateral swap lines). The analysis uses monthly panel data with country and year fixed effects. The key independent variables are policy dummy variables set to 1 for the 6-month window after each respective policy event (signing or use of funds). Coefficients of "policy_imf" and "policy_imfu" capture the effects of IMF loan agreements and their utilization. Coefficients of "policy_swap" and "policy_swapu" capture the effects of China's bilateral swap line agreements and their utilization. Robust standard errors are reported in parentheses. Significance levels are denoted as: *** p-value less than 0.01, ** p-value less than 0.05, * p-value less than 0.1.

lending agreements are linked to a significant decrease in imports. This finding aligns with the IMF's long-standing practice of attaching conditionality to its loans, which often necessitates macroeconomic adjustments and fiscal consolidation to address underlying imbalances. Our results further support this interpretation by showing that IMF lending is associated with a smaller fiscal deficit and a lower government debt service ratio, as well as an improved current account balance. The story here is one of guided economic adjustment, where financial support is intertwined with policy commitments aimed at restoring long-term sustainability. In essence, IMF programs compel countries to address the root causes of their external pressures through often contractionary fiscal policies and efforts to curtail imports, thereby also improving debt metrics.

In stark contrast, China's bilateral swap agreements show no similar discernible effects on the recipient government's tendency to reduce its fiscal deficit or pursue a more contractionary fiscal policy. The coefficients for both signing and using a China swap line are not statistically significant for variables such as imports, fiscal deficit, and debt service ratio. This suggests that China's liquidity support, while effective in shoring up foreign reserves and reducing EMP, does not typically come with the explicit policy conditionality characteristic of IMF programs. The story behind China's approach appears to prioritize immediate financial stabilization and fostering trade ties, often without demanding the kind of deep fiscal or structural reforms that might be politically sensitive or economically challenging for recipient nations. This difference in conditionality represents a fundamental divergence in the operational philosophies of the two lenders and offers recipient countries a choice in the nature of the financial assistance they receive.

Furthermore, we find a unique channel for China's swap lines. As shown in Table 7, the use of China's swap lines is associated with a statistically significant increase in the share of a country's total imports coming from China. The coefficient of 0.021

Table 7: The mechanisms of IMF lending and China swap line

Sample: 2000-2024 annual data					
	(1)	(2)	(3)	(4)	(5)
Mechanisms	ln(imports)	ln(fiscal deficit)	Debt service%	CA/GDP	CHN import%
IMF Lending	-0.115***	-0.270**	-0.211***	0.840	-0.004
	(0.032)	(0.111)	(0.080)	(0.620)	(0.003)
IMF Lending Use	-0.090***	-0.163	-0.163**	0.858*	-0.004
	(0.027)	(0.111)	(0.082)	(0.515)	(0.003)
CN Swap Line	-0.059	0.206	0.010	-0.432	0.010
	(0.049)	(0.220)	(0.277)	(1.902)	(0.008)
CN Swap Line Use	-0.048	-0.235	-0.059	1.400	0.021**
	(0.077)	(0.348)	(0.249)	(2.635)	(0.010)
Country FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

Note: For each column, we report the estimated coefficients from four separate panel regressions exploring each of the five intermediate mechanisms of rescue lending using annual data. Specifically, we present the results for five intermediate variables: the logarithm of imports, the logarithm of fiscal deficits, the debt service ratio, the current account to GDP ratio, and the share of a country's total imports coming from China. For each column, we use four policy dummies as key independent variables in each row: IMF lending agreement signing, IMF loan use, China swap line agreement signing, and China swap line use. The regressions include country and year fixed effects. Robust standard errors are reported in parentheses. Significance levels are denoted as: *** p-value less than 0.01, ** p-value less than 0.05, * p-value less than 0.1.

is significant at the 5% level, indicating a shift in import composition toward Chinese goods. This finding suggests that China's liquidity support, while ostensibly designed for macroeconomic stability, also serves a dual purpose of facilitating trade and promoting the internationalization of the renminbi. The availability of RMB liquidity through the swap lines can be a key mechanism for this shift, encouraging recipient countries to increase their trade with China and solidifying a new form of economic partnership. We therefore examine the dynamics by constructing a counterfactual estimation to assess how imports from China would have evolved for countries signing RMB currency swap agreements in the absence of such arrangements. As shown in Figure 4, observed imports from China follow a stable upward trend in reality, whereas the counterfactual path indicates a pronounced decline without swap lines. The estimated reduction is most substantial in the first year—falling from nearly 10% to around 2%—followed by a gradual recovery, though imports remain persistently below the observed level even after ten years. This pattern is consistent with the liquidity-support and trade-promotion function of China's swap lines: in the absence of them, partner countries would face greater exchange rate depreciation because of higher EMP, and thus lead to reduced import capacity, including imports from China.

7 Further Tests and Results

7.1 Heterogeneity analysis

7.1.1 One-time vs. Rollover agreement

We examine whether the stabilizing effect of China's currency swap lines depends on the depth and duration of the bilateral financial relationship. To this end, we classify recipient countries into two groups: "one-time signers," defined as countries that signed

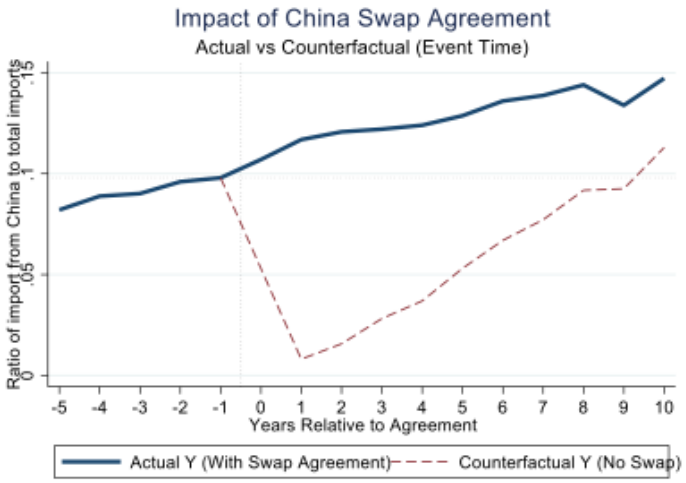

Figure 4: The counterfactual analysis of China's swap line on imports from China

a single swap agreement (typically with a three-year maturity) without subsequent renewal, and "rollover partners," defined as countries that have repeatedly renewed or extended their swap arrangements. This distinction allows us to assess whether financial markets perceive the liquidity backstop differently when it reflects a temporary, tactical arrangement rather than a long-term strategic commitment.

The results, reported in Table 8, show that the stabilizing effect of China's swap lines is remarkably consistent across the two groups. Columns (1) and (2) indicate that the signing of a swap agreement is associated with a statistically significant reduction in EMP for both one-time signers and rollover partners. Likewise, Columns (3) and (4) demonstrate that the actual use of swap lines significantly alleviates market pressure in both cases. Importantly, the estimated coefficients are similar in magnitude across all specifications.

These findings have important implications for understanding the mechanism of China's financial statecraft. They suggest that the credibility of the liquidity backstop is established immediately upon signing and does not depend on the existence of a long-term, institutionalized relationship. Financial markets appear to respond primar-

ily to the availability of the liquidity buffer itself, rather than to the political durability implied by repeated rollovers. As a result, China's swap lines function as effective stabilization instruments even for "tactical" users engaging with Beijing during a single crisis episode, reinforcing the view that they constitute a credible and functional alternative to the IMF for a wide range of developing economies.

Table 8: Classify Swap agreements into signing only once and with rollovers

	(1) Only once	(2) With Rollover	(3) Only once	(4) With Rollover
Dep. var.	EMP	EMP	EMP	EMP
Swap Agreement	-0.0049*	-0.0054**		
	(0.0026)	(0.0022)		
Swap Use			-0.0078*	-0.0067***
			(0.0041)	(0.0024)
Constant	-0.0002***	0.0008***	-0.0002***	0.0006***
	(0.0001)	(0.0002)	(0.0000)	(0.0001)
Observations	15,808	18,160	15,808	18,160
R-squared	0.0413	0.0438	0.0413	0.0438
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Notes: This table presents the results of panel regressions examining the heterogeneity of China's swap line effects based on the duration of the bilateral agreement. The sample is divided into two groups: One-Time Signers (countries that signed only one swap agreement without renewal) and Rollover Partners (countries that renewed or extended their swap agreements). The dependent variable is Exchange Market Pressure (EMP). Columns (1) and (2) estimate the impact of Swap Signing (a binary variable equal to 1 in the months following the signing of the agreement) for the two groups, respectively. Columns (3) and (4) estimate the impact of Swap Use (a binary variable equal to 1 in the months following the drawdown of funds) for the two groups. All regressions include country and month fixed effects to control for time-invariant unobservables and global shocks. Robust standard errors are reported in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

7.1.2 Political distance and swap line effectiveness

Second, we explore whether geopolitical alignment influences the effects of rescue lending. Political closeness can serve as a proxy for the reliability of the "friendship" and

the likelihood of future support, potentially enhancing market confidence. We measure this alignment using the "Ideal Point Distance" (IPD) based on United Nations General Assembly (UNGA) voting data. This voting index quantifies how far apart countries' foreign policy stances are, by analyzing their roll-call votes in the UN General Assembly. Researchers use spatial voting models (like item-response theory) to estimate each country's underlying "ideal point" or policy preference, and the IPD is the difference between these points, indicating alignment or divergence on global issues. In our specification, a higher IPD score indicates closer alignment with the United States, while a lower score indicates closer alignment with China.

We test for heterogeneity using two distinct specifications to isolate the mechanism of political influence. First, we employ a "Standing Agreement" specification using the full country-month panel, where the Swap dummy takes a value of 1 for all months in which a valid swap agreement is in place. We interact this variable with the IPD score. The results, presented in Table 9, reveal significant heterogeneity. The coefficient of the interaction term (SwapAgreement_X_idealdist) is positive and significant. This implies that for countries with a larger distance from China (closer to the US), the EMP-reducing effect of holding a swap line diminishes. Conversely, for countries politically closer to China, the existence of a swap line provides a significantly stronger stabilization effect. This suggests that the market views the standing liquidity backstop provided to close allies as more credible or "sticky" than that provided to distant partners. When we apply the same metric to IMF lending, we find no significant variation in effectiveness based on ideological distance. This asymmetry highlights that the efficacy of China's financial statecraft appears partly conditional on the strength of the bilateral political relationship.

However, a different picture emerges when we examine the immediate, short-term impact. In a second specification, we utilize the "Policy Event" dummy from our base-

Table 9: Heterogeneity on political distance

Dependent variable	(1) EMP	(2) EMP	(3) EMP	(4) EMP
idealdist	-0.0002	-0.0002	-0.0007	-0.0005
	(0.0023)	(0.0025)	(0.0022)	(0.0022)
IMFLending	-0.0014*			
	(0.0008)			
IMFLending_X_idealdist	0.0003			
	(0.0009)			
IMF_used		-0.0009		
		(0.0011)		
IMF_used_X_idealdist		0.0003		
		(0.0013)		
SwapAgreement			-0.0004	
			(0.0017)	
SwapAgreement_X_idealdist			0.0036**	
			(0.0015)	
Swap_used				-0.0011
				(0.0022)
Swap_used_X_idealdist				0.0037
				(0.0040)
Constant	-0.0012	-0.0013	-0.0021**	-0.0020**
	(0.0010)	(0.0011)	(0.0010)	(0.0009)
Observations	31,443	29,929	28,561	28,561
R-squared	0.0433	0.0420	0.0428	0.0428
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Notes: This table examines whether the effectiveness of rescue lending on Exchange Market Pressure (EMP) varies with a country's geopolitical alignment. The estimation utilizes an OLS panel regression with country and year fixed effects. The key independent variable for heterogeneity is Ideal Point Distance (IPD), constructed using United Nations General Assembly (UNGA) roll-call voting data. Following the spatial voting models (item-response theory), the IPD measures the difference in foreign policy preferences between the recipient country and the major powers. In this specification, the variable is constructed such that a higher score indicates closer ideological alignment with the United States, while a lower score indicates closer ideological alignment with China. The robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

line event study (defined as 1 only during the 12-month window following a signing or utilization event). When interacting this short-term event dummy with the IPD score, we find no significant heterogeneity. The stabilizing effect of the announcement or immediate injection appears to be universal, benefiting politically distant partners just as much as close allies. Collectively, these findings highlight that markets react positively to the fresh swap agreement regardless of politics. However, the long-term structural credibility of the backstop is politically conditional; markets appear to discount the value of the insurance policy over time if the recipient is not politically aligned with Beijing, perhaps pricing in a higher risk of revocation or friction in future deployments.

7.2 Placebo tests

To ensure that our main results capture a genuine impact rather than random chance or unobservable pre-existing trends, we conduct two types of placebo tests by manipulating the time and country dimensions of our analysis.

First, we perform a temporal falsification test to rule out the possibility that our results are driven by pre-event trends. We re-estimate our baseline model by assigning a fictitious "treatment" date to six months before the actual signing or utilization of the rescue instruments. If the reduction in EMP observed in our main analysis were simply the result of a pre-existing downward trend in market pressure, we would expect to see significant coefficients even with these "fake" event dates. However, as shown in Table 10, the estimated coefficients for these placebo events are statistically insignificant from zero. This disappearance of significant effects confirms that the stabilization of the EMP documented in our baseline results is temporally specific to the actual intervention of the China swap lines and IMF lending. We find that all effects disappear, indicating that the baseline results indeed capture the stabilizing role of the China swap lines and IMF lending.

Table 10: Placebo test: assign event dates to 6 months earlier

Dependent variable	(1) EMP	(2) EMP	(3) EMP	(4) EMP
policy_imf_F6m	-0.0003			
	(0.0020)			
policy_imfu_F6m		-0.0025		
		(0.0027)		
policy_swap_F6m			0.0059	
			(0.0057)	
policy_swapu_F6m				0.0016
				(0.0103)
Constant	-0.0012	0.0016	0.0022	0.0071
	(0.0014)	(0.0018)	(0.0040)	(0.0072)
Observations	4,280	3,900	790	365
R-squared	0.1475	0.1462	0.2653	0.2813
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Notes: This table presents the results of a falsification (placebo) test designed to validate the causal interpretation of our baseline findings and rule out the possibility that the observed reduction in EMP is driven by pre-existing downward trends or market anticipation. We re-estimate the baseline event study model by assigning a fictitious event date to each intervention, set exactly six months before the actual effective date ($t-6$). The dependent variable is Exchange Market Pressure (EMP). The table reports the estimated coefficients for four placebo specifications across separate columns: Columns (1)–(4) report the estimated effects for Placebo IMF Signing, Placebo IMF Use, Placebo Swap Signing, and Placebo Swap Use, respectively, using these fictitious dates. The key independent variables are dummy variables set to 1 for the 6-month window following these fictitious dates (effectively covering the period $t-6$ to $t-1$ relative to the true event) and 0 otherwise. Robust standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Second, we conduct a placebo test along the country dimension by estimating the effects of these instruments on a sample of developed economies. China's currency swap network and the logic of its "alternative" liquidity provision are theoretically predicated on the financial constraints and trade dependencies specific to the developing world. Consequently, we expect the stabilizing mechanism of China's swaps to be absent or ineffective for advanced economies, which typically possess deeper financial markets and access to established hard-currency swap lines (e.g., with the U.S. Federal Reserve). The results, presented in Table 11, support this hypothesis: we find no significant effect of China's swap agreements on EMP within the developed economy sample. This null result reinforces our argument that the efficacy of China's financial statecraft is conditional on the specific vulnerabilities of developing nations.

Finally, regarding the comparative analysis for developed economies, we do not report estimates for the effect of IMF lending on EMP. This exclusion is due to the insufficient sample size of developed countries receiving IMF assistance during our study period; the few cases available (e.g., Greece, Iceland, Ireland) are too sparse to yield statistically reliable econometric estimates. Therefore, our comparative findings are most robustly interpreted within the context of developing economies, where both China and the IMF are active and competing providers of emergency liquidity.

7.3 Robustness check

First, we account for potential time-lagged effects, recognizing that the full impact of a financial intervention may not be immediate. We re-run our regressions with a one-month lagged dependent variable (EMP_{t+1}) to confirm that the mitigating effects of IMF and Chinese lending persist beyond the month of the event.

A second set of checks addresses the nature of the lending variables themselves. Our baseline results use dummy variables to capture the signing and utilization of lending

Table 11: Placebo test: Effects of China swap lines on developed economies

	(1)	(2)	(3)	(4)
	2000-2024	2008-2024	2000-2024	2008-2024
Dep.var.	EMP	EMP	EMP	EMP
policy_swap	0.0024	0.0024		
	(0.0026)	(0.0026)		
SwapAgreement			0.0005	0.0001
			(0.0009)	(0.0017)
Constant	-0.0044**	-0.0044**	-0.0027***	-0.0010*
	(0.0018)	(0.0018)	(0.0002)	(0.0006)
Observations	200	200	4,571	2,556
R-squared	0.7023	0.7023	0.5100	0.5218
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Notes: This table presents the results of a placebo test examining the impact of China's swap lines on Exchange Market Pressure (EMP) within a restricted sample of Developed Economies. The table reports estimates across two different model specifications and time periods: Columns (1) and (2) use the Swap Policy Event Dummy as the independent variable (set to 1 for the 12-month window following the signing of a swap line). Column (1) estimates this over the full sample period (2000–2024), while Column (2) restricts the sample to the post-2008 period (2008–2024). Note that the results are largely identical because China's swap activity only commences after 2008. Columns (3) and (4) use the Swap Signing Status Dummy, a "standing agreement" dummy set to 1 for all months after a swap agreement is in force. Column (3) covers the full sample (2000–2024), and Column (4) covers the post-2008 period. All regressions include country and month fixed effects.Robust standard errors are reported in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

agreements. While this approach effectively captures the signaling and direct liquidity effects, it does not account for the magnitude of the lending. To ensure our findings are robust to this simplification, we re-estimate our models using continuous variables representing the dollar amount of funds committed by the IMF and the total size of the swap lines established by the PBoC. The results are robust and confirm that larger scale of intervention leads to a commensurately greater reduction in EMP.

Third, to disentangle the overlapping effects of simultaneous interventions, we conduct a robustness check that isolates observations where countries rely exclusively on one lender. In our baseline full-sample analysis, the presence of both IMF programs and China swap lines in the same country-year could potentially confound the estimated coefficients. To address this, we re-estimate our baseline model using restricted sub-samples.

In Columns (1) and (2) of Table 12, we regress EMP on the IMF policy dummies after dropping all observations where a China swap agreement is in place. The results show that the signing of an IMF agreement remains effective in reducing EMP, reinforcing the strong signaling power of the Fund's endorsement even in the absence of Chinese alternatives. However, the coefficient for IMF use becomes statistically insignificant in this restricted sample. This likely reflects a severe selection bias: countries that rely solely on the IMF for liquidity—without access to China's alternative backstop—are often those in the deepest structural distress. For these "desperate" cases, the mere injection of funds may be insufficient to immediately quell market panic compared to the deeper structural adjustments required.

In Columns (3) and (4), we examine the impact of China's swap lines in the absence of an IMF arrangement. Interestingly, we find that while the coefficient for Swap Signing becomes statistically insignificant, Swap Use retains a robust and significant negative effect on EMP. This divergence highlights a fundamental distinction in the

Table 12: Policy effects with exclusive reliance on one lender

	(1)	(2)	(3)	(4)
Dep.var.		**EMP**		
policy_imf	-0.0048**			
	(0.0022)			
policy_imfu		-0.0013		
		(0.0017)		
policy_swap			-0.0058	
			(0.0064)	
policy_swapu				-0.0143**
				(0.0059)
Constant	0.0017	-0.0004	0.0117**	0.0195***
	(0.0015)	(0.0012)	(0.0043)	(0.0040)
Observations	3,628	3,256	608	266
R-squared	0.1748	0.1682	0.2592	0.3258
Country FE	YES	YES	YES	YES
Month FE	YES	YES	YES	YES

Notes: This table presents the results of examining the impact of rescue lending on Exchange Market Pressure (EMP) using restricted samples to isolate exclusive reliance on one lender. The analysis uses monthly panel data with country and month fixed effects. Columns (1) and (2) report the effects of IMF Lending (Signing and Use) estimated on a subsample that excludes all observations where a China swap agreement was active. This isolates the effect of IMF intervention for countries that did not simultaneously hold a Chinese backstop. Columns (3) and (4) report the effects of China Swap Lines (Signing and Use) estimated on a subsample that excludes all observations where an IMF lending agreement was active. This isolates the effect of Chinese intervention for countries that did not simultaneously rely on the IMF. The independent variables are policy event dummies set to 1 for the 12-month window following the respective event.Robust standard errors are reported in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

transmission mechanisms of the two lenders. Unlike IMF programs, which are highly dependent on a confidence channel—where mere announcement signals policy credibility—the stabilizing power of China's swap lines appears to be driven primarily by the material provision of liquidity. This finding reinforces the "functional" nature of China's financial statecraft: markets may view the standby agreement primarily as a trade facility, but they respond significantly once the tangible liquidity is actually deployed to settle obligations and stabilize the external position.

Furthermore, to better understand the mechanism of currency swap signing on fi-

Table 13: The impact of China swap line on EMP: by announcement types

	Type 1 Swap	Type 2 Swap
In announcement	Trade, Investment	Trade, Investment + Financial Stability
Dep. var.	EMP	EMP
Swap Agreement	-0.0067**	-0.0034*
	(0.0031)	(0.0019)
Country FE	YES	YES
Month FE	YES	YES
Observations	15287	16379
R-squared	0.037	0.038

Notes: Robust standard errors are reported in parentheses. Significance levels are denoted as: *** p-value less than 0.01, ** p-value less than 0.05, * p-value less than 0.1.

nancial stability, we delve into the stated motivations behind China's bilateral currency swap agreements. The People's Bank of China (PBoC) often provides a public explanation for these agreements on its website. We observe that these explanations fall into two broad categories: some agreements are explicitly framed as measures to "promote financial stability," while others are described with the more general goal of "facilitating trade and investment."

This distinction allows us to perform a crucial robustness test by separating the swap agreements into two distinct types. Type 2 includes those agreements where the official announcement explicitly mentioned a goal of "promoting financial stability." This group likely involves countries already facing financial challenges, which introduces a stronger degree of endogeneity, as the decision to sign the swap is directly a response to existing market pressure. In contrast, Type 1 consists of agreements where the official purpose was focused solely on trade facilitation, implying a lower degree of endogeneity.

To test whether the EMP-mitigating effect of China's swaps holds even in cases with less apparent financial distress, we re-run our core regressions exclusively for the Type 1 swap agreement sample. Results are presented in Table 13. Our findings show that even when the official purpose is trade-oriented, the signing and utilization of

these swaps still have a significant and negative impact on EMP. This result is highly significant as it provides compelling evidence that the positive effects of these swap agreements are not limited to a direct liquidity injection during a crisis. Instead, they can also operate through a more subtle, yet powerful, channel: by facilitating trade and investment, they bolster economic confidence, reduce transaction costs, and signal a long-term commitment, all of which contribute to a more stable currency and lower market pressure. This finding broadens the understanding of the mechanisms through which China is expanding its financial influence and highlights the multidimensional nature of its bilateral swap lines.

For additional robustness checks on event window choice, we re-estimate our core event study model using a shorter event window. While our baseline analysis defines the event window as 12 months post-intervention, this check focuses on the more immediate effects by setting the event window to only the 6 months following the signing or utilization of a lending program. The results of this analysis, presented in Table 14, largely corroborate our main findings. The coefficients for the IMF lending signing and use, as well as the China swap line signing, remain highly significant and similar in magnitude to those in our baseline model. This consistency confirms that the EMP-mitigating effects of these interventions are not only robust to different time horizons, but are also a strong, immediate market reaction.

One notable nuance emerges for the effect of China's swap line utilization. Although the coefficient's magnitude remains consistent with our primary findings, its statistical precision is slightly reduced, as evidenced by a larger standard error. This suggests that while the initial effect of using the swap line is significant, the full stabilizing impact on a country's EMP may unfold and strengthen over a period longer than six months. The slightly diminished precision does not undermine the core result, but rather provides a more detailed insight into the temporal dynamics of these interventions, highlighting

Table 14: The impact of IMF lending and China swap line event on EMP (6-month window)

Event	(1) EMP	(2) EMP	(3) EMP	(4) EMP
policy_imf	-0.0081***			
	(0.0026)			
policy_imfu		-0.0059**		
		(0.0029)		
policy_swap			-0.0145*	
			(0.0081)	
policy_swapu				-0.0241
				(0.0163)
Constant	0.0033**	0.0027*	0.0182***	0.0255**
	(0.0015)	(0.0016)	(0.0046)	(0.0097)
Observations	2,935	2,691	534	245
R-squared	0.2024	0.1923	0.3522	0.3726
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Notes: This table presents the results of a linear regression event study on the effect of IMF lending and China's swap lines on Exchange Market Pressure (EMP), based on the event window of 6 months around each policy event (signing agreement or use of funds from IMF or China bilateral swap lines). The analysis uses monthly panel data with country and year fixed effects. The key independent variables are dummy variables set to 1 for the 6-month window after each respective policy event (signing or use of funds). Coefficients of "policy_imf" and "policy_imfu" capture the effects of IMF loan agreements and their utilization. Coefficients of "policy_swap" and "policy_swapu" capture the effects of China's bilateral swap line agreements and their utilization. Robust standard errors are reported in parentheses. Significance levels are denoted as: *** p-value less than 0.01, ** p-value less than 0.05, * p-value less than 0.1.

that the benefits of using a Chinese swap line can be a sustained effect rather than a temporary shock.

Finally, to ensure that our findings are not sensitive to the specific construction of the dependent variable, we re-estimate our baseline models using Exchange Rate Volatility (FX-Volatility) as an alternative measure of financial instability. The detailed results of this analysis are presented in Appendix C.

8 Conclusion and Future Directions

The evolving great power rivalry between the United States and China has emerged as the defining dynamic of the contemporary global economy and politics. This paper contributes to that discourse by offering novel empirical evidence on the transformation of financial power within the international system. Our analysis reveals a dynamic reconfiguration of the global financial architecture, driven by the comparative effects of IMF programs and China's bilateral currency swap lines on Exchange Market Pressure (EMP). We demonstrate not only the functional equivalence of these instruments in alleviating currency stress but also the distinct mechanisms through which they operate.

Both IMF lending and China's swap lines prove effective in mitigating EMP, underscoring their respective—and increasingly complementary—roles in preserving global financial stability. Yet our findings reveal a critical asymmetry: while the IMF's impact has diminished since the 2008 global financial crisis—though not disappeared—China's swap agreements have grown in salience and, in certain contexts, exhibit stronger stabilizing effects. This empirical pattern substantiates the proposition that China is emerging as a consequential challenger to the postwar, U.S.-anchored international financial order. Rather than outright displacement, however, this rivalry manifests as a form of competitive coexistence: both institutions now serve as vital, yet institutionally and ideologically distinct, sources of crisis liquidity.

The IMF continues to function as the orthodox lender of last resort, leveraging its credibility through reserve infusions and the signaling power of multilateral endorsement. In contrast, China's swap lines—longer in duration than U.S. Federal Reserve swaps, similar to the IMF lending yet less burdened by structural conditionality—have carved out a parallel, increasingly influential niche. Their effectiveness stems not only from immediate liquidity provision but also from a dual transmission mechanism: direct reserve support and the redirection of trade flows toward Chinese imports. This latter

channel embeds deeper commercial dependencies, subtly advancing the internationalization of the renminbi and, over time, challenging the structural dominance of the U.S. dollar.

These findings carry profound implications. First, they signal the erosion of the singular, IMF-centered crisis management model that has underpinned U.S. monetary leadership since Bretton Woods. The availability of credible, less conditional alternatives from China alters the bargaining calculus for borrowing states, potentially diluting the IMF's leverage to impose structural reforms. Second, China's financial statecraft extends beyond short-term stabilization: by incentivizing trade realignment, swap agreements foster long-term economic interdependence that serves Beijing's strategic objectives. The RMB's internationalization is thus not merely a technical or market-driven process but a deliberate geopolitical project with far-reaching consequences for the governance of global finance.

From a geopolitical standpoint, financial instruments are revealed as potent vectors of influence. IMF programs reflect and reinforce the liberal, rules-based order anchored by the United States. China's swap lines, by contrast, advance an alternative model of monetary governance—one that is bilateral, pragmatic, and aligned with Beijing's vision of a multipolar world. Over time, this may lead to a fragmented global financial safety net, wherein states strategically toggle between multilateral and bilateral mechanisms based on political alignment, economic need, and conditionality tolerance.

For policymakers, these developments pose urgent questions about institutional adaptation and strategic autonomy. The IMF risks obsolescence unless it undertakes meaningful reforms: streamlining approval processes, recalibrating conditionality to borrower capacity, and deepening collaboration with regional financial arrangements. For borrowing countries, the proliferation of liquidity options offers enhanced resilience—but also new vulnerabilities. Diversification may reduce dependence on any single creditor,

yet overreliance on politically embedded bilateral instruments could subtly erode foreign policy autonomy.

In sum, the evidence points to a slow but unmistakable structural shift: from a unipolar, U.S.-anchored financial order centered on the IMF toward a more pluralistic, contested system in which China's swap lines function simultaneously as financial backstops and instruments of strategic influence. The stakes transcend macroeconomic stability; they touch upon the very architecture of global governance and the reconfiguration of power in an era of renewed great power competition.

This study opens several promising avenues for future research. More research can be done to investigate the contextual conditions under which IMF versus Chinese instruments prove most effective, or examine the long-term macroeconomic and institutional consequences of reliance on bilateral versus multilateral crisis financing. Further work could also explore how mechanisms initiated by China—such as its increasing push of the renminbi bond market for foreign borrowers—interact with, or are displaced by, these two dominant frameworks. A deeper understanding of these dynamics is essential for anticipating the trajectory of global monetary governance—and for navigating the geopolitical turbulence that will accompany its transformation in the decades ahead.

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Contents

A Appendix A. Background Information

A.1 Classification by Purpose

Based on the official communiqués, we classify China's currency swap agreements into two primary categories:

1. Trade and Investment Facilitation: Almost all swap agreements are explicitly aimed at promoting bilateral trade and investment. The official announcements for these swaps typically use language such as "facilitate trade and investment" or "support the development of a bilateral currency market." The primary function of these swaps is to allow businesses to settle cross-border transactions in their respective local currencies, thereby reducing exchange rate risk and transaction costs. For the recipient country, this provides a more direct and efficient way to finance imports from China without needing to first acquire U.S. dollars. This channel, as our main analysis suggests, can also indirectly alleviate Exchange Market Pressure (EMP) by reducing external demand for hard currency.

2. Financial Stability Support: A second, and increasingly prominent, category of swaps is explicitly designed to provide emergency liquidity. The PBoC's public statements for these agreements often include phrases like "promote financial stability" or "support the financial system." These swaps are activated during periods of heightened market volatility or when a country faces a severe shortage of foreign currency, particularly the U.S. dollar. The provided liquidity, in the form of renminbi, can be used by the recipient central bank to intervene in its domestic foreign exchange market, repay foreign currency-denominated debt (including to the IMF), or otherwise shore up its external position. This type of swap directly serves as a form of "lender of last resort" facility, and as our empirical findings indicate, it has a significant and direct effect on mitigating EMP.

3. The other two purposes mentioned in the announcements are "financial cooperation" and "economic development." These categories are considerably vaguer than those related to "trade and investment" and "financial stability support." In particu-

lar, the objective of promoting "economic development" is mentioned only five times in swap line announcements with developing countries and only twice in those with developed economies.

More details on the countries, year, amounts, and purposes of China's swap lines are shown in Table A.1 and Table A.2.

A.2 Case Study: Argentina

The PBoC's currency swap with Argentina, a country with frequent balance of payments challenges, serves as an illuminating case study for the multi-purpose nature of these agreements. Public disclosures reveal that the Argentine swap line has been used for various purposes over time:

- Trade-Related Use: Initially, a portion of the swap line was designated for settling trade transactions, allowing Argentina to pay for Chinese imports in renminbi. This function facilitates commerce and eases pressure on Argentina's limited foreign reserves.

- Emergency Liquidity: In several instances, the swap line has been drawn upon specifically to boost Argentina's foreign currency reserves and defend the peso against speculative attacks. This highlights its role as a key instrument for financial stability. In November 2022, for example, Argentina secured an additional 35 billion RMB for non-trade purposes, which its central bank activated in January 2023 to defend its currency.

- IMF Debt Repayment: A unique and significant use case has been Argentina's utilization of the Chinese swap to repay its obligations to the IMF. In July 2023, Argentina announced its first repayment to the IMF by drawing on its Chinese swap line. This was followed by a similar transaction in August 2023, when Argentina confirmed it would draw an additional 1.7 billion USD (in RMB equivalent) from the swap to service its IMF debt. By drawing on the swap line and using the renminbi to settle its debt to the Fund, Argentina has effectively used China's financial support as a direct substitute for drawing down its own scarce dollar reserves or seeking new, potentially conditional, IMF financing.

This dual-use functionality—serving both trade facilitation and financial stability—makes China's swap lines a versatile and increasingly attractive alternative to traditional sources of emergency liquidity. This descriptive analysis complements our

Table A.1: Countries by Engagement with IMF and China's Swap Lines

With IMF only		**With China's swap line only**	**With both**
Afghanistan	Jamaica	Australia	Albania
Angola	Jordan	Canada	Argentina
Azerbaijan	Kenya	Japan	Armenia
Bangladesh	Latvia	Korea	Belarus
Barbados	Lesotho	Malaysia	Brazil
Benin	Liberia	New Zealand	Chile
Bolivia	Lithuania	Qatar	Hungary
Bulgaria	Madagascar	Saudi Arabia	Iceland
Burkina Faso	Malawi	Singapore	Indonesia
Burundi	Mali	South Africa	Kazakhstan
Cambodia	Mexico	Switzerland	Laos
Cameroon	Moldova	UAE	Maldives
Cape Verde	Morocco	UK	Mauritius
Central African	Mozambique	Uzbekistan	Mongolia
Chad	Myanmar		Nigeria
Colombia	Namibia		Pakistan
Comoros	Nepal		Russia
Costa Rica	Nicaragua		South Korea
Croatia	Niger		Sri Lanka
Cyprus	Panama		Suriname
Djibouti	Papua New Guinea		Tajikistan
Dominica	Paraguay		Thailand
Dominican Republic	Peru		Turkey
Ecuador	Philippines		Ukraine
Egypt	Poland		
El Salvador	Portugal		
Equatorial Guinea	Romania		
Estonia	Rwanda		
Ethiopia	Sao Tome and Principe		
Gabon	Senegal		
Gambia	Serbia		
Georgia	Seychelles		
Ghana	Sierra Leone		
Greece	Solomon Islands		
Grenada	Sudan		
Guatemala	Togo		
Guinea	Tunisia		
Guyana	Uganda		
Haiti	Uruguay		
Honduras	Vietnam		
Iraq	Yemen		
Ireland	Zambia		
Ivory Coast			

Table A.2: Currency Swap Agreements by Country and Year

Country	First Signed	Amount (B)	Agreement Areas				
			Trade	Investment	Fin. Coop.	Fin. Stability	Econ. Dev.
Albania	2013	2	YES	YES	YES	YES	
	2016	2	YES	YES			YES
Argentina	2009	70					
	2014	70	YES	YES			
	2023	130					
Armenia	2015	1	YES	YES			
Belarus	2009	20	YES	YES			
	2015	7	YES	YES			YES
Brazil	2013	190	YES	YES	YES	YES	
Chile	2015	22	YES	YES	YES		
Hungary	2013	10	YES	YES	YES	YES	
	2016	10	YES	YES	YES	YES	
Indonesia	2009	100	YES	YES		YES	YES
	2013	100	YES	YES			
	2018	200	YES	YES		YES	
	2022	250	YES	YES	YES	YES	
Kazakhstan	2011	7	YES	YES	YES		
	2014	7	YES	YES	YES	YES	
Malaysia	2009	80	YES	YES			
	2012	180	YES	YES		YES	
	2015	180	YES	YES		YES	
	2018	180	YES	YES			
Mauritius	2024	2	YES	YES	YES		
Mongolia	2011	5	YES	YES		YES	
	2014	15	YES	YES		YES	
	2023	15	YES	YES	YES	YES	
Nigeria	2018	15	YES	YES		YES	
Pakistan	2011	10	YES	YES	YES	YES	
	2014	10	YES	YES	YES	YES	
	2024	30	YES	YES	YES		
Qatar	2014	35	YES	YES	YES	YES	
Russia	2014	150	YES	YES			YES
Saudi Arabia	2023	50	YES	YES	YES		
South Africa	2015	30	YES	YES		YES	
Sri Lanka	2014	10	YES	YES	YES		
Suriname	2015	1	YES	YES	YES	YES	
Tajikistan	2015	3	YES	YES	YES	YES	
Thailand	2011	70	YES	YES	YES	YES	
	2014	70	YES	YES	YES		
	2021	70	YES	YES	YES		
Turkey	2012	10	YES	YES	YES	YES	
	2015	12	YES	YES	YES		
	2025	350	YES	YES	YES		
UAE	2012	35	YES	YES	YES	YES	
	2015	35					
Ukraine	2012	15	YES	YES	YES	YES	
	2015	15	YES	YES		YES	
	2018	15	YES	YES			YES
Uzbekistan	2011	0.7	YES	YES	YES		

Note: Amount in billions RMB (B). YES indicates activated agreement areas. Empty cells indicate the area is not covered.

main findings by providing qualitative evidence on the practical application and strategic flexibility of this crucial instrument of Chinese financial diplomacy.

B Appendix B. FOC Proof in Section 3

Derivation of the Optimal Lender Choice (A_M^*) 1. The Optimization Problem. The government aims to minimize a total loss function (L) that accounts for crisis mitigation costs, political costs, and trade opportunity costs. The objective function is:

$$\min_{A_M, A_C} L = \gamma(G - q_M A_M - q_C A_C)^2 + k_M A_M - \beta T_i A_C$$

Subject to the liquidity constraint:

$$A_M + A_C = G$$

Here are the key variables: G: Total liquidity gap (Crisis Gap); A_M: Amount of IMF aid; A_C: Amount of China swap lines; q_M, q_C: Liquidity quality of IMF and China funds, respectively ($q_M > q_C$); γ: Crisis severity (panic sensitivity); k_M: Political cost of IMF conditionality; βT_i: Marginal trade benefit of Chinese aid.

2. Substitution. To solve for the optimal IMF allocation (A_M^*), we substitute the constraint $A_C = G - A_M$ into the objective function to reduce it to a single variable problem.

Substituting A_C into the quadratic crisis term:

$$\text{Crisis Term} = \gamma[G - q_M A_M - q_C(G - A_M)]^2$$

$$= \gamma[G(1 - q_C) - A_M(q_M - q_C)]^2$$

Let $\Delta q = q_M - q_C$ (the liquidity quality gap).

$$= \gamma[G(1 - q_C) - A_M \Delta q]^2$$

Substituting A_C into the linear cost/benefit terms:

$$\text{Linear Terms} = k_M A_M - \beta T_i (G - A_M)$$

$$= (k_M + \beta T_i) A_M - \beta T_i G$$

Combining these, the simplified Loss Function is:

$$L(A_M) = \gamma [G(1 - q_C) - A_M \Delta q]^2 + (k_M + \beta T_i) A_M - \beta T_i G$$

3. First-Order Condition (FOC). We take the derivative of L with respect to A_M and set it to zero to find the minimum.

$$\frac{\partial L}{\partial A_M} = 2\gamma [G(1 - q_C) - A_M \Delta q] \cdot (-\Delta q) + (k_M + \beta T_i) = 0$$

4. Solving for A_M^*. Rearrange the FOC to isolate A_M:

$$2\gamma \Delta q [G(1 - q_C) - A_M \Delta q] = k_M + \beta T_i$$

$$G(1 - q_C) - A_M \Delta q = \frac{k_M + \beta T_i}{2\gamma \Delta q}$$

$$A_M \Delta q = G(1 - q_C) - \frac{k_M + \beta T_i}{2\gamma \Delta q}$$

Divide by Δq:

$$A_M^* = \frac{G(1 - q_C)}{\Delta q} - \frac{k_M + \beta T_i}{2\gamma (\Delta q)^2}$$

5. Final Structural Equation. Substituting $\Delta q = q_M - q_C$ back into the equation yields the final form presented in the text:

$$A_M^* = \underbrace{\frac{G(1 - q_C)}{q_M - q_C}}_{\text{Baseline Liquidity Demand}} - \underbrace{\frac{k_M + \beta T_i}{2\gamma (q_M - q_C)^2}}_{\text{Cost-Driven Reduction}}$$

This derivation shows that the optimal IMF share is the "Baseline Liquidity De-

mand" (driven by the need for high-quality liquidity) minus a "Cost-Driven Reduction" term (driven by political costs and trade benefits).

C Appendix C. Additional Robustness Check: Different Dependent measurement

To ensure that our baseline results capturing the stabilization effects of rescue lending are not sensitive to the specific construction of the Exchange Market Pressure (EMP) index, we conduct an additional robustness test using an alternative measure of currency instability: Exchange Rate Volatility (FX-Volatility).

While EMP captures a broader set of pressures, market participants often focus strictly on the realized volatility of the exchange rate as a primary gauge of instability. To construct this variable, we collect daily nominal exchange rate data (local currency against the U.S. dollar) and calculate the standard deviation of the daily percentage changes for each month. This monthly standard deviation serves as our dependent variable, FX_Vol_{it}, proxying for high-frequency market turbulence.

We re-estimate our baseline specifications using this alternative dependent variable, and results are displayed in Table A.3. First, we find that the signing of an IMF lending agreement (the "signaling" effect) is not statistically associated with a lower FX-volatility. The coefficient for the IMF agreement dummy is insignificant, suggesting that the mere announcement of a program is insufficient to quell high-frequency daily fluctuations in the exchange rate, even if it relieves broader pressure on reserves. Second, in contrast to the signing effect, the actual use of IMF lending (the "liquidity" effect) is associated with a statistically significant reduction in FX-volatility. This finding implies that it is the tangible injection of hard currency, rather than the policy signal alone, that effectively smooths market volatility during distress episodes. Finally, to account for the magnitude of intervention, we replace the binary indicators with the logarithm of the IMF lending amount (in U.S. dollars). We find that a larger size of IMF lending is significantly associated with lower FX-volatility. This creates a coherent picture: while the promise of aid does not immediately calm daily market volatility, the provision of substantial liquidity plays a decisive role in stabilizing the exchange rate path. These results reinforce our broader conclusion that material liquidity support is

Table A.3: The impact of IMF lending on exchange rate volatility

Dep.var.	(1) lnFXvol	(2) lnFXvol	(3) lnFXvol
IMF agreement	-0.00006		
	(0.00007)		
IMF use		-0.00014*	
		(0.00007)	
IMF lending amount (in log)			-0.00001*
			(0.00001)
Constant	0.00097***	0.00098***	0.00114***
	(0.00002)	(0.00001)	(0.00002)
Observations	15,427	14,809	9,660
R-squared	0.28232	0.27873	0.26082
Country FE	YES	YES	YES
Month FE	YES	YES	YES

Notes: This table presents the results of panel regressions examining the impact of IMF lending on exchange rate volatility, serving as a robustness check for the baseline results using Exchange Market Pressure (EMP). The dependent variable, lnFXvol, is the natural logarithm of the monthly realized volatility of the exchange rate. This is calculated as the standard deviation of daily percentage changes in the nominal exchange rate (local currency against the U.S. dollar) within each month, proxying for high-frequency market turbulence. Column (1) estimates the signaling effect using IMF Agreement, a binary dummy variable set to 1 for the 12-month window following the signing of an IMF lending arrangement. Column (2) estimates the liquidity effect using IMF Use, a binary dummy variable set to 1 for the 12-month window following the actual disbursement of IMF funds. Column (3) replaces the binary indicators with IMF Lending Amount (in log), a continuous variable defined as the natural logarithm of the U.S. dollar value of the IMF credit disbursed, to account for the magnitude of intervention. All regressions include country and month fixed effects to control for time-invariant unobservables and global shocks. Robust standard errors are reported in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

a critical channel for crisis resolution.

In contrast to the findings for the IMF, we observe that neither the signing nor the utilization of China's swap lines has a statistically significant effect on exchange rate volatility (FX_Vol_{it}). While initially surprising given their strong impact on EMP, this divergence is consistent with the 'Liquidity Asymmetry' mechanism ($q_M > q_C$) central to our theoretical framework.This null result can be explained by the functional distinction between an intervention currency and a settlement currency. Central banks typically manage high-frequency exchange rate volatility by intervening directly in spot

markets using hard currency (primarily USD). Because IMF lending provides direct access to these intervention assets, it empowers authorities to smooth out daily fluctuations. China's swap lines, however, provide liquidity in Renminbi—a currency with limited convertibility that is rarely used for direct open-market operations to defend a peg. Instead, as our mechanism analysis (Section 6) suggests, these swaps operate through a "resource substitution" channel: they allow countries to finance imports from China using RMB, thereby preserving scarce dollar reserves. This relieves the aggregate pressure on the balance of payments (lowering EMP) but does not provide the central bank with the immediate hard currency required to suppress high-frequency daily volatility. Thus, the insignificance of the volatility coefficient reinforces our argument that China's swaps function as a structural buffer rather than a tool for stabilizing the active market.

However, it is important to note that we retain the Exchange Market Pressure (EMP) index as our preferred primary specification throughout the main text. We prioritize EMP because it offers a more comprehensive assessment of external sector stress than volatility alone. By aggregating exchange rate depreciation, foreign reserve depletion, and interest rate adjustments, the EMP index captures the full spectrum of policy responses available to central banks, particularly in developing economies where authorities often intervene to suppress volatility. This multidimensional approach is widely established in the international finance literature (e.g. Eichengreen et al., 1995; Aizenman et al., 2022) as the superior metric for identifying periods of distress. Consequently, while FX-volatility serves as a valuable robustness check for high-frequency turbulence, the EMP index remains the most appropriate measure for evaluating the efficacy of rescue lending.