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MACROPRUDENTIAL POLICIES CAPITAL FLOW MANAGEMENT

POLÍTICAS MACROPRUDENCIALES DE GESTIÓN DE FLUJOS DE CAPITAL

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ABSTRACT

This article aims to present the legitimization process of macroprudential capital flow management policies as a tool for economic stability after 2009, when such policies started to have the support of multilateral institutions such as the IMF. To this end, we conducted extensive bibliographical research, bringing together several academic strands to present how this process of transformation and acceptance developed and the motivations, impacts, and effective results of these policies. As a result, we verified that the use and effectiveness of these management strategies must follow an arrangement in which their scope must involve several other policies of the fiscal, macroprudential, monetary, exchange rate, and capital control, mainly in emerging economies and in these cases, reduce financial fragility and maintain the macroeconomic stability of these countries in the face of adverse shocks to the balance of payments caused by excessive capital inflows or outflows, mitigating the resulting externalities in the process.

Keywords: Macroprudential policies / Stability / Capital flow

RESUMEN

Este artículo tiene como objetivo presentar el proceso de legitimación de las políticas macroprudenciales de gestión de flujos de capital como herramienta para la estabilidad económica a partir de 2009, cuando dichas políticas comenzaron a contar con el apoyo de instituciones multilaterales como el FMI. Para ello, se realizó una extensa investigación bibliográfica, reuniendo varias corrientes académicas con el fin de mostrar cómo se desarrolló este proceso de transformación y aceptación y cuáles fueron las motivaciones, impactos y resultados efectivos de estas políticas. Como resultado, se verificó que el uso y efectividad de estas estrategias de gestión deben seguir un arreglo en el cual su alcance debe involucrar varias otras políticas de control fiscal, macroprudencial, monetaria, cambiaria y de capitales, principalmente en economías emergentes y, en estos casos, deben reducir la fragilidad financiera y mantener la estabilidad macroeconómica ante choques adversos en la balanza de pagos causados por entradas o salidas excesivas de capital, mitigando las externalidades resultantes en el proceso.

Palabras clave: Políticas macroprudenciales / Estabilidad / Flujos de capital

JEL Code: E44; F38; G28; E58.

I. INTRODUCTION

The free mobility of cross-border capital was widely defended by institutions such as the International Monetary Fund (IMF) and the World Bank during the 1980s, 1990s, and until the mid-2000s, aiming at the integration of emerging economies into financial globalization. However, the financial crises that affected East Asian countries in the 1990s and, in a more recent period, the subprime global financial crisis, which started in the US in 2007, showed that the pro-cyclical volatility of capital flows could negatively affect the financial and macroeconomic order of countries, with the imposition of some regulation not only necessary but essential.

In response to the imposition of factual reality, a reassessment of the most appropriate capital flow policies began. Political and academic discussions led to the construction of a new theory called "Capital Flow Management," which came to justify and base political stability actions after 2009. This view began to be defended even by the IMF (2012), which legitimized adopting capital flow management measures via the imposition of controls as part of a set of macroprudential tools capable of mitigating these impacts, guiding their use in line with other macroeconomic policies.

The existing arguments in the macroprudential literature regarding the use of policies related to the management of capital flows, according to authors such as Ostry *et al*. (2012) and Galindo *et al*. (2013), would be justified under two conditions: The first would be at the macroeconomic level, based on the recognition that intense movements of capital inflows into an economy can cause an excessive exchange rate appreciation, harming the competitiveness of the tradable goods sector; The other condition would be related to control measures to reduce financial fragility, the so-called macroprudential policies. Here, there is an acceptance that large capital inflows can cause externalities such as excessive domestic debt in foreign currency, increasing currency exposure, and potentially triggering domestic credit booms and asset bubbles. Thus, a context prone to the emergence of a financial crisis is formed in the event of reversals in international liquidity conditions.

Capital control management measures began to be adopted, mainly by developing economies, as a strategy to reduce external vulnerability. As a result, capital controls begin to help guide the state of confidence in the country and mitigate the intensity of any instability in the international financial market. The country's economic authority has started to adopt a series of tools for managing capital flows, aiming to reduce the distortions that excessive capital inflows or outflows can generate. In addition to the policies used directly, there is also the

agent's perception of the economic measures implemented, the development of the financial sector, the quality of institutions, and the economic scenario. The agents absorb all this information and influence decision-making regarding capital allocation in each economy.

In this context of theoretical reformulation and, consequently, of the most appropriate policy recommendations for the management of international capital flows, the objective of this study is to expose the various theoretical discussions regarding the process of institutionalization of this new arrangement of policies of capital controls, seeking to rescue the main discussions that contributed to the advancement of this new political reformulation of the use of capital controls. In this sense, this work seeks to contribute to the understanding of the subject by expanding the contemporary discussion on the macroprudential capital control policies that have been used by countries to mitigate the most diverse externalities resulting from the inflows and outflows of capital in economies, in addition to the primary evidence found in the literature of the effectiveness of these policies on economic activity.

Thus, the remainder of the paper is organized as follows to discuss these issues. Section 2 presents an overview of the emergence, definitions, and need for countries to use capital flow management policies. Then, in section 3, a discussion is carried out on the externalities generated by capital mobility and the importance of identifying and implementing ideal control measures to mitigate its macroeconomic impacts. Section 4 discusses the main tools used by countries in managing capital flows. Next, in section 5, the main transmission channels of capital control policies are presented and discussed, showing that in addition to the direct policies adopted by the government, there is also the issue of signaling and the expectations of agents, who, when considering other related information to the institutional environment, can directly impact choices related to capital allocation. Section 6 addresses some works that emphasize the macroeconomic effects verified in countries using active capital control management policies, highlighting the main results and discussions that have contributed to the knowledge of the subject. Furthermore, we have the final considerations of the work.

II. CAPITAL FLOW MANAGEMENT POLICIES

The defense and advantages of free capital mobility were widely disseminated during the 1980s, 1990s, and until the mid-2000s. The release of the capital account was a necessary compromise for advancing the economic agenda defended by multilateral institutions, such as the International Monetary Fund (IMF) and

the World Bank. As pointed out by Korinek (2017) and Erten *et al*. (2021), there was an understanding that capital account liberalization would be a necessary and beneficial process in promoting market efficiency, with better allocation of productive resources, thus boosting economic growth and the well-being of these economies.

This movement followed what was advocated by conventional neoclassical literature. It was based on applying the first welfare theorem: the market self-adjusts to a Pareto optimal condition. In this way, free mobility would be beneficial by expanding resources such as limited savings for countries with less economic development, attracting financing for productive investment projects, and encouraging investment risk diversification, thus contributing to developing their financial markets. In this sense, the imposition of restrictions on capital mobility meant forgoing these benefits due to the distortions of resources arising from the misallocation that controls could cause, which would reduce economic efficiency and welfare (Ostry *et al*., 2010; Erten *et al*., 2021).

Several authors define the restrictions imposed on capital mobility as «capital controls» (Magud *et al*., 2011; Ahmed & Zlate, 2014; Rebucci & Ma, 2019). This concept designates all restrictions based on the quantity or price of transactions of financial assets and liabilities between residents and non-residents, that is, inflows and outflows of portfolio investments, direct investment, and bank loans (Korinek, 2017; Fritz & Prates, 2018).

As of the second half of the 2000s, the term «capital controls» has also been referred to in the literature as «capital account regulations» due to the existing connection with the other policies of macroprudential regulations. Following the terminology used by the International Monetary Fund (IMF) in documents in which it establishes its institutional vision (IMF, 2012), capital control measures can also be referred to as «capital flow management measures» (CFMs - Capital Flow Management Measures).

In these new denominations, they started to include, in addition to traditional capital controls, other measures that do not discriminate based on residence but, even so, are designed to limit the movements of capital flows, also known as macroprudential policies (IMF, 2012; Forbes *et al*., 2016; Benigno *et al*., 2016, Erten & Ocampo, 2017; Korinek, 2017; Erten *et al*., 2021, among others). This new terminology signaled an essential change in the understanding of economic theory about the potential effects that capital flows can have on a national economy that is not internalized (considered) in the utility functions and constraints of private agents, therefore called externalities.

Such considerations became more important with the integration that took place in capital markets on a global scale between 1995 and 2005. During this period, there was a significant increase in international capital flows, with gross transactions exceeding US$ 6 trillion daily, as indicated by IMF (2005). As an example, due to the adoption of the Euro as the common currency, Europe had rapid growth in intra-European flows, increasing its spending on investment and consumption and increasing social welfare (IMF, 2005).

However, in many cases, the environment of intense capital flows can result in what Galindo and Izquierdo (2003) and Calvo (2013) called a «Sudden Stop»: a situation in which capital flows abruptly reverse their inflow movements, with the effects of this phenomenon that is immediately reflected in the real side of the economy, often causing recessions and systemic financial crises. Therefore, economies gradually became more exposed to expansion and contraction cycles in international capital flows, with their markets subject to greater financial and macroeconomic instability. The East Asian crisis of 1997-98 was the first milestone that changed the prevailing view until that moment, showing that large flows of international private capital can make even economies with low and stable inflation, economic growth, and equilibrium in the trade balance, vulnerable to financial crises (Ostry *et al*., 2010; Erten *et al*., 2021).

Even so, until the end of the 1990s, the theoretical framework exposed in the economic literature was still incipient to offer policymakers guidance on why it might be desirable to intervene in the free market equilibrium. Even more uncertain was defining how to regulate capital flows optimally and what the welfare implications and international side effects of such policies might be (Erten *et al*., 2021).

However, a new policy paradigm emerged after the global financial crisis of 2008-09. In it, government measures such as capital controls and other restrictions on credit flows, previously considered inadequate, became part of the package of policy tools for preventing financial crises. Following this trend, even the IMF, known for conservatism, changed its orthodox view on capital controls. However, although the new «institutional vision» (IMF, 2012) provides an opening for the use of capital control policies to manage risks to financial and macroeconomic stability, the IMF recommendation remains strongly oriented in its previous vision that these measures should be used as policies of last resort. Thus, they should be triggered after, for example, using fiscal tightening measures and other macroeconomic policies, such as countercyclical monetary and fiscal policies, active management of foreign exchange reserves, and macroprudential domestic financial regulations (Benigno *et al*., 2016; Erten & Ocampo, 2017).

In this new approach, the main reason supporting capital controls is the search for financial stability and the recognition of externalities in capital flows. This practice justifies ex-ante prudential interventions (that is, before the formation of financial imbalances and, in many cases, the occurrence of a financial crisis), which are desirable and recommendable because they can make agents internalize the consequences of their individual decisions. The benefits of capital control management policies in this configuration arise by discouraging the taking of financial excesses, reducing the amount that agents borrow, thus decreasing the probability of a financial crisis and increasing welfare intertemporally (Benigno *et al*., 2016).

To broaden the scope of the discussion, the next section presents and discusses the implications of the different types of externalities that arise between economic agents in an open economy, given the importance of the topic in capital control policy decisions.

III. EXTERNALITIES OF CAPITAL FLOWS

In the literature, an extensive generation of authors (Rebucci & Ma, 2019; Korinek, 2020; Erten *et al*., 2021) has reported the existence of several externalities that arise from the inability that economic agents have to internalize the effects of their individual decisions on economic activity, requiring some regulation to mitigate the unwanted impacts that arise from the volatile and pro-cyclical nature of international financial capital. In order to moderate these externalities, a series of control tools are used to encourage and discourage the entry or exit of international flows. Another highlighted point deals with the strong signaling effect in capital allocation decisions, often more decisive in directing these flows than the policies directly imposed, being thus stimulated by several other channels, such as the quality of institutions and the other political directions of an economy.

The view of the externalities of capital flows recognizes that their benefits and costs can be distinguished into private and social benefits and costs (Korinek, 2020). Private benefits and costs are automatically identified and controlled by the free market. However, the social benefits and costs, because the agents do not internalize them, generate macroeconomic externalities that provide greater financial instability and negatively impact the aggregate demand of the economy (Korinek, 2020; Erten *et al*., 2021).

The literature identifies two types of externalities, pecuniary and aggregate demand (Dávila & Korinek, 2018; Rebucci & Ma, 2019; Korinek, 2020). The pecuniary externality arises due to the direction in the allocation of wealth in the economy between national and foreign residents, which can affect variables such as exchange rates and prices of domestic assets.

Externalities of pecuniary origin emerge when economic agents take on excessive debts, which can be aggravated in financial crises or when the institutional framework of the country changes. That is, investors expect that economic or political changes may negatively affect the financial structure and, consequently, the expected capital returns, and in these cases, they may respond negatively with the withdrawal of capital from these countries.

In times of financial crisis, externalities arise as an effect of imbalances in the balance sheet, when economic agents, by submitting themselves to rapid and excessive deleveraging, cause, through their collective actions, falls in asset prices and depreciation in the exchange rate that ends up reducing the value of assets on borrowers' balance sheets or increasing the value of their liabilities. These effects represent externalities because individual actors do not internalize how their joint behavior fuels and amplifies the initial shock. Therefore, pecuniary externalities are induced through redistributive or allocative mechanisms originated by the impact of individual decisions (Korinek, 2017; Dávila & Korinek, 2018; Erten *et al*., 2021; Korinek, 2020).

The effects described above have important implications for understanding the benefits and costs of capital flows and determining how a pecuniary externality arises. For example, if foreign investors perceive that a negative output shock could affect the domestic economy, they may immediately respond with increased risk aversion, withdrawing capital from the economy. In this environment, the exchange rate depreciates, financial restrictions increase, and this dynamic is amplified at the macroeconomic level, affecting other economic prices (Korinek, 2017).

According to Korinek (2020), the fact that capital flows have a hierarchy makes some investments more prone to sudden and intense movements of entries or exits in times of disturbances in the financial market. Foreign direct investment (FDI) is considered the most benign type of inflow, as in addition to being able to convert into greater production capacity in the host country, it is characterized by lower volatility and capacity to exit in times of crisis. On the other hand, equity portfolio flows, and local currency debt flows are considered more volatile and subject to reversal. Debts indexed to inflation or in foreign currency are the types of entry with the most significant potential for negative externalities due to the fluctuations these variables suffer in line with market fluctuations. Likewise, short-term flows generate more significant externalities than long-term flows due to the difficulty of refinancing the debt during times of crisis. In this way, capital controls can increase earnings and economic well-being when inserted according to the origin, structure, and ideal risk profile.

The works that propose to investigate the implications of pecuniary externalities in economic activity identify two types of them: distributive pecuniary and collateral (Caballero & Lorenzoni, 2014; Dávila & Korinek, 2018; Jeanne & Korinek, 2010).

Distributive pecuniary externalities arise in cases where financial institutions can change market prices in a risky environment, redistributing wealth and the level of risk among economic agents. That is, when the monetary authority restricts an economy's lending capacity or dollar leverage, respectively, falls in the exchange rate and asset prices are mitigated, improving the terms of trade for borrowers who are involved in immediate sales, thus providing a better division of risk between borrowers and lenders (Rebucci & Ma, 2019).

Collateral pecuniary externalities, on the other hand, would be those capable of directly affecting the agents' financing capacity, arising when financial restrictions are binding, that is, in foreign currency, being pegged to exchange rates. In such cases, borrowing agents often, especially in emerging economies, take on excessive debts in foreign currency (Benigno *et al*., 2016; Dávila & Korinek, 2018; Rebucci & Ma, 2019).

As shown by Bianchi and Mendoza (2010), assuming the presence of externalities and opposing the formation of financial imbalances can positively affect the economy. In a study on the implications of agents' excessive indebtedness in an open economy, using a stochastic dynamic general equilibrium model (DSGE), Bianchi and Mendoza (2010) showed that agents' excessive indebtedness affects the probability and severity of crisis of financial institutions an average of 0.4% to 5.5%. As a result, according to his estimates, consumption drops by 17%, capital inflows are reduced by around 8%, and the real exchange rate drops by 19%. The author identified various measures that can mitigate the impacts of a crisis, all of which involve restricting the amount of credit in the economy. These measures are imposed before a crisis occurs (ex-ante) so that private agents internalize external borrowing costs, and the economy becomes less vulnerable to future adverse shocks.

Therefore, as prudential actions, it is up to policymakers to identify and quantify these externalities. From this, using capital control policies in conjunction with macroprudential policies is essential so private agents can recognize these externalities and establish macroeconomic well-being.

On the other hand, aggregate demand externalities occur when wealth allocations in the economy affect real variables such as output and employment. Discussions regarding aggregate demand externalities have been addressed in the

literature by several authors (Benigno *et al*., 2016; Farhi & Werning, 2014; Schmitt-Grohé & Uribe, 2016; Rebucci & Ma, 2019; Korinek, 2020). In these analyses, there is recognition that they can spread through different mechanisms. The first would be the case of economies with the presence of price and wage rigidity. In these economies, as economic agents cannot individually internalize their consumption decisions, aggregate demand externalities can arise whenever aggregate demand differs from the aggregate supply. In this environment, aggregate demand can be excessively boosted in the expansionary phases of economic cycles and make the economy more vulnerable during the contractionary phase due to the ineffectiveness of monetary policy in the presence of price and wage rigidity, with macroprudential interventions being critical to reducing distortions in prices and contraction costs in these economies.

Farhi and Werning (2016) highlighted another mechanism by which the unrestricted mobility of capital flows imposes aggregate demand externalities: when capital outflows occur, and domestic agents are subject to financial restrictions, a net transfer of wealth from domestic agents to foreign agents is observed. Therefore, domestic agents are obliged to restrict consumption, and, as foreigners are less likely to spend on domestic goods, they tend to compensate only partially for the decline in demand in the country that suffers from capital outflows. If stabilization policies, such as interest rate cuts and exchange rate depreciations, succeed in counteracting recessive pressures, they can undo these aggregate demand effects and restore the efficient level of production.

However, if stabilization policies are only partially effective and there is a shortage of aggregate demand, as is the case during financial crises (for example, because interest rate cuts generate contractionary depreciations due to balance sheet effects), outflows of capital can generate aggregate demand externalities, further depressing an already inefficient level of aggregate demand. Similar arguments with opposite signs are valid for capital inflows in an overheated economy (Korinek, 2020). In these cases, capital control policies, when properly managed, can restrict capital inflows into an overheated economy or reduce capital outflows from those with a shortage of aggregate demand.

Schmitt-Grohé and Uribe (2016) presented a model in which the combination of downward nominal wage rigidity, a fixed exchange rate, and free capital mobility creates a negative externality. The nature of this externality is that expansions in aggregate demand raise wages, putting the economy in a vulnerable situation. Already in the contractionary phase of the cycle, downward nominal wage rigidity and a fixed exchange rate may prevent real wages from falling to a level consistent

with employment. Agents understand this mechanism but are too small to internalize that their individual spending decisions collectively cause inefficiently significant expansions in wages during expansions, exacerbating unemployment during contractions. The existence of these externalities creates a justification for the adoption of capital controls.

Finally, there is also some evidence (Benigno *et al*., 2016; Farhi & Werning, 2014) that emerging countries have not been able to use international financial markets effectively to reduce consumption volatility. The financial crises in these economies were associated with sharp declines in income and consumption. This appears to be a significant pro-cyclical element for international capital mobility in these markets. International investors are willing to lend to them in good times, but tend to pull back in bad times, amplifying macroeconomic swings (Kose *et al*., 2003).

IV. CAPITAL FLOW MANAGEMENT TOOLS

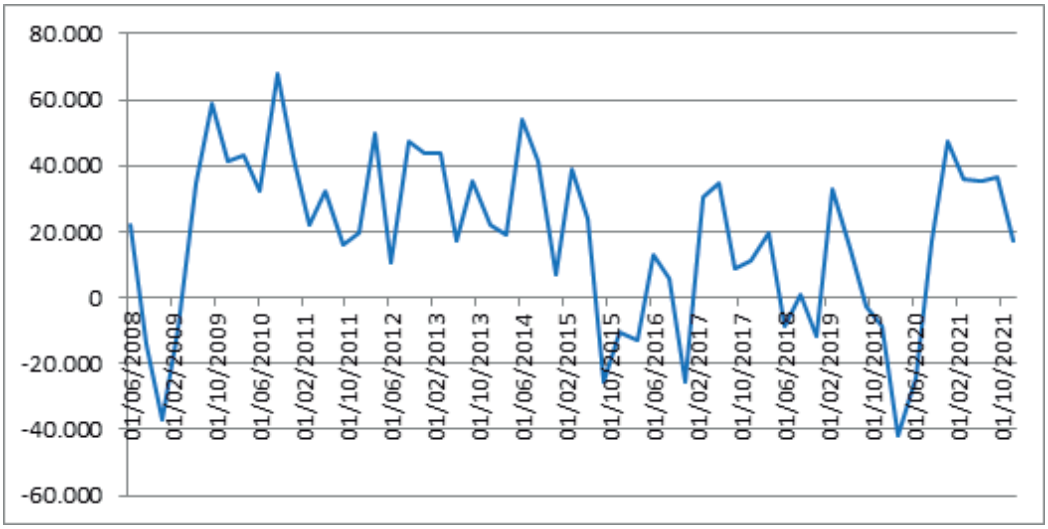
Capital flow controls have been an essential macroeconomic policy tool, especially in emerging economies. This occurs due to the characteristic of the temporary nature of international capital flows, which, as pointed out in the previous section, are easily reversed according to the interest rate differentials in these economies concerning advanced economies and the fluctuations in premiums and risk aversion required and exhibited by investors operating in international markets. However, another worrying situation with the excessive inflow of capital flows is its potential to generate growing financial fragility fueled by the possibility of an increase in external loans in foreign currency and the consequent exchange rate exposure. Such a situation can fuel domestic credit booms and asset bubbles capable of potentially causing significant adverse effects in case of a sudden stop of these flows, as occurred in the subprime crisis in the US (Calvo, 2013; Ostry *et al*., 2010), in a sample of seven emerging countries[1], the period recorded one of the largest capital flights, reaching US$ 37 billion.

As can be seen in Graph 1, by recognizing the pro-cyclical volatility of capital flows, developing countries have come to grips with boom and bust cycles in capital flows and using capital controls to manage these cycles. In this way, countries adopt a combination of macroeconomic policies to face the challenges imposed by this high volatility, with the choice of appropriate management instruments being defined according to each situation.

[1] Sample of seven countries (Chile, Colombia, South Korea, India, Ukraine, Poland and Brazil).

Graph 1 - **Portfolio flow to emerging economies (2008-2021).**

(In US$ billion)



Source: Own preparation with data from the Central Bank of Brazil, 2023.

It is, however, a highly complex decision, as it depends on a set of macroeconomic, institutional, and structural factors, such as the degree of financial openness, the composition of capital flows, and the characteristics of foreign exchange and financial markets (Athukorala & Rajapatirana, 2003; Erten & Ocampo, 2017; Fritz & Prates, 2018; Erten *et al*., 2021).

Thus, capital controls can also be divided according to the purpose they seek to achieve. It is essential to first consider the direction of capital flow if they are to control capital inflows or outflows. Another important dimension to consider is the type of capital account transactions affected and whether they are restrictions on prices (taxes or subsidies) or quantitative or administrative restrictions. Controls are also differentiated according to their objectives: they are imposed ex-ante or ex-post in relation to financial or macroeconomic instability. Controls can also be structural (long-standing) or cyclical (Erten *et al*., 2021). Moreover, finally, whether capital controls are directly imposed on international transactions or whether it is a domestic regulation that restricts the financial transactions of domestic agents or the domestic use of foreign currency (Ostry *et al.*, 2010; Erten *et al*., 2021).

As for the distinction over which type of transaction the control is being imposed, it is essential to distinguish which type of capital account investment the

measure will restrict or encourage, for example, Foreign Direct Investment (FDI), portfolio investment in shares or securities, or others that include bank loans and other bank flows (Erten *et al*., 2021). Regarding bonds and loans, these controls can be between foreign and local currency or short-term flows versus long-term flows. Capital controls that impose quantitative or administrative restrictions are characterized by complete prohibitions or explicit quantitative limits that reduce the scope of private portfolio management freedom. Controls that impose price restrictions seek to discourage capital flows by increasing their costs through tax disincentives, compulsory deposits, multiple exchange rates, and other mechanisms. Controls with administrative restrictions start to limit the exchange exposure and leverage of banks and companies, not only in amounts but also in terms of terms (Deos *et al*., 2006).

Capital controls used to reduce financial and macroeconomic instability may be those imposed ex-ante or ex-post. Ex-ante capital controls are prudential tools that aim to reduce the risk of financial crises, preventing economic agents from assuming excessive risks. They include measures such as tightening restrictions to curb capital inflows during booms and prevent overheating. Capital inflow and outflow controls can also be used as ex-post interventions, that is, once a crisis occurs. For example, measures encouraging new borrowing from abroad by reducing capital inflow regulations are ex-post interventions that can increase credit availability after a crisis. (Saborowski *et al*., 2014; Erten *et al.*, 2021).

Capital controls can also be differentiated from structural (or long-standing) capital controls in that they are applied for long periods, while cyclical (or episodic) capital controls are those that are typically implemented and adjusted throughout the business cycle (Erten *et al*., 2021). In addition, structural controls take the form of quantity-based restrictions, while cyclical controls are price-based (Erten *et al*., 2021).

Another important distinction is whether a policy measure is an explicit capital control directly imposed on international transactions or a domestic regulation restricting domestic agents' financial transactions or the domestic use of foreign currency. Although the latter type of regulation does not theoretically target international capital flows, it does have a de facto effect of influencing the level of such flows by impacting financial regulations, starting with regulations on financial transactions by national residents in national currency (regulation of traditional prudential, including those called countercyclical macroprudential). Thus, there are restrictions on the domestic use of foreign currency by residents of the country (exchange-related regulations), which do not officially count as capital controls, but

have the side effect of applying to most transactions with foreigners who typically transact in foreign currency foreign (Ocampo, 2017; Erten *et al*., 2021).

Finally, there are restrictions on domestic agents' transactions with foreign residents, also known as financial sector regulations (Erten *et al*., 2021). In this category are, for example, limits on the amount that residents can borrow and maintain in accounts abroad or the reverse, as well as the ability of non-residents to maintain domestic accounts. These regulations are also considered capital controls by discriminating between residents and non-residents.

V. CAPITAL FLOW MANAGEMENT TRANSMISSION CHANNELS

Erten *et al*. (2019) highlight several channels through which capital management tools can affect the economy. According to them, the most apparent channel would be the direct one, whereby capital controls would change the cost of international capital or limit the amount of certain financial transactions and transfer of funds through complete prohibition or the imposition of explicit quantitative limits, such as the total control or limitations on the actions of investors. These controls, for example, can be seen when a country prohibits foreign investors from investing in its stock exchange. Therefore, administrative controls seek to directly affect the volume of certain financial transactions (Silva & Resende, 2010).

Nevertheless, there are also indirect channels through which controls affect international capital flows and are empirically relevant. What seems to matter most is the signaling channel. Its effects are characterized by directly affecting agents' expectations, discouraging the movement of capital and associated transactions, making them more onerous, and imposing costs for certain financial operations. Through this channel, controls discourage certain types of transactions (Silva & Resende, 2010; Erten *et al*., 2021).

Prasad *et al*. (2003) point out that the signaling channel can be considered one of the ways that most generate indirect impacts on capital flows. They highlighted three relevant elements for its functioning: the development of the financial sector, the quality of institutions, and the quality of macroeconomic policies.

Concerning the development of the financial sector, in particular, Prasad *et al*. (2003) suggest that it is a vital determinant of the extent of a country's growth and stability and the benefits that financial globalization can bring. The more developed the country's financial sector is, the greater the benefits of growing capital flows and the lower its vulnerability to crises. Another benefit of further financial sector development would be the positive effect on macroeconomic stability, which, in

turn, has implications for the volume and composition of capital flows (Prasad *et al*., 2003). For developing countries where funding sources are reduced, sudden changes in the direction of capital flows tend to induce or exacerbate boom and bust cycles, contributing to the occurrence of financial crises.

In turn, institutional quality would play an essential role in the determination and composition of flows, attracting mainly foreign capital in the form of Foreign Direct Investment (FDI) and less in the condition of short-term Portfolio capital flows. Prasad *et al*. (2003) point out that FDI flows tend to bring more collateral benefits to developing economies' productive and social financing, directly impacting their macroeconomic results.

The credibility of macroeconomic and domestic policies also stands out as an essential form of signaling to influence the level and composition of inflows and the country's vulnerability to crises (Prasad *et al*., 2003). In these cases, implementing liberal government policies sends a favorable signal that can trigger significant capital inflows.

In summary, the channel of expectations of capital controls arises when agents evaluate the set of policy measures imposed to control the mobility of capital flows, especially when such controls seek to impose barriers to exit (Erten *et al*., 2021). That is, the perception of international investors when policies are changed is that the economic environment in the country may be susceptible to weaknesses of an economic, political, or financial nature still unknown to the public and that the government, having previously been aware of this information, immediately changes its policies to mitigate future recessive impacts that the excessive movement of inflows or outflows of these capitals could amplify.

VI. MACROECONOMIC EFFECTS

As described in the previous topics, international capital flows are central to the functioning of the global economy and the dynamics of developing economies since the capacity of a government and its citizens to borrow and lend abroad allows domestic investment spending to deviate from domestic savings, which can promote growth and greater economic efficiency (Fernández *et al*., 2015). However, in practice, it turns out that large capital flows can also create substantial challenges for policymakers, as Galindo and Izquierdo (2003) showed when they analyzed the impact of the Russian Crisis on Latin American economies. Moreover, these challenges are even more significant for emerging market economies (EMEs) due to their greater susceptibility to the volatility of capital flows (Ahmed & Zlate, 2014).

In this sense, the free mobility of capital flows has caused costs and benefits for the receiving countries, as shown for example by Athukorala & Rajapatirana (2003), Saborowski *et al*. (2014), Fernández *et al*. (2015), and Erten *et al*. (2019). The benefits were widely discussed in a collection of works carried out by the IMF (2022) and can be obtained by allowing an efficient allocation of resources, due to the possibility of migration of resources between less productive countries to countries with greater productivity, favoring both the country of origin as the recipient of these resources. Capital flows established in the banking market can also reduce financial constraints and facilitate economic growth and exports; capital flows can also increase exchange liquidity, facilitating the granting of credit during crises. It was also found that the access of large banks to the international credit market can facilitate domestic credit conditions, benefiting companies by providing better financing conditions, encouraging technological innovations, increasing production efficiency and consequently the country's aggregate production. The costs arise from the high volatility of these flows, which accompany changes in global financial conditions, mainly affecting emerging and developing economies (IMF, 2020).

Given this scope, the empirical literature has sought to analyze how a wide range of macroeconomic outcomes, such as economic growth, exchange rate, and financial fragility, are affected by capital controls (Klein, 2012; Ostry *et al*., 2011; Erten *et al*., 2021).

Thus, the implementation of controls at the entrance is justified by its preventive function. Through them, the aim is to avoid the undesirable effects of the excessive flow of capital. In retrospect, for exit controls, the main objective is to encumber capital flight in an attempt to decrease its likelihood. For example, to mitigate capital outflows, policymakers can raise the interest rate to counteract exchange rate depreciations, reducing balance sheet effects. However, an adverse effect of this strategy would be the existence of demand externalities. This strategy was even used in Brazil in the 1990s, after the financial opening, even after the stabilization of chronic inflation, the results went beyond imbalances on the demand side, as high interest rates attracted almost all capital of high volatility, which resulted in an evident worsening from a macroeconomic perspective (Barros, 2022). In this case, an alternative would be the use of ex-ante prudential policies, that is, during the expansive phases of the economic cycle. With them, legislators can adopt a strategy of reducing interest rates, avoiding exchange rate appreciation and its effects on the trade balance, and preserving greater autonomy of macroeconomic policy. With this type of ex-ante measures, there would be a significant reduction in capital inflows and their effects associated with domestic aggregate demand (Stiglitz, 2002; Erten *et al*., 2021).

Another macroeconomic variable considered, undoubtedly the one with the most significant impact on political decisions on capital flow management, is the exchange rate due to the resulting externalities, both pecuniary and demand, which can propagate through the economy with different effects and may vary according to the «economic and financial health» of the country. Its effects in the case of appreciations, in times of excessive inflows, are highly damaging to the export sector, and consequently to economic growth, in addition to worsening external imbalances, in the case of reversals. Depreciations that occur at times of capital flight, as they encourage the imposition of policies such as raising the interest rate, to discourage capital outflow, in which case they can cause demand externalities by increasing other prices in the economy, generating in this case process imbalances in economic activity with diverse effects on investment, production, and employment (IMF, 2020). Such findings were empirically evidenced in the work of Adrian *et al*., (2020), but it already had been highlighted by Calvo and Reinhart (1996) when they examined the contagion of the 1994 Mexican crisis in other Latin American economies. However, Athukorala and Rajapatirana (2003) showed that the effects of flows on exchange rates depend not only on the volume but also on the modalities in which they occur. This empirical finding will give even more importance to the role of capital flow management policy.

Therefore, as already discussed in previous sections, the concern of the political authority in administering the management tools available to control this variable, which has such an essential weight in the economic direction of the country, is considerable. This perception contrasts with the main considerations of authors such as Cardarelli *et al*. (2009), in a study for the IMF, on the macroeconomic impacts of capital control policies for developed and emerging economies, the authors conclude that among the primary motivations for the use of capital flow management policies is the concern regarding exchange rate appreciations or depreciations. Appreciations, in times of excessive inflows, are highly detrimental to the export sector and, consequently, to economic growth, in addition to aggravating external imbalances, in the case of reversals. On the other hand, the depreciations that occur at times of capital flight, as they stimulate the imposition of policies such as raising interest rates, to discourage capital outflows, in which case they may cause demand externalities by increasing other prices in the economy, generating in this process imbalances in economic activity with diverse effects on investment, production, and employment.

In parallel, authors such as Ostry *et al*. (2011) presented a set of circumstances under which capital controls are recommended and effective as a policy response to surges of external capital inflow as part of a macroprudential policy arrangement.

However, the authors point out that although capital control measures in conjunction with prudential regulations can help to reduce the accumulation of vulnerabilities in balance sheets and the emergence of credit booms, both inevitably create distortions. Moreover, prudential tools that directly limit capital inflows –acting like capital controls– can also have adverse multilateral implications and should not be used as a substitute for macroeconomic policies. Therefore, a pragmatic approach is needed to consider all relevant risks and distortions to strengthen the financial system's resilience. The authors also point out that the basic principle is to use instruments (or combinations of instruments) that best achieve policy objectives with minimal national and multilateral costs.

Following this perspective, Klein's work (2012) examined the pattern of controls on capital inflows and the association of these controls with financial and macroeconomic variables, such as Gross Domestic Product (GDP) and exchange rates. He addressed a set of 44 advanced countries and emerging economies in the period from 1995 to 2010. As a result, the author pointed out that, with some exceptions, there is little evidence of the effectiveness of capital controls on the selected variables. He also concluded that the statistics presented show that countries with more significant restrictions on capital inflows have lower annual expansion rates of financial variables associated with booms and higher GDP growth rates. The regression results also showed that, in partial correlations, there was a lower growth rate of these aggregate economic variables among countries with long-standing controls compared to those that imposed controls episodically. Nevertheless, countries with long-standing controls on capital inflows differ in important respects from others in the sample, most notably by having lower levels of per capita GDP.

Similarly, in Brazil between 2009 and 2019, according to a collection of records from the Bulletins of the Central Bank of Brazil (BCB), its economy can be compared to a laboratory for verifying the effectiveness of these policies. We can observe, in a period of ten years, several capital flow management measures being applied, at first to contain and select the excessive inflow of foreign incoming capital, with the tightening of these policies.

Between 2009 and mid-2011, a period of significant foreign capital inflows, the clear objective of the policies was to contain the appreciation of the exchange rate, with a series of measures applied to restrict excessive inflows in various segments of the account financial. The results of this management effort were considerable, with reductions in capital inflows, mainly in the variable income market, with the process of appreciation of the Brazilian currency being interrupted, as expected (BCB, 2012).

However, from 2012 onwards, with changes in the world scenario and internally, with the first signs of rupture in the growth process of the Brazilian economy, a gradual loss of effectiveness of capital control management policies can be observed, mainly with the change in the pattern of these policies. From that year onwards, they began to control the length of stay of foreign capital. If, on the one hand, at that time, the intention of these policies was just to reduce the financial fragility that accompanies the nature of these flows, on the other hand, such policies seemed to have signaled to the market that challenging years were to come. As a result, although at first the management measures were beneficial in diversifying part of the capital, previously predominant in high volatility assets such as stocks and other short-term assets, to other long-term segments, in a short period, a reversal of these flows was observed, marking a reduction in the dynamism of the Brazilian economy, accompanied by a change in the response pattern of foreign capital flows to the management measures adopted from that moment on, as highlighted by BCB (2013).

In a second moment, from 2014, with the arrival of the recessive period of the Brazilian economy, there were substantial changes in these policies, which were made more flexible to attract foreign capital (BCB, 2014). The results verified mainly on the exchange rate showed that the capital control management policies adopted in the period were indeed necessary. However, its validity and effectiveness may be related to several other factors, as confirmed by Ostry *et al*. (2011), some of which are even endogenous, such as the quality of institutions and governments' commitment to fiscal control policies. Likewise, other exogenous factors are related to the dynamics of the international financial market. Thus, the agents' decisions are guided by various factors. If expectations are shaped according to the individual perception of each agent, in the case of negative ones, regarding the risk and return of their asset portfolios, the withdrawal of foreign capital is inevitable, as well as the resulting externalities, such as exchange rate depreciation and consequent macroeconomic impacts.

Such empirical findings, observed for Brazil, reinforce the dynamic defended by the IMF concerning applying capital flow management policies,[2] although, according to the agency's recommendations, such policies should be accompanied

[2] Works such as Magud *et al*. (2011), Pandey *et al*. (2015), Chamon and Garcia (2016), Alfaro *et al*. (2017), Erten and Ocampo (2017), Erten *et al*. (2021) and Montiel (2022) find both favorable and unfavorable results regarding the effectiveness of capital flow management policies. Therefore, research to evaluate the effectiveness of capital flow management policies is still a work in progress.

by a set of policies of fiscal, macroprudential, monetary, and exchange rate magnitude and not just measures with the direct objective of encumbering or exempting foreign capital. The results highlighted above confirm the predilection in the arrangement emphasized by the agency as necessary for the success of such management strategies.

VII. FINAL CONSIDERATIONS

The objective of this work, when considering the growing support that international capital control policies, modernly known as Capital Flow Management, began to receive from academic circles and multilateral institutions in the last decade, was to update the debate regarding the conduct of such policies structured in this new management system.

Thus, from the theoretical framework discussed, it is possible to list a series of macroeconomic benefits made possible by entering foreign capital into a country's economy. But, on the other hand, we also have a series of consequences in the case of excessive inflow of these capitals and sudden reversals. Another point discussed is related to the effectiveness of capital flow management policies in mitigating the resulting impacts on the balance of payments, whether to attract capital, restrict its inflow or outflow, and select the quality and diversification of the portfolio of this capital. Finally, we also have the impact of the macroeconomic situation regarding changes in the international and national environment on the economic decisions of individuals regarding the allocation of capital, with the indirect effects of signaling and expectations of agents in the transmission of the management policies adopted being often predominant, as occurred in Brazil after the year 2014.

Furthermore, when synthesizing some works that explored the use of these policies in the last section, it appears that the macroeconomic effects of capital flows in an economy, relating their importance, their costs, and benefits in the performance of the economic activity in addition to the importance of control measures of these flows to contain some intrinsic externalities of this market, related to the exchange rate, interest, and financial fragility, showed that the effectiveness of these measures when used without the intermediation of other macroprudential policies can have minimal or even null results, corroborating the strategy defended in the implementation of these policies by multilateral institutions such as the IMF.

Thus, throughout this work, it was shown how harsh reality was imposing itself on a theoretical conception. The recurring financial crises have weakened

the idyllic vision that multilateral organizations such as the IMF and the World Bank had regarding the free flow of capital in the international economy. The outbreak of the 2007 financial crisis was crucial in this process, as it occurred in the main world economies, and which adopted the macroeconomic measures proclaimed by conventional economic literature. The impact of the financial crisis was so strong that it opened space for the improvement and institutionalization of policies capable of managing the externalities produced by financial flows within and between countries. Macroprudential policy, especially in its branch called capital flow management, came to provide approval and a theoretical basis for various measures that developing countries had been adopting since the 1990s. This not only reduces the possibilities of new crises but also allows for an analysis and more careful assessment of the efficiency and effectiveness of measures, improving government action.

As discussed in the present work, issues related to capital mobility, both in terms of its economic costs and benefits and how management policies can help mitigate financial cycles, prolonging or shortening their recessive impacts on economies, are far from clear to be fully understood, being a field with several directions yet to be explored. For Brazil and other Latin American countries, as a suggestion for future work, it would be an attempt to measure in detail how these policies were applied and the respective qualitative impacts on the most diverse economic and financial variables in comparison with other economies.

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