Debate

Dollar Liquidity, Financial Vulnerability and Monetary Sovereignty

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ABSTRACT

Periods of dollar-led global monetary tightening generate negative effects in many lower- and middle-income countries. The tightening cycle which commenced in early 2022 has exacerbated the financial dislocation experienced by countries including Zambia, Sri Lanka and Pakistan. How can policy makers protect their economies from such external shocks and foster a stable developmental environment? Some recent contributions argue that the capacity of countries to insulate domestic policy from global financial conditions depends upon 'monetary sovereignty'. This contribution argues that this misrepresents the constraints to macroeconomic policy and development strategy. Monetary sovereignty, if narrowly defined, is necessary but not sufficient for domestic policy autonomy. Stronger definitions impose unrealistic requirements on debt denomination and exchange rate regimes. The authors argue that, outside of currency unions, the main policy constraints for developing countries are limited domestic productive capacity and integration into global trade and financial networks rather than monetary arrangements. The discussion is illustrated with an empirical examination of three recent episodes of global illiquidity and/or policy tightening: the 2013 taper tantrum, the March 2020 liquidity shock and the 2022 dollar tightening cycle. The authors find evidence that monetary sovereignty does not insulate a country from episodes of dollar illiquidity. While 'fundamentals' such as current account deficits and foreign exchange reserves provide limited power in identifying vulnerability, measures of financial depth and activity do appear related to vulnerability.

INTRODUCTION

Periods of dollar-led global monetary tightening generate negative effects in many lower- and middle-income countries (LMICs). For countries with open financial accounts and substantial external debt stocks, dollar appreciation, rising interest rates and tightening liquidity can quickly generate destabilizing macro-financial processes which lead to default or debt restructuring. Even if liquidity crises can be avoided, many LMIC policy makers cannot avoid raising already structurally high interest rates and tightening fiscal policy.

Since the start of the tightening cycle which began in early 2022, countries including Zambia, Sri Lanka and Pakistan have seen severe financial dislocation as dollar tightening exacerbated the difficulties of servicing external debt stocks. Sri Lanka was forced to default on its public debt in April, after the Sri Lankan rupee depreciated from around 200 rupees to the dollar to 350 rupees to the dollar, annual inflation increased to over 50 per cent, foreign exchange reserves collapsed, and political crisis and austerity policies ensued (Parkin et al., 2023).

How can policy makers in LMICs insulate their economies from externally imposed constraints and foster a stable developmental environment? Some recent contributions argue that the capacity to insulate domestic policy from global financial conditions depends upon 'monetary sovereignty'. This view is influenced by modern monetary theory (MMT) which proposes a definition of monetary sovereignty centred on the state's capacity to issue domestic currency (Tymoigne, 2020; Wray, 2019). MMT originally focused on proposals to use this capacity to expand aggregate demand in rich countries, the USA in particular. As interest has grown in applying the concept of monetary sovereignty more widely, proponents have been compelled to consider the specific policy constraints faced by LMICs.

In this article, we argue that monetary sovereignty, if narrowly defined, is necessary but not sufficient for domestic policy autonomy. Consequently, the 'monetary sovereignty view' of development misrepresents the constraints on policy making and development strategy in many LMICs. The most important of these fall into two categories. First, inadequate structural transformation and domestic productive capacity limit the potential for rapid increases in employment and productivity growth and can impose structural dependence on imports and foreign exchange. Second, integration into the global trade and financial system constrain policy: even limited integration affects macroeconomic policy space while countries which are more tightly integrated face transmission of global liquidity shocks to domestic macroeconomic and financial conditions. Broader definitions of monetary sovereignty which attempt to incorporate these structural constraints lack coherence because the obstacles to policy go well beyond issues of monetary management.

The article proceeds as follows. We first discuss monetary sovereignty in more detail and then discuss the two structural constraints outlined above. In the subsequent section we illustrate our discussion with an empirical examination of three recent episodes of global illiquidity and/or policy tightening: the 2013 taper tantrum, the March 2020 liquidity shock and the 2022 dollar tightening cycle. Using currency depreciation against the dollar as a proxy for financial outflows, we demonstrate that a simple measure of monetary sovereignty is weakly negatively correlated with size of depreciation, but monetary sovereignty does not (in and of itself) insulate a country from episodes of dollar illiquidity. Instead, measures of financial depth and activity appear to be related to vulnerability to the 2013 'taper tantrum'. In the two later episodes, we find that a combination of 'fundamentals' and financial integration are weakly correlated with dollar depreciation. We conclude that the constraints imposed by global financial integration go beyond issues of monetary sovereignty.

MONETARY SOVEREIGNTY AND DEVELOPING COUNTRIES

The concept of monetary sovereignty has a long history, as do debates about the interaction between monetary arrangements, legal sovereignty, trade, financial integration and policy space (Kurihara, 1949; Mundell, 2002; Pistor, 2017; Schuler, 2003; Zimmermann, 2013). Strong claims made by MMT proponents about the correspondence between monetary sovereignty and policy autonomy have recently attracted interest in debates about policy in LMICs (Kaboub and Aliriza, 2019; Sylla, 2020). Proponents argue that understanding monetary sovereignty — and, where necessary, taking steps to attain it — provides states with the capacity to enact policy constrained only by domestic resources, and thus to pursue developmental strategies unhindered by financial constraints or externally-imposed pressure (Sylla, 2023; Tymoigne, 2020). The following conditions are identified as necessary for monetary sovereignty:

1. The national government chooses a money of account in which the currency is denominated;
2. The national government imposes obligations (taxes, fees, fines, tribute, tithes) denominated in this money of account;
3. The national government issues a currency denominated in this money of account, and accepts that currency in payment of these imposed obligations;
4. Any other obligations against the national government are also denominated in the chosen money of account, and payable in the national government's own currency (see, for example, Wray, 2019: 5).

A government which fulfils these criteria, it is claimed, is able to finance its expenditures by issuing either currency or debt instruments (government bonds) denominated in its own currency: imposing taxes denominated in domestic currency enforces widespread acceptability and thus ensures that the government can purchase domestically produced goods and services by issuing the currency. The capacity of policy makers to spend is then 'limited [only] by the real resources at their disposal' (Sylla, 2020). A policy which equates to debt monetization may appear a surprising proposal for LMICs. However, MMT proponents reject any meaningful distinction between debt instruments and monetary instruments on the basis that both are liabilities issued by the government so either can be used to finance spending (Wray, 2007).[1] Governments which issue their own currency therefore have substantial — and often under-used — capacity to raise economic activity and employment by increasing expenditure, without the need to worry about financing the resulting deficits. Monetary sovereignty thus bestows policy autonomy.

An important problem with these criteria for monetary sovereignty and policy autonomy is the limited attention paid to integration into global trade and financial systems. Monetary sovereignty, if narrowly defined using the first three criteria, applies to the majority of countries — the exceptions are countries in monetary unions such as the eurozone or the CFA franc zone, and countries with significant dollarization (Koddenbrock and Sylla, 2019). The condition that public debt must be denominated in local currency applies less consistently and has a number of important corollaries: while large economies (most obviously, the USA) conform to all four criteria, many LMICs are small open economies with a variety of links to the global trade and financial systems. If the governments of these economies are to avoid incurring foreign-denominated liabilities, they must avoid intervening to prevent currency depreciation because any sort of currency peg is a commitment to supply foreign exchange. Thus, many authors include a freely floating exchange rate as a fifth necessary condition for monetary sovereignty (Kaboub, 2007; Sylla, 2020; Tcherneva, 2016; Wray, 2012).

Floating exchange rates are advocated on the basis that domestically issued currency can be converted to other currencies in order to pay for imports while supply and demand will determine the equilibrium exchange rate. This stipulation is at odds with much thinking about development policy and industrial strategy. The exchange rate is described by Wade as 'about the most important price a government has to get right in order to

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1. In MMT, 'the government' is usually used as shorthand to cover the consolidated public sector, including the treasury, central bank and other public sector institutions. This does not correspond to the actual institutional arrangement in countries where central banks are expected to be more or less independent of government. It can, however, be thought of as an institutional structure which *could* exist, if legislation were enacted to make the central bank fully subordinate to the treasury or finance ministry, for example.

enable industrial policy to be effective' (Wade, 2014); Chang and Grabel (2014: 166) argue that 'unrestricted currency convertibility creates the potential for currency depreciation and collapse, capital flight and financial instability'. The majority of LMICs intervene to reduce exchange rate volatility: some kind of floating peg is the most widely adopted approach. Acknowledging these points, some MMT authors accept the need for exchange rate management while arguing that this does not reduce monetary sovereignty but it does reduce policy space (e.g., Tymoigne and Wray, 2013).

Even if the benefits of a fully floating currency — the alleviation of 'financial' constraints on government spending — outweighed the costs, such a regime would not exempt policy from external constraints: higher spending generally leads to higher import demand, raising domestic demand for foreign currency. Increased public spending therefore leads to domestic depreciation, raising the cost of imports and compressing real incomes. This mechanism is either overlooked or downplayed by many proponents of the monetary sovereignty view (Bonizzi et al., 2019).

MMT proponents likewise overstate the extent to which the choice of currency for debt denomination is a policy decision. In many cases, development and industrialization require imports of capital goods which can only be purchased in foreign currency. If this cannot be obtained from export revenues, then foreign-denominated debt is unavoidable. This issue is not limited to government debt: private debt stocks issued in foreign currencies also constrain domestic policy. Depreciation for countries with private foreign-denominated debt will lead to increased foreign-exchange commitments relative to domestic productive capacity, and may lead to bankruptcies, unemployment and/or reduced domestic consumption, none of which can be ignored as policy constraints. The monetary sovereignty criteria thus implicitly require governments to prevent domestic firms and residents from taking on foreign-denominated debt.

Despite these issues, proponents argue that monetary sovereignty remains a useful concept and a valid policy target for LMICs: understanding monetary sovereignty, it is argued, helps reveal the power of the state to deploy resources for developmental ends and to counteract exploitative neo-colonial relationships (Ben Gadha et al., 2022). The freedom to set monetary and fiscal policy with a significant degree of autonomy is undoubtedly an important prerequisite for successful developmental policy. For most LMICs, however, the limits to policy autonomy do not derive from a lack of monetary sovereignty in the narrow sense of capacity to issue domestic currency (the first three criteria above). Instead, the main constraints derive from the productive structure of the economic system, on the one hand, and external financial factors on the other. Limited domestic productive capacity leads to structural reliance on imports; the resulting need for foreign exchange requires integration into global financial systems on terms which cannot be unilaterally imposed by domestic policy makers.

Once it is accepted that neither internal nor external constraints can be easily overcome by domestic policy choices — declaring that foreign-denominated debt should be avoided and exchange rates should be flexible does not provide a workable policy proposal — the concept of monetary sovereignty loses much of its strength. Attempts to adjust monetary sovereignty proposals to account for these constraints either require the definition to be expanded to include a much broader range of policy interventions — industrial policy, financial system design, exchange rate management and so on — or effectively require autarky. In either case, such proposals go well beyond monetary issues. In the following section we discuss these internal and external constraints in more detail and highlight the limits to monetary sovereignty in overcoming these constraints.

POLICY CONSTRAINTS IN LMICs

The Internal Constraint: Insufficient Productive Capacity

MMT proponents claim that monetary sovereignty frees states from financial constraints, and thus enables them to utilize all available resources without concern for the public finances. By expanding spending, it is argued, underutilized resources can be employed in productive activity, raising output and employment. Once freed from deficit fetishism, we are able to focus on the real resource constraints that are the true barrier to economic activity. This approach to the supply side is usually framed in terms of an inflation constraint, or 'barrier' (Tymoigne, 2021). Once spending has increased to the point at which the economy is operating close to full employment, inflationary pressure will occur. This is a signal that expenditure should not be increased any further, and that all real resources are employed (ibid.). These real resource constraints are often, if only implicitly, reduced to a single variable: the supply of labour. Underlying MMT is a simple macro model: a closed-economy Leontief production function with excess labour. The only constraint on output is the labour supply; capital is assumed to be abundant. The 'inflation barrier', therefore, refers to the point at which unemployment has been driven so low that wage demands are not sufficiently constrained to prevent a wage–price spiral.
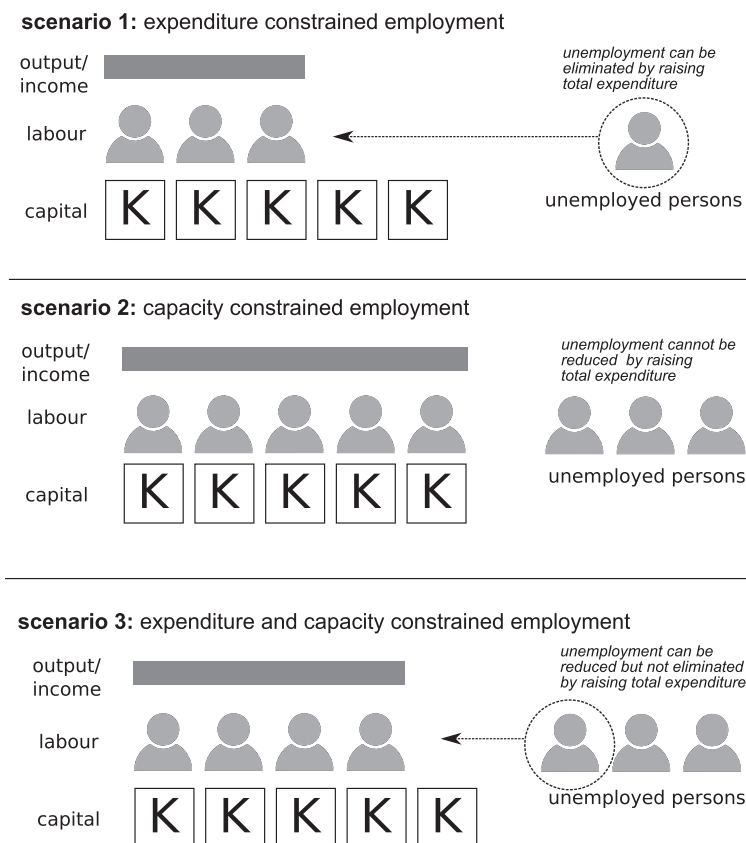
As Aboobaker and Ugurlu (2023) have argued, this misrepresents the stylized facts of developing countries in an important way: developing countries generally face a problem of capital shortage rather than capital abundance (Kalecki, 1955; Storm, 1997). In contrast with the detailed descriptions of monetary transactions provided by MMT authors, theorization of the productive structure of the economy tends to be highly stylized. This may or may not be a useful abstraction in the case of large economies like the USA, but is a significant omission in the case of developing countries.

One of the most important differences between the supply side in developed and developing countries is the profoundly 'dual' character of labour markets in the latter, in which underdeveloped formal labour markets coexist with substantial disguised and open unemployment. In contrast with the situation in rich economies, where capital is abundant and labour relatively scarce, raising government spending to the point at which all available labour is employed is not a realistic proposition for developing countries. Instead, the root of the problem is the lack of productive capacity. The capital stock and level of technological sophistication impose a limit on the level of productive employment. Beyond this limit, further demand-driven increases in employment will not lead to higher output. If spare capacity is not available, or if bottlenecks exist in specific sectors such as agricultural production, increased demand is likely to generate inflationary pressure and lower real wages for those already employed. Over the longer run, sustained increases in labour demand require growth in capacity: employment promotion beyond the short run requires capital accumulation and structural transformation. The simple concept of an inflation barrier is, therefore, misleading. In rich countries, inflation may or may not be the result of wage pressure when unemployment is low. In developing countries, inflation is more likely to result from capacity constraints.

Figure 1 illustrates this point by representing different limits to expansion of production and employment. Productive capacity is represented as several units of capital which can be combined with labour to produce output. The size of the capital stock sets an upper limit to production: achieving further increases in output by raising employment above the maximum level imposed by the capital stock is not possible. Employment levels are represented by the number of persons working with the capital stock. On the right is shown the number of unemployed persons. Following classic dual economy models, we assume that people can be withdrawn from this group without causing a reduction in output (the marginal productivity of labour in this group is zero). The level of output is, therefore, determined by the level of employment (Kirkpatrick and Barrientos, 2004).

The top row shows a situation of expenditure-constrained employment, typical of the situation in rich economies: sufficient unused capital is available to expand output and employment such that unemployment can be eliminated. This is the scenario which corresponds to the MMT inflation barrier: as the number of unemployed people gets close to zero, wage demands increase, leading to inflationary pressure. The second row depicts a situation of capacity-constrained employment: all available capital is already in use but substantial unemployment persists. Further increases in employment are not possible without redistribution of income and/or inflationary pressure. The cause of unemployment in this case is insufficient productive capacity, rather than insufficient aggregate demand. The final row shows a combination of the previous two constraints, and is probably a reasonable

Figure 1. Categorizing Supply Constraints

scenario 1: expenditure constrained employment

output/income — labour — capital: K K K K K

unemployment can be eliminated by raising total expenditure — unemployed persons

scenario 2: capacity constrained employment

output/income — labour — capital: K K K K K

unemployment cannot be reduced by raising total expenditure — unemployed persons

scenario 3: expenditure and capacity constrained employment

output/income — labour — capital: K K K K K

unemployment can be reduced but not eliminated by raising total expenditure — unemployed persons

Source: Aboobaker and Michell (2023)

representation of the case in many LMICs: unemployment could be reduced somewhat in the short run by demand expansion, but the longer-run problem persists in the presence of inadequate capital accumulation.

The claim that once financial constraints to government spending are removed by achieving monetary sovereignty, only a labour-supply constraint remains, misrepresents the nature of supply constraints in many LMICs. Linkages between sectors mean that reducing unused capacity in some sectors will also raise capacity utilization in other sectors. Increased demand for domestic manufactured goods, for example, will raise demand for labour in manufacturing. If this leads to higher employment, total wage income will rise and this will lead to an increase in consumption expenditures. These consumption expenditures are likely to include expenditure on services and food; expansion of employment which raises demand for agricultural output beyond available capacity will lead to inflationary pressure.

The existence of such domestic agricultural constraints is an important theme in the development literature (Fischer, 2015, 2019).

In many cases, shortages of capital, energy, food or other inputs to the productive process can only be overcome by importing these items. Growth and development are, therefore, constrained by the need for imports, which in turn is constrained by the need for foreign exchange. This foreign exchange constraint, and the capacity for foreign exchange shortages to constrain growth in developing countries, have been repeatedly emphasized in the development literature (see Aboobaker and Michell, 2022 for further discussion). In the next section we consider these external constraints in more detail.

The External Constraint: Global Finance

The idea that developing countries face binding external constraints has a long tradition in the structuralist macroeconomics literature, in the form of balance-of-payments-constrained growth models and structuralist 'gap' models (Taylor, 1994; Thirlwall, 2012). Development requires imports, and imports require foreign exchange. This necessitates the integration of developing countries in global trade and financing networks, exposing policy makers in these countries to the dynamics of the global financial system: borrowing or foreign direct investment are the primary alternatives to export revenues as a means of acquiring foreign exchange. When foreign exchange needs arise in the domestic private sector, the state may be required to take on foreign-denominated liabilities: domestic companies may not be deemed creditworthy by overseas investors, requiring the state to effectively take on the associated exchange rate risk. As a result, avoiding foreign-denominated debt, whether public or private, is often not an available policy choice.

Foreign exchange constraints cannot be ameliorated by narrow monetary sovereignty: attempts to finance imports by issuing domestic currency and converting it to foreign currency in spot markets will lead to depreciation, lower consumption and an increase in the real debt burden. Issuance of debt in domestic currency does not provide insulation from sudden-stop dynamics if that debt is held by foreign investors: a holder of LMIC liabilities denominated in domestic currency might be funded in a foreign currency, creating a currency mismatch between their assets and liabilities. In the event of dollar liquidity tightening, such positions face pressure for liquidation (Carstens and Shin, 2019; Kaltenbrunner and Painceira, 2015). In a world of convertible currencies, those in receipt of domestic currency are free to exchange it for harder currencies. In the absence of an unlimited demand for government liabilities denominated in domestic currency, the size of the deficit thus matters independently of the supply-side constraints discussed above. Financing is not automatic.

These issues have led to criticisms of attempts to apply the MMT-derived monetary sovereignty concept to LMICs (Aboobaker and Ugurlu, 2023; Bonizzi et al., 2019; Vergnhanini and Conti, 2018; Vernengo and Caldentey, 2020). They have also led both critics and proponents to consider the relationships between monetary sovereignty and currency hierarchies (Murau and van 't Klooster, 2022; Patrício Ferreira Lima, 2022; Prates, 2021). The latter concept derives from the observation that the capacity of currencies to perform the functions of money internationally varies substantially. Currencies are arranged in a hierarchy with the most liquid currency, the US dollar, at the top. Other currencies are below, ordered by the liquidity premium faced by each, relative to the dollar (Kaltenbrunner, 2015; Prates, 2020). The relationship between vulnerability to externally imposed financial instability and currency hierarchy position is not straightforward, however. Middle-income countries, which exhibit limited structural transformation alongside substantial integration into global financial markets, appear to be most exposed to financial outflows and sudden-stop dynamics. Countries towards the bottom of the currency hierarchy tend to be substantially less financially integrated, have less liquid financial markets and are thus less prone to high-speed financial dynamics. In contrast, these countries often have significant external debt stocks alongside structurally high interest rates, but do not issue currencies which are treated as an asset class by global investors (Kvangraven et al., 2020). In these countries, dollar tightening tends to induce interest rate hikes and debt distress, rather than rapid financial outflows and depreciations.

This leads to an impasse: if monetary sovereignty is treated as synonymous with policy autonomy, the narrow definition is untenable for the majority of countries. Definitions broad enough to sustain the equivalence with policy autonomy go well beyond any reasonable meaning of *monetary* sovereignty (some implicitly expand the definition of 'monetary sovereignty' to include self-sufficiency in primary commodities, for example). In response, some argue that monetary sovereignty is dependent on a state's position in the currency hierarchy; others accept a weakening of the equivalence between policy autonomy and monetary sovereignty, and view policy autonomy as dependent upon both monetary sovereignty and position in the currency hierarchy. Whichever semantic strategy is adopted, the implication is that the traditional macroeconomic policy trilemma still holds.

In fact, it is increasingly accepted that the so-called trilemma is in fact a dilemma because independent monetary policy is incompatible with open capital accounts regardless of the exchange rate regime (Rey, 2015). The dollar is unique in its position as the currency in which the majority of international debt contracts are denominated — in this sense, the US is the only true monetary sovereign of the global system. Economies with historically large or important financial centres, such as London, also enjoy substantial leeway to set policy. But treating these special cases as the norm is a mistake.

To summarize: the ability to issue domestic currency and set domestic taxes has little bearing on the problems of inadequate capacity and structural reliance on imports, while availability of foreign exchange depends on a country's export structure and the nature and extent of its integration into the global financial system. Only a small number of currencies are widely accepted for international transactions. Policy autonomy is necessary but not sufficient for development, and narrow monetary sovereignty is necessary but not sufficient for policy autonomy. Structural transformation which increases domestic productive capacity will tend to weaken external dependence and thereby increase policy autonomy, rather than the other way round. Financial vulnerability is particularly acute for those countries which have substantially integrated into global financial markets but have not achieved sufficient structural transformation to free themselves from foreign exchange constraints.

THREE EPISODES OF DOLLAR APPRECIATION

In this section we present evidence on the second of the two constraints identified above. We demonstrate the importance of financial integration — and the relative unimportance of narrow monetary sovereignty — in determining exposure to global liquidity conditions. Specifically, we consider the reaction of emerging market economies — those developing countries which are substantially integrated into the global economic system — to three separate episodes of dollar tightening: the tightening of dollar liquidity in May 2013 and in March 2020, and the hiking cycle which began in March 2022.

The 2013 Taper Tantrum

Central banks in advanced economies responded to the 2008 financial crisis with multiple rounds of quantitative easing, as interest rates fell to their effective lower bound. The spillover effects of quantitative easing on developing countries have been widely studied, with large increases in financial flows thought to be a major consequence of the policy. Portfolio investment, particularly in bond markets, was especially affected by central bank asset purchases after 2008 (Lim and Mohapatra, 2016).

As well as spillover effects from the expansion of unconventional monetary policies, there are also a variety of negative spillover effects from their withdrawal. The first major example of these spillovers was the 'taper tantrum' of 2013. This is widely believed to have been triggered by a statement made to the Joint Economic Committee of the US Congress by the chairman of the Federal Reserve (henceforth 'the Fed'), Ben Bernanke, on 22 May of that year. As part of a routine appearance, Bernanke answered a question put to him by a lawmaker as follows: 'If we see continued improvement and we

have confidence that that's going to be sustained then we could in the next few meetings … take a step down in our pace of asset purchases' (da Costa and Bull, 2013). This acknowledgement that the pace of quantitative easing could be reduced led to an immediate sell-off of US Treasuries, with the yield on 10-year Treasuries rising from around 2 per cent in May to around 3 per cent by the start of September 2013.

The 2020 Rush for Liquidity and 2022 Tightening Cycle

The spike in Treasury yields around May 2013 led to a sharp decrease in capital flows, and a depreciation of several developing country currencies against the dollar. The early phase of the COVID-19 pandemic saw a similar shift in global liquidity in response to fears about the economic effects of the pandemic, and measures to contain it. Investors first shifted towards safe assets, most obviously the sovereign bonds of a small number of rich countries including the USA, UK and Germany. As fears intensified, however, investors moved out of these bonds and into cash, placing severe strain on the sovereign debt markets of rich countries, and the US Treasury market in particular (Barone et al., 2022). As in the 'taper tantrum', the currencies of emerging markets saw rapid depreciation as investors moved out of risky assets. Meanwhile, the Fed launched a large-scale operation of dollar liquidity provision via swap lines; this appears to have been successful in rapidly curtailing the liquidity shock.

Dollar exchange rates for a panel of middle- and high-income developing countries over these two periods, as well as for the 2022 tightening cycle, are shown in Figure 2. In each case, depreciation is shown relative to an index month: May 2013 for the taper tantrum, February 2020 for the COVID-19 liquidity shock, and January 2022 for the 2022 tightening cycle. Despite heterogeneity in exchange rate dynamics, the majority of these countries experienced depreciations in all three episodes.[2] Five countries are highlighted for particular consideration. These are the so-called 'fragile five' that were

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2. The countries shown in Figure 2 and subsequent Figures are middle-income and high-income developing countries with a population of at least 10,000,000 (which removes offshore financial centres such as Hong Kong and Singapore from the analysis; we do not include Korea or China in our definition). We also remove Egypt, Iran and Venezuela, which were significant outliers in exchange rate dynamics and/or reserve movements in 2013. Bolivia, Ecuador, Iraq and Saudi Arabia are also excluded, as these countries' domestic currencies are pegged to the dollar, and a small number of other countries are excluded due to lack of data. The full sample is then: Angola, Argentina, Azerbaijan, Bangladesh, Brazil, Chile, Cote d'Ivoire, Cameroon, Colombia, Dominican Republic, Algeria, Ghana, Guatemala, Honduras, Indonesia, India, Jordan, Kazakhstan, Kenya, Cambodia, Sri Lanka, Morocco, Mexico, Myanmar, Malaysia, Nigeria, Pakistan, Peru, Philippines, Sudan, Senegal, Thailand, Tunisia, Turkey, Uzbekistan, Vietnam, South Africa and Zambia.

Figure 2. Emerging Market Exchange Rate Depreciation against the Dollar
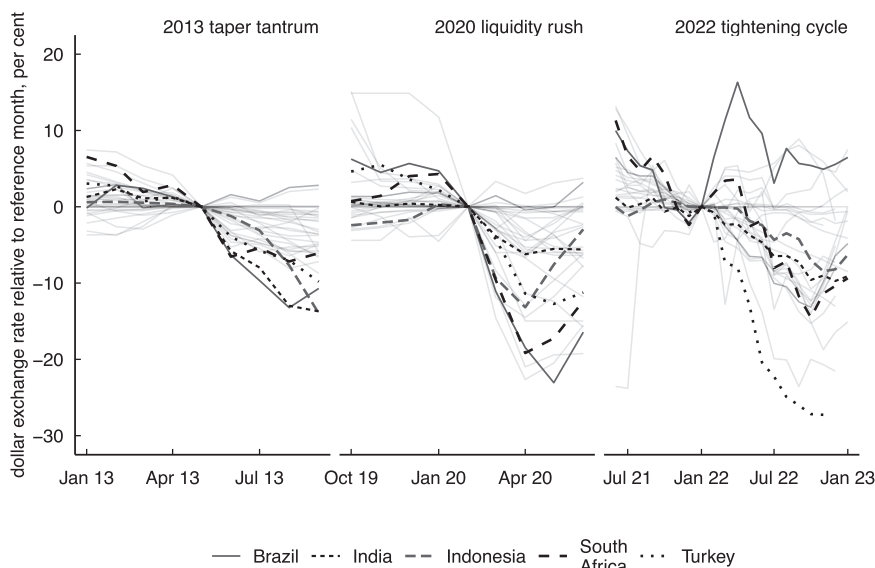
Note: Four countries with large exchange rate moves not shown for 2022 tightening cycle: Angola, Argentina, Ghana and Sri Lanka.
*Source*: IMF International Financial Statistics (https://data.imf.org/?sk=4c514d48-b6ba-49ed-8ab9-52b0c1a0179b)

particularly affected by the taper tantrum: Brazil, India, Indonesia, South Africa and Turkey.

While most of the middle- and high-income developing countries in our sample experienced depreciations against the dollar in all three of these episodes, their monetary policy reactions were highly heterogeneous. While interest rates remained roughly constant over the taper tantrum, most countries reduced their interest rates around the 2020 liquidity shock, alongside large-scale dollar liquidity via swap lines as the impact of COVID-19 (temporarily) outweighed other concerns. In contrast, the 2022 hiking cycle saw almost all emerging market economies follow the Fed in increasing or, in some cases, pre-emptively increasing rates (see Figure 3). Turkey's determination to pursue a 'heterodox' path makes it a prominent outlier during this episode (see Orhanghazi and Yeldan, this issue).

The Role of Monetary Sovereignty

To what extent did monetary sovereignty insulate emerging-market policy making from these shocks? In this section we examine the correlation

*Figure 3. Changes in Emerging Market Policy Rates*
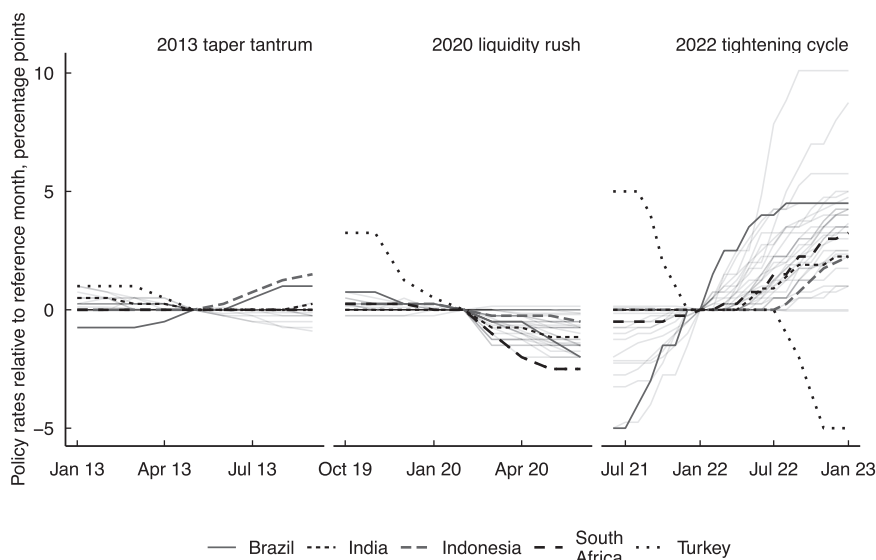
Note: Two countries with large rate changes not shown: Hungary and Russia.
Source: Bank for International Settlements (www.bis.org/statistics/cbpol.htm)

between foreign-denominated external debt and currency depreciation, which we treat as a proxy for financial outflows rather than equilibrium repricing. We have excluded the poorest countries in the world from the sample, and those with dollar pegs. All of the countries in Figures 2 and 3, therefore, broadly satisfy the first three conditions for monetary sovereignty discussed above, yet some suffered severe capital flight and exchange rate depreciations. In response to these episodes, policy makers in some of these countries hiked interest rates; some hiked pre-emptively. In the absence of these hikes, currency depreciations probably would have been greater.

The remaining criterion for monetary sovereignty is the extent to which the countries in Figures 2 and 3 issue debt denominated in their own currencies. Unfortunately, data on the currency composition of external debt is relatively patchy, but there are some countries for which the World Bank publishes data on total external debt by currency composition that are also included in our sample of middle- and high-income developing countries. This measure includes both public and private sector debt — as we argued in previous sections, a definition limited to public debt is implausible. Figure 4 plots the ratio of external debt denominated in foreign currencies as a proportion of total external debt for these countries, as of quarter two 2022, against their depreciation against the dollar during the 2022 tightening

Figure 4. Ratio of Foreign Currency External Debt in Total External Debt against Exchange Rate Depreciation during 2022 Hiking Cycle
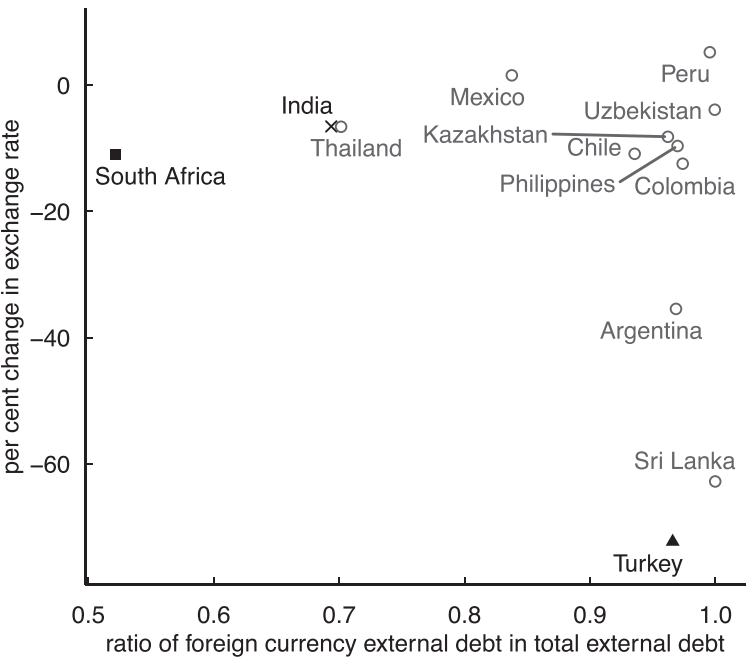
cycle.[3] Allowing for the small sample, there appears to be a weak correlation between the ratio of external debt denominated in foreign currencies and exchange rate depreciations in 2022, as might be expected. Nonetheless, relatively low ratios are clearly not sufficient for insulation from the shock: India, Thailand and South Africa, for example, all have relatively low ratios of foreign to domestically denominated external debt, yet experienced currency depreciations close to the average in 2022. Monetary sovereignty does not appear to protect policy makers from external influence.

THE ROLE OF CAPITAL MARKET OPENNESS

If monetary sovereignty is only weakly related to the exposure of emerging markets to international financial shocks, what are the major determinants?

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3. The change in exchange rate is calculated as the average monthly dollar exchange rate in the 12 months following January 2022, relative to the average in the six months prior to January 2022.

Such shocks are highly heterogeneous, and economists' knowledge of the factors which increase or decrease exposure is limited. For example, there is a literature examining developing country exposure to the 2013 taper tantrum, but no straightforward conclusions have emerged. Some articles focus on the role of capital flows, while others focus on 'fundamentals' such as current account balances and foreign exchange reserves (Avdjiev and Takáts, 2014; Eichengreen and Gupta, 2015; Estrada et al., 2016; Park et al., 2016; Shin, 2017).
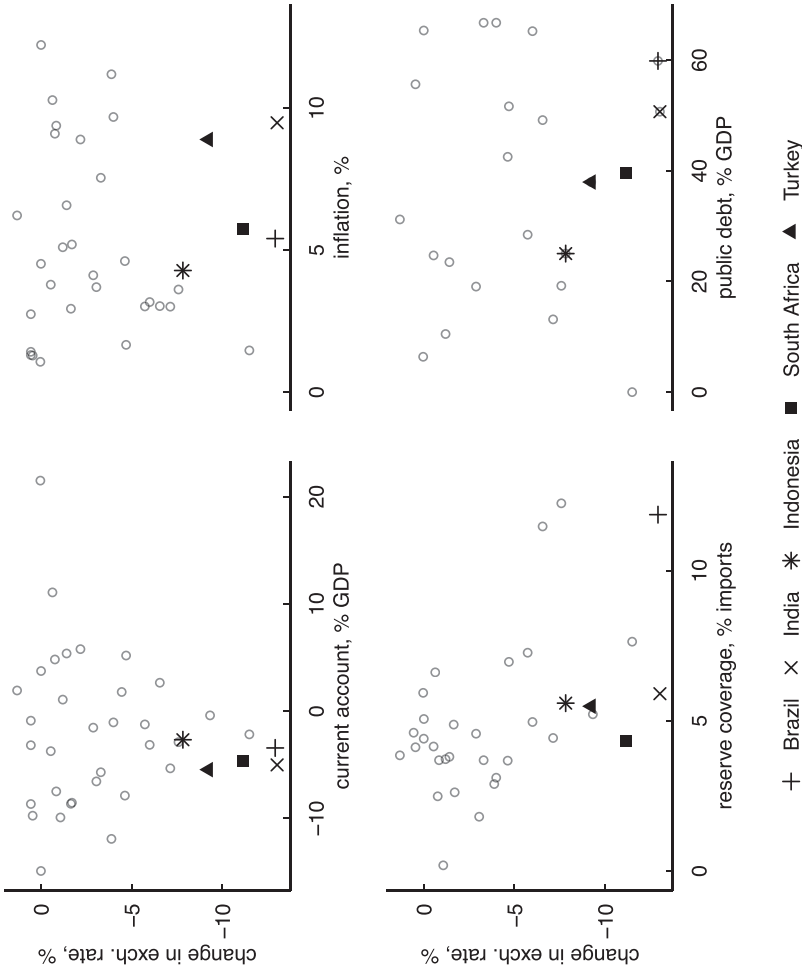
'Fundamentals' such as healthy reserve positions can obviously help countries weather periods of heightened capital market volatility, and many middle- and high-income developing countries, including the so-called 'fragile five', were in a relatively good position by most fundamental measures in both 2013 and 2020. This is illustrated in Figures 5, 6 and 7, which plot current account balances, consumer price inflation, reserve coverage, and government debt against the percentage change in nominal exchange rates during the 2013 taper tantrum, 2020 liquidity shock and 2022 tightening cycle.[4] Each of the predictor variables in these figures is a pre-shock annual average, and (allowing for data availability) the sample is the same as described in footnote 2.

Figures 5, 6 and 7 illustrate in a simple way the complexity of proposing necessary (let alone sufficient) conditions for policy autonomy in developing countries. There are few obvious statistical relationships between the economic fundamentals and exchange rate movements in these figures, and those that do appear to exist are not constant over the three episodes. Reserve coverage, for example, appears to be positively related to size of depreciation in 2013 — the opposite of what one would expect — but changes to the expected sign in 2020. Similarly, there is no obvious relationship between central government debt and depreciation in 2013, while there appears to be a positive effect in 2020. Even in studies that do find a relationship between, for example, current account deficits and exchange rate depreciations over the taper tantrum, the 'fragile five' are outliers in this relationship (for example, in Eichengreen and Gupta, 2015).

This level of complexity is common in international macroeconomics, but does not imply that nothing can be said about the exposure of developing countries to global shocks. In particular, these shocks are mediated by certain institutional factors that, at least for certain episodes, can provide a good indication of sensitivity to global events. Of these institutional factors, various de facto measures of capital market size and liquidity are particularly important. Annina Kaltenbrunner and her co-authors, for example,

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4. The change in exchange rate is calculated as an average (of monthly observations) over the period following the index month relative to the average over the period prior to the index month. For the 2013 and 2020 samples, the averaging period is four months. For the 2022 sample, reflecting the longer-run adjustment process, the pre-index period is six months and the post-index period is 12 months. The index months are the same as in Figures 2 and 3.

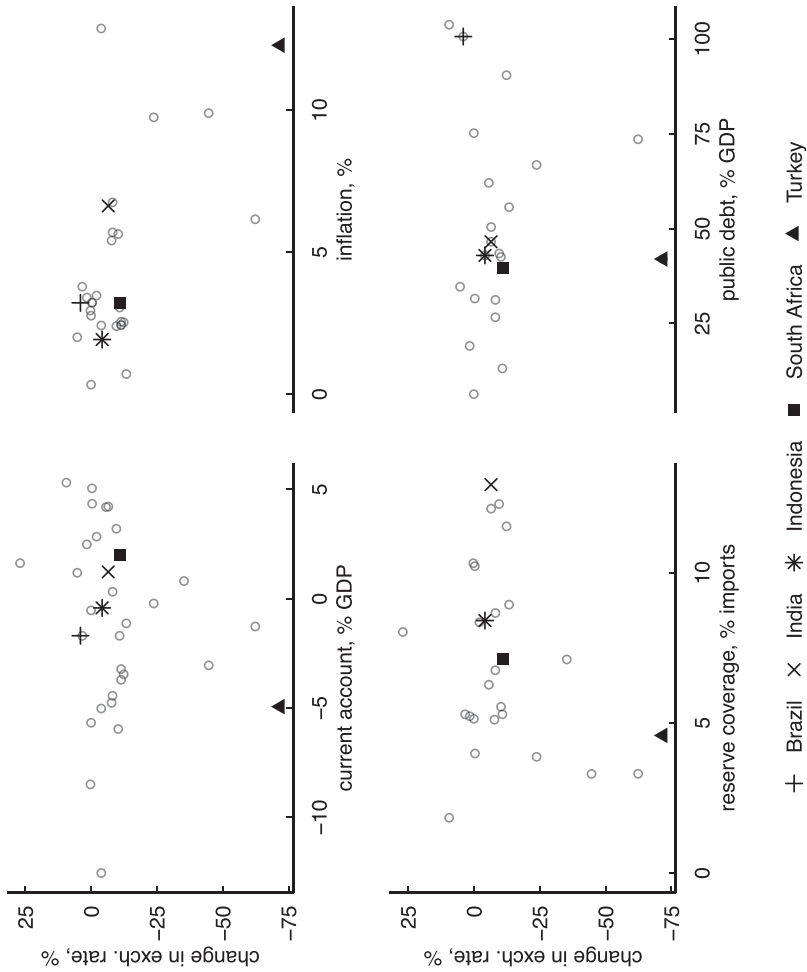*Figure 5. 'Fundamentals' and Exchange Rate Depreciations, May 2013*

Figure 6. 'Fundamentals' and Exchange Rate Depreciations, March 2020
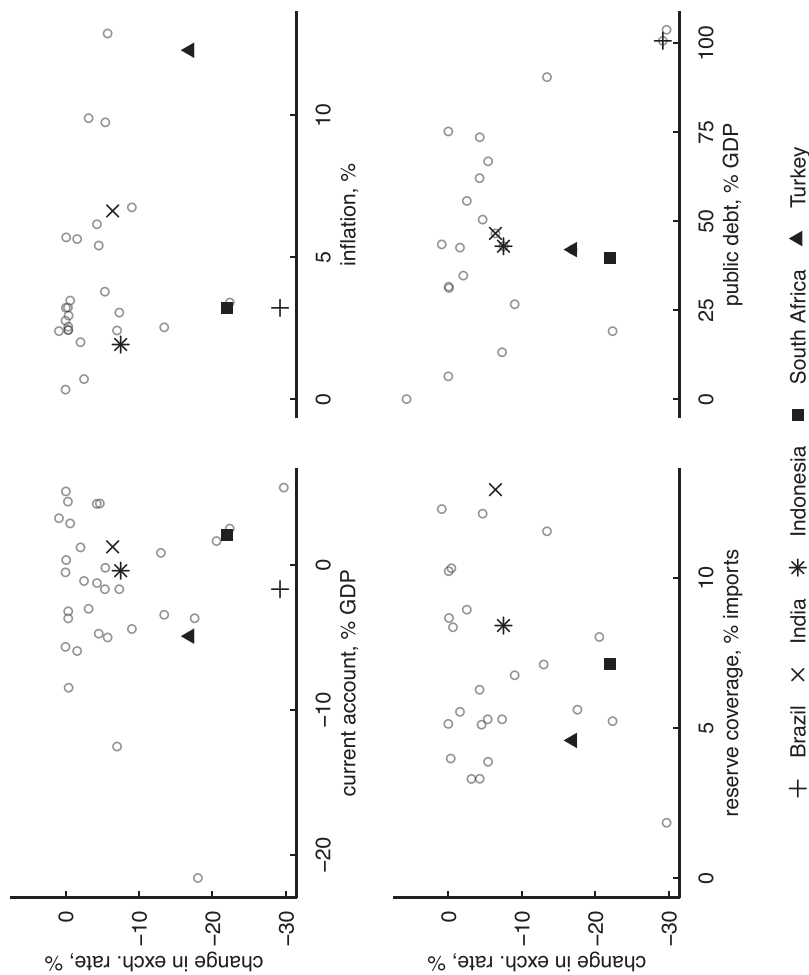
Figure 7. 'Fundamentals' and Exchange Rate Depreciations, January 2022

have studied the extent to which Brazil has remained subject to extremely
volatile capital flows, despite comfortable current account balances, stable
inflation and healthy reserves. They argue that this is due to Brazilian
capital markets that are increasingly open to foreign investors, particularly
those whose portfolio allocations are sensitive to changes in international
financial conditions (Bonizzi and Kaltenbrunner, 2021; Kaltenbrunner and
Painceira, 2015). Similar forms of external vulnerability are shared by
other members of the 'fragile five', including Turkey and South Africa
(for the case of South Africa, see for example, Isaacs and Kaltenbrunner,
2018).

Yilmaz Akyüz has also argued that liberalized financial systems increase
the exposure of developing countries to 'sudden stops', for the simple reason
that international investors find it easier to liquidate their positions in this
kind of system (Akyüz, 2017). A similar point has been made by Barry
Eichengreen and Poonam Gupta regarding the 2013 taper tantrum. They
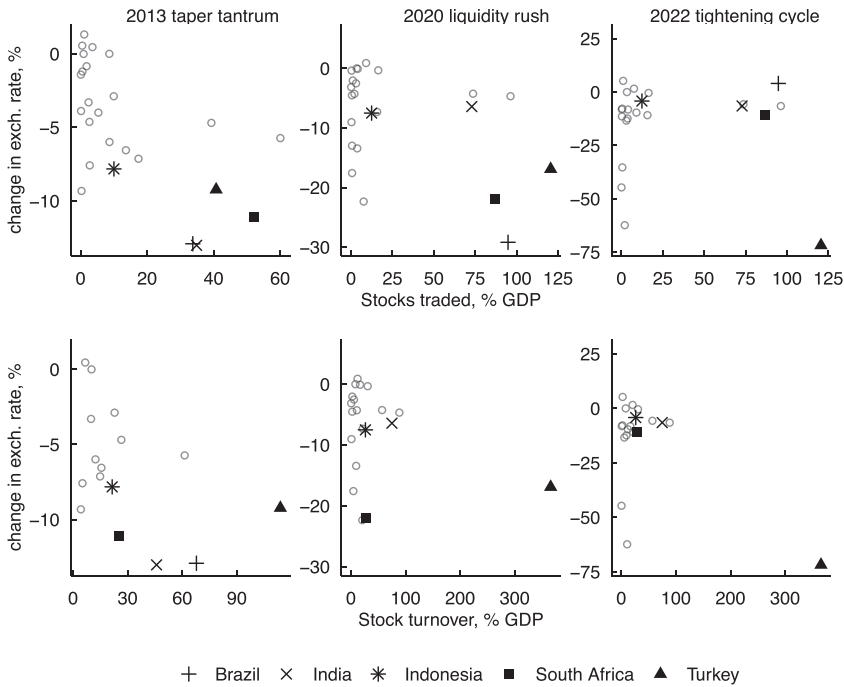observe that:

> Countries with larger and more liquid markets experienced sharper impact [from the taper
> tantrum]. We interpret this as investors seeking to rebalance their portfolios being able to
> do so more easily and conveniently when the target country has a large and liquid market
> and presence of foreign capital. This suggests that having a large and liquid market can be a
> mixed blessing when a country is subject to financial shocks coming from beyond its borders.
> (Eichengreen and Gupta, 2015: 12)

Moreover, these are exactly the type of countries that have relatively high
degrees of monetary sovereignty within their peer group of middle- and
high-income developing countries.

Figure 8 illustrates these observations. It plots the total value of shares
traded on domestic exchanges and the turnover rate of shares traded on
domestic exchanges against the percentage change in dollar exchange
rates around May 2013, February 2020 and January 2022. Both the
total value of shares traded and their turnover rate are straightforward
measures of the depth and liquidity of capital markets, which have the
added advantage of being relatively well-measured. In contrast to the
'fundamentals', there are clear negative relationships between developing
countries' exposure to international financial shocks and these 'Keynesian
fundamentals' (Bonizzi, 2017) in 2013. This relationship weakens but
appears to remain present during the 2020 liquidity shock, and (if we
exclude Turkey as an outlier) appears to be absent during the 2022 hiking
episode.

These observations are supported by the regression results reported in
Table 1, which examine the determinants of middle- and high-income
developing country exposure to the 2013 taper tantrum. If e_{it} denotes the
nominal exchange rate for country i at time t, such that an increase in e_{it} is
a depreciation, and if D_t denotes an indicator variable equal to 1 for the four
months succeeding May 2013, and equal to 0 for the four months preceding

Figure 8. Financial Depth and Exchange Rate Depreciations

Sources: World Bank data downloaded from API using webstats (https://cran.r-project.org/web/packages/wbstats/vignettes/wbstats.html); IMF (https://data.imf.org/?sk=4c514d48-b6ba-49ed-8ab9-52b0c1a0179b).

it, then the interactive fixed effects model,

$$lne_{it} = \alpha_i + \left(\beta + \gamma' X_i\right) D_t + u_{it},$$

can be written as,

$$\Delta lne_{it} = \beta + \gamma' X_i + \in u_{it},$$

that is, a simple cross-sectional regression model. The predictor variables are contained in the vector X, which are all measured as of 2012. The corresponding vector of slope parameters, γ, measures the extent to which these predictors increased or decreased a country's exposure to the taper tantrum (see Giesselmann and Schmidt-Catran, 2022 for a discussion of interactive fixed effects models). Table 1 reports the results from estimating this model, in which X includes stocks traded as a percentage of GDP, controlling for the 'fundamentals' from Figure 5 (individually, rather than jointly, due to degrees of freedom limitations).

The results in Table 1 support the observations in Figure 8. In particular, capital market size and liquidity, proxied by the value of stocks traded as a percentage of GDP, is a consistently strong predictor of taper tantrum

Table 1. Regression Results for 2013 Taper Tantrum, Cross-sectional Model

	(1)	(2)	(3)	(4)	(5)
Stocks traded	0.028***	0.023***	0.031***	0.025***	0.033***
Current account		-0.004**			
Inflation			0.004**		
Reserve coverage				0.023	
Government debt					0.017
N	25	25	24	24	20
R^2	0.67	0.72	0.8	0.68	0.73

Note: *, **, and *** denote significance at the 10%, 5% and 1% levels, respectively; 'stocks traded' is the log of the value of stocks traded on domestic exchanges as a percentage of GDP; 'current account' is the current account balance as a percentage of GDP; 'reserve coverage' is the log of the value of foreign exchange reserves expressed in months of imports; 'government debt' is the log of central government debt as a percentage of GDP. The sample is discussed in footnote 2 (allowing for data availability); observations are weighted by population (unweighted results are qualitatively similar).

exposure. A 10 per cent increase in this variable, across the models in Table 1, leads to an increase in expected depreciation by around 2 to 3 percentage points. Second, although there are no obvious bivariate relationships between the fundamental indicators in Figure 5 and taper tantrum exposure, a number of these indicators are significant when included in a model that also includes the value of stocks traded as a percentage of GDP. In other words, they appear to be useful predictors conditional on capital market size and liquidity, which again is what we might expect given the complexity of these variables and their interactions.

Finally, we note that these results are robust to increasing the complexity of the analysis. Table 2 presents results from a model using the full monthly time series of exchange rate movements between January and September 2013, in which the treatment dummy is replaced by monthly data on US 10-year Treasury yields:

$$lne_{it} = \alpha_i + \left(\beta + \gamma' X_i\right) r_t + u_{it}.$$

The average effect of the taper tantrum, measured by a 1 percentage point increase in the US Treasury yield, is given by $\beta + \gamma' E[X]$, and the slope parameters in γ measure how this effect varies according to country-specific characteristics. Interestingly, the point estimates for this model are very similar to those in the simple cross-sectional model. This is because the US 10-year Treasury yield increased by around 1 percentage point between May and September 2013, and so acts in a similar way to a unit treatment dummy.

There is, then, little evidence to support the proposal that monetary sovereignty, in and of itself, ensures domestic policy autonomy in LMICs. Instead, developing countries face a difficult balancing act. Capital accumulation and structural change require foreign exchange; this requires integration into global trade and financial systems and exposure to global shocks that threaten to undermine development goals. Maximizing the

Table 2. Regression Results for 2013 Taper Tantrum, Interactive Fixed Effects Model

	(1)	(2)	(3)	(4)	(5)
Stocks traded	0.035***	0.029***	0.039***	0.033***	
Current account		-0.005***			
Inflation			0.005***		
Reserve coverage				0.021	
Government debt					0.015
N	225	225	216	216	180
R^2	0.56	0.54	0.62	0.58	0.64

Note: *, **, and *** denote significance at the 10%, 5% and 1% levels, respectively. See Table 1 for variable definitions and other details.

benefits of this process while mitigating its costs is a complicated problem for which there is no silver bullet, monetary or otherwise.

CONCLUSION

The post-pandemic tightening cycle has seen the US policy rate of interest exceed 5 per cent for the first time since the 2008 financial crisis. The shift to tighter global dollar conditions adds to already considerable pressure on many LMIC policy makers. Appropriate policy responses to tighter dollar conditions require an understanding of the risks and constraints faced by LDCs and of the mechanisms by which instability is transmitted from global markets to domestic economies.

Recent contributions have argued that understanding monetary sovereignty can empower policy makers, including those in LMICs, to expand policy autonomy and utilize domestic resources. We argue that a narrow definition of monetary sovereignty applies widely but offers minimal scope for expanding policy autonomy; broader definitions impose unrealistic requirements in the form of flexible exchange rates and domestic-currency debt denomination. Focusing on monetary arrangements obscures more important obstacles faced by developing economies, including limited structural transformation and the constraints arising from integration into global trade and financial systems.

We present empirical evidence showing that a range of emerging market economies which match the narrow definition of monetary sovereignty experienced highly heterogeneous outcomes during the post-pandemic hiking cycle. Currency denomination of externally held debt offers only minimal explanatory power for predicting susceptibility to the financial outflows and depreciation which often precede debt crises. Evidence from the post-pandemic tightening alongside two previous episodes of dollar tightening (the 2013 taper tantrum and the 2020 rush for liquidity) suggests that the determinants of vulnerability to financial outflows

are heterogeneous. Macro-financial 'fundamentals' including current account positions and reserve coverage offer little power to predict vulnerability to external liquidity shocks. In contrast, measures of financial market size and activity do appear correlated with size of depreciations, particularly during the 2013 episode. This suggests that integration of domestic and global financial systems is an important determinant of the extent to which tighter global conditions are transmitted to domestic financial systems. This financial constraint is largely unrelated to monetary sovereignty.

Managing macroeconomic policy in LMICs during a tightening cycle is a balancing act involving difficult trade-offs between appropriate domestic macroeconomic policy and potential externally triggered instability. Policy autonomy does not derive from monetary sovereignty, but from successful structural transformation and integration into global trade and financial systems.

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