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The mainstream economics on capital account liberalization and capital controls: New evidence and theoretical reorientation

O mainstream economics quanto à liberalização da conta financeira e controles de capital: novas evidências e reorientação teórica

Diego Garcia Angelico [1]
Giuliano Contento de Oliveira [1]
[1] Universidade Estadual de Campinas

Abstract

The mainstream studies on capital accounts underwent important changes over the last three decades. Starting from the theoretical models that grounded full capital account liberalization, the financial crises that hit emerging markets in the 1990s and then the global financial crisis that broke out in 2008 showed several dysfunctions of financial globalization. In addition, the post-global crisis period provided new evidence on the effectiveness of regulation measures. In response to much evidence contradicting the earlier *ex ante* models, several mainstream authors developed new models that ground the use of capital controls. In this context, the main objective of this paper is to analyze the recent evolution of mainstream economics on capital account liberalization and capital controls, focusing on its new evidence and theoretical reorientation. This paper sustains that the new mainstream models represent a new phase in its approach on the regulation of international capital flows.

Keywords

Capital controls, capital account liberalization, financial globalization, mainstream economics, global financial crisis.

JEL Codes F3, F4, F6.

Resumo

Os estudos da mainstream economics *sobre contas financeiras passaram por importantes mudanças ao longo das últimas três décadas. Partindo de modelos que sustentavam uma abertura financeira plena, as crises financeiras dos anos 1990 e a crise financeira global deflagrada em 2008 mostraram diversas disfunções da globalização financeira. Adicionalmente, o período do pós-crise global propiciou novas evidências sobre a efetividade de medidas de regulação. Em resposta a tantas evidências que contradizem os antigos modelos* ex ante*, autores da* mainstream economics *desenvolveram novos modelos que fundamentam o uso de controles de capital. Nesse contexto, o principal objetivo do artigo é analisar a recente evolução dos estudos da* mainstream economics *sobre liberalização da conta financeira e controles de capital, com foco nas novas evidências e na reorientação teórica que tem ocorrido. O artigo sustenta que os novos modelos da* mainstream economics *representam uma nova fase dessa corrente quanto à regulação do capital externo.*

Palavras-chave

Controles de capital, liberalização da conta financeira, globalização financeira, mainstream economics*, crise financeira global.*

Códigos JEL *F3, F4, F6.*

1 **Introduction**

It is widely recognized that several authors from the Keynesian/Structuralist tradition in economics have been calling attention for the inherent instability of capital flows since the seminal works of Keynes on this subject[1]. Among them, one particular strand focuses on the ability that few currencies have to denominate debt contracts and derivative instruments in international markets. This 'currency hierarchy', therefore, implies that a considerable share of capital flows to economies whose currencies are inconvertible may be determined according to the international investors' state of liquidity preference (Prates, 2005; Prates; Cintra, 2008; Conti *et al*., 2014; Fritz; Prates, 2014). As consequence, the interest rate performed by these peripheral economies[2] may be subjected to pressures coming from their respective exchange rates (Ocampo, 2016), which implies loss of monetary policy independence and consequently the fail of the 'impossible trinity' condition. It is also noteworthy that such negative side effects can be stronger in those peripheral economies whose current accounts are structurally deficient (Oliveira, 2011; 2012). Therefore, according to this Keynesian/Structuralist perspective, the use of capital controls and macroprudential policies should be thought as instruments available to peripheral economies to deal permanently with such inherent asymmetries of the contemporaneous International Monetary and Financial System (IMFS). In other words, such measures could then partially offset the negative side effects derived from these currencies inconvertibility.[3]

In the other hand, it is also widely recognized that mainstream econom-

1 See Keynes (1980a; 1980b; 1980c).

2 The term 'peripheral economies' is frequently used to design economies that: a) liberalized the capital account; b) adopt a regime of dirty floating exchange rate; and c) whose currencies are inconvertible at international level.

3 Some keynesian theorists have adapted Keynes' (1936) portfolio theory to an open economy in order to theoretically ground the use of capital controls (Andrade; Prates, 2013; Kaltenbrunner, 2015). Based on the equation $r = (q - c) + a + l$, peripheral economies tend to set higher interest rates (q), relatively to advanced economies, in order to compensate the absence of international liquidity of their currencies (l). This interest rate differential, in turn, can attract an excess sum of capital flows and, therefore, promote an undesirable appreciation of the exchange rate (a). Such dynamics frequently occurs in peripheral economies along cycles of high international liquidity, and generally implies deviations from their respective UIP condition and loss of monetary policy independence. Therefore, the use of capital controls ($-c$) can function as a wedge between the domestic and international interest rates and soften pressures of exchange rate appreciation, thus increasing monetary policy autonomy and restoring UIP condition.

ics did not share such interpretation back in the 1970s and 1980s, period in which the supposed benefits of free mobility of capital stood out. However, the mainstream approach on financial openness and capital controls has been changing considerably over the last two-and-a-half decades for several reasons. The orthodox presumptions that theoretically grounded the financial openness processes in the 1980s and 1990s were contradicted by the crises that hit emerging economies in the late 1990s. In addition, the global financial crisis that broke out in 2008 introduced another important shift in these mainstream studies, which were also boosted by the use of capital controls by several emerging countries in the post-crisis period. In this perspective, in the past few years the emerging mainstream literature is characterized by: a) new recommendations on regulatory measures on capital flows; b) studies that empirically investigate the effectiveness of capital controls and macroprudential policies; and c) new orthodox models that ground the use of capital controls. Unlikely two decades ago, in which the mainstream advocated free capital movement, the new empirical studies and theoretical models suggest that countries – especially emerging economies – can use capital controls to ensure financial stability, monetary policy autonomy, and even greater rates of economic growth.

In this sense, this paper analyzes the recent evolution of mainstream economics on capital account liberalization and capital controls, focusing on its new evidence and theoretical reorientation, especially on the post-global crisis period. For this, it was carried out a literature review of the most reputed papers about financial openness and capital controls published in prestigious journals besides the National Bureau of Economic Research (NBER) working papers and International Monetary Fund (IMF) papers, among others. We then argue that the new mainstream models represent a new phase in its theoretical approach on the regulation of capital flows. So much is that currently capital controls are admitted with fewer restrictions by the mainstream economics, being conceived as important instruments available to central banks. A new phase, but not a turning point, given the still existing restrictions on the use of these regulatory measures on permanent basis, which greatly derive from its remaining differences with the Keynesian approach on the contemporaneous International Monetary and Financial System.

In addition to this introduction and conclusion, this article proceeds as follows. Section 2 presents a brief description of the important main-

stream studies that contradict the orthodox presumptions that theoretically grounded the capital account liberalization processes in emerging economies during the 1990s. Section 3 provides some mainstream studies that empirically ground new recommendations on capital controls and macroprudential policies. Section 4 discusses the effectiveness of capital controls and macroprudential policies present in the recent literature. Based on this, section 5 presents the main orthodox models that ground the use of capital controls and then synthetizes the main results of the selected papers on the effectiveness of capital controls and prudential policies, as well as the evolution of mainstream economics on financial openness and capital controls from the liberalizing reforms to the post global financial crisis period.

2 **Empirical evidence against full capital account liberalization: A brief review**

The mainstream's new emphasis on capital controls did not occur suddenly. Two decades ago, the mainstream advocated full financial openness. The current study finds an evolution in the scope of mainstream studies, where the currency and financial crises in several emerging economies in the late 1990s marked the first mainstream reorientation on capital account liberalization. The financial crises that hit emerging economies in the late 1990s and beginning of the 2000s boosted empirical studies that contradict the orthodox presumptions on the benefits of financial openness, especially those that would supposedly go to emerging economies. The main results established by literature are as follows:

a) There is no relationship between financial openness and greater rates of economic growth, such as in Prasad *et al*. (2003), Kose *et al*. (2009), and Rodrik and Subramanian (2009);

b) Advanced economies have superior risk sharing in relation to emerging countries due to a higher degree of financial integration and interconnection between the advanced economies, as in presented by Kose *et al*. (2009), Bluedorn *et al*. (2013), and Lane and Milesi-Ferretti (2007). Consequently, consumption volatility did not precisely fall for emerging countries; instead, this indicator even increased during some periods, such as Prasad *et al*. (2003) and Levy-Yeyarti and Calderón (2009) observe;

c) International capital flows tend to be pro-cyclical and influenced directly by advanced countries' monetary policy and conditions, such as Arora and Cerisola (2000), Calvo and Reinhart (2002), and Kaminsky *et al*. (2004) show;

d) Institutional investors' dynamics impose restrictions on emerging economies' issue of external liabilities, and thus on the absorption capacity of foreign savings, such as Eichengreen *et al*. (2003), Reinhart *et al*. (2003), and Eichengreen *et al*. (2007) point out;

e) Consequently, due to the two findings above, emerging economies' access to international financial markets show interruptions and reversions, which in turn negatively affect the economic activity in these countries, such as Rodrik and Velásco (1999), Calvo *et al*. (2004), and Edwards (2007) find. These processes also induce a loss in monetary policy autonomy for emerging economies, which in turn contradicts the impossible trinity.

Despite all of this new evidence, the mainstream in general did not defend the use of capital controls as an external insertion alternative for emerging economies. The authors based their recommendations on the threshold approach, which assumes that the benefits of capital account liberalization may take a certain time to yield the expected benefits in emerging economies. In other words, the benefits of financial openness start working only at a certain level of financial integration in relation to GDP.[4]

3 **New recommendations on capital controls**

The global financial crisis of 2007-2008 triggered mainstream's new reorientation on capital account liberalization. Different from the threshold approach on financial openness that marked the period between the emerging economies' crises and the global crisis, several mainstream studies now provide an explicit defense of capital controls in their recommendations. Before proceeding, two caveats are noteworthy. First, capital controls and (macro) prudential policies on capital outflows aim to restrict the outflow of domestic resources rather than restricting the repatriation of invested resources from non-domestic agents. For example, during the

4 For more details, see Prasad *et al*. (2003) and IMF (2007).

1990s and 2000s several emerging economies intensified their liberalization of domestic capital outflows. In other words, they released their restrictions on cross-border operations (such as loans and investments) of domestic residents, such as banking institutions, non-banking financial institutions (such as institutional investors), non-financial companies, and physical persons.

The second caveat is that the mainstream literature began to adopt the typology used by authors such as Ostry *et al*. (2010; 2011) and Ghosh *et al*. (2014), who classify capital controls as regulatory measures that discriminate according to the investor's residency. For example, the imposition of an IOF tax (the Portuguese acronym for 'Tax on Financial Operation') on capital inflows coming from foreign investors is a capital control under this typology. Macroprudential policies do not discriminate according to the investor's residency, but do discriminate according to the currency denomination of the cross-border financial transaction. For example, a raise in the degree of restrictions on banking institutions in forming open positions on foreign currencies is a macroprudential policy (classified as 'foreign exchange related measures').

The term 'Capital Flows Management Measures (CFMs)' encompasses both types of regulations; that is, capital controls and macroprudential policies. It explains why some studies approach the effectiveness of CFMs imposed by developed countries vis-à-vis emerging countries, which is discussed in Subsection 4.3. In other words, the CFMs developed countries impose necessarily relate to macroprudential policies, since any advanced country imposes capital controls (that discriminate based on investors' residency) since the liberalizing reforms that took place in the 1970s and 1980s. However, the CFMs emerging economies impose refer to both capital controls and macroprudential policies. Having clarified these caveats, it is now necessary to present the main studies that offer new recommendation on the subject.

Ghosh *et al*. (2014) analyze the main determinants and magnitudes of net financial flux surges such that their innovation was to distinguish between the surges due to foreign investors and those due to the behavior of domestic investors. In other words, they differentiate between liability-driven and asset-driven surges, respectively.[5] Some regressions showed

5 Foreign inflows trigger liability-driven surges, while a reduction in capital outflows from domestic residents cause asset-driven surges.

that external factors had a superior explanatory power relative to domestic factors, in terms of the probability of a surge, which explains the strong synchrony of this phenomenon between emerging markets. The liability-driven surges, besides being predominant in the probability of an occurrence, were the most sensitive to changes in external factors, the contagion effect, and the degree of financial interconnection. To the extent of this evidence, Ghosh *et al*. (2014) defend the use of capital controls to avoid a strong volatility in this surge category, as well coordination policies between emerging economies that receive these financial fluxes and advanced countries that are the source of such capital outflows.

The conventional economic policy mix also underwent important shifts in the last few years. Facing the strong capital inflows that characterized emerging economies in the post-global crisis period, De Gregorio (2014) defends the adoption of an economic regime based on: a) a flexible exchange rate to avoid one-way speculations and arbitration; b) an inflation targeting regime; and c) a sustainable fiscal balance. However, the author points out that these measures can be insufficient to counter an excess of financial fluxes, to the extent that the use of capital controls becomes necessary. Nonetheless, adopting regulatory measures must support the adoption of sustainable macroeconomic policies, according to the authors' prescriptions.

Facing capital flow volatility in the last years, several economists began inquiring into the presumptions and theories that advocate the free mobility of capital. One of the more important examples is the denial of the validity of the macroeconomic trilemma (or impossible trinity) for emerging economies, as in Rey (2015). Based on econometric regressions, the author concludes that cross-border financial fluxes through banking institutions (the financial credits) cause deviations in emerging economies' interest rates uncovered parity, despite the exchange rate regime and the macroeconomic fundaments of these countries. With these results, only the use of capital controls can raise an emerging economy's degree of monetary policy autonomy, such that CFMs must fall on financial credit and debt bonds fluxes. Additionally, these regulatory measures should be imposed during booms of financial inflows and relaxed during a bust (Rey, 2015).

This movement to new prescriptions on a stronger regulation of cross border capital flows also rested on one of the most important economic forums, the Committee on International Economic Policy and Reform

(CIEPR). Following a similar direction, CIEPR and Eichengreen (2011) point out the role that macroprudential regulation must assume to counter asset inflation and credit booms, besides recognizing that small and liberalized countries lack autonomy in implementing domestic policies. Hence, these economies should use macroprudential measures and temporary capital controls, especially on the capital inflows that fund domestic financial institutions, since the external equilibrium of an emerging economy is not guaranteed by the hypothesis of real adjustments in the exchange rate.

4 **The effectiveness of capital controls and macroprudential policies**

In this section, we discuss the effectiveness of capital controls and macroprudential policies from three aspects: a) Main goals and spillover effects; b) Permanent versus sporadic capital controls; and c) Capital Flows Management Measures (CFMs) in a comparative perspective between emerging economies and developed economies.

4.1 **Main goals and spillover effects**

This study argues that the use of capital controls and macroprudential policies by emerging economies facing strong capital inflows after the global financial crisis led several mainstream researchers to investigate the effectiveness, under several parameters, of these regulatory measures. This new research strand can also be interpreted as part of the reorientation of the mainstream's scope.

The emerging economies that triggered the CFMs had mainly six goals: a) to counter an appreciation of the exchange rate; b) to raise the degree of monetary policy autonomy; c) to stretch the maturity of external liabilities; d) to reduce the net volume of financial inflows, v) to counter credit booms; and e) to counter asset inflation (Habermeier *et al*., 2011). Capital controls, however, are not due only to their effects on the economies that use them. Other studies point out the spillover effects of CFMs. To investigate the effectiveness of capital controls imposed by emerging economies,

Habermeier *et al*. (2011) estimate VAR regressions[6] which results point to the relative effectiveness of raising the degree of monetary policy autonomy for Brazil, Thailand, and Colombia, as well stretching the maturity of external liabilities of the latter.

During the post-global crisis period, in which several emerging economies imposed capital inflow controls, many economists examined their potential effectiveness in the context of high global liquidity and the concerning possibility that these CFMs could form a new 'impoverish the neighborhood' policy. Among these economists, Pasricha *et al*. (2018) contributed greatly to the literature on capital controls and macroprudential policies. The authors use a capital controls database to analyze the effectiveness of the capital controls imposed by emerging economies before and after the financial crises in terms of financial fluxes, exchange rate variation, and monetary policy autonomy. The authors examine two models to analyze the domestic impacts of the capital controls and the spillover effects of the imposition of controls by some BRICS members on other emerging economies.

First, in terms of the domestic impacts, in the period up to the crisis in 2008, the impulse-response functions show that a net restriction on inflows increased monetary policy autonomy and reduced the pressure on exchange rate appreciation (although with mixed and less significant results), and the net loosening on outflows reduced the monetary policy autonomy of emerging countries. However, in the post-crisis period (2008-2011), the regressions show that the domestic effects of net restrictions on inflows raised only monetary policy autonomy to a smaller degree, and the net loosening on outflows did not present any significant effect on the 'trilemma' variables. This relative loss in the effectiveness of the controls was primarily due to the context of global high liquidity (Pasricha *et al*., 2018).

In relation to the spillover effects, some impulse-response functions established that these effects were more intense in the post-crisis period. Besides raising the net financial fluxes and the pressure on exchange rate appreciation in relation to the pre-crisis period, these effects also reduced monetary policy autonomy in other emerging markets. According to the these regressions, the spillover effects were more intense to Latin

6 The capital controls were the IOF tax ('Tax on Financial Operation') imposed by Brazil in 2009, the URRs imposed by Colombia in 2007-2008 and by Thailand in 2006-2008, and the process of capital outflow liberalization promoted by Korea in 2005-2008.

American economies relative to those in Asia because the former have a stronger degree of financial openness and rely heavily on bank flows as external funding.

Given that Brazil imposed the most capital controls after the global financial crisis, a study of this case contributed greatly to this subject. Unlike cross-country studies of effectiveness and the spillover effects of capital controls, Forbes *et al*. (2016) examine whether Brazil's controls during 2006-2013 had spillover effects on other economies, besides their direct impact on the Brazilian capital account. Forbes *et al*.'s (2016) regression shows that the imposition of IOFs during the sample period reduced the position of institutional investors in the asset class subject to the controls, specially, fixed income instruments. However, the regression establishes that the effect of reducing investor's positions was even larger on some equity classes, demonstrating a certain fear among investors regarding the government's controls.

After finding evidences of the effectiveness of capital controls in reducing the volume of portfolio fluxes to Brazil over the sample period, the authors also investigate whether there were spillover effects to other countries in response to the Brazilian government's regulatory measures. The regression to investigate this hypothesis highlights positive indications, such as positive spillovers (an increase in investors' positions) to countries in the same region (Latin America), to countries that have financial markets similar to that of Brazil, and to big exporters to China. On the other hand, there were negative spillovers (a reduction in investors' positions) to countries seen as 'susceptible' to impose capital controls (Forbes *et al*., 2016). These results are then extremely important in the debate on the multilateral aspects of capital controls, since there is a risk that these regulations can become a new 'impoverish the neighborhood' policy.

4.2 **Permanent versus sporadic capital controls**

One of the biggest controversies about capital controls is if the instruments should be permanent or sporadic. The experience of emerging economies in the post-crisis period seems to point to the second option. In order to counter the trade-offs between these two types of capital account regulation, several econometric studies aimed to identify, under several parame-

ters, whether one type of regulation is superior to another. Another caveat is noteworthy. Permanent capital controls do not mean that a country is totally closed to cross-border capital flows; it means that a country imposes a control on a certain class of asset or debt and maintains this regulatory measure over time. This classificcation is independent of the level of taxation, or administrative measure, of the capital control imposed. In turn, a sporadic capital control refers to a regulation that the government changes or lifts quickly, and whose effects can even be stronger relatively to the permanent capital controls.

In this research strand, Klein's (2012) study is one of the most relevant. The author precisely distinguishes between countries that presented capital controls as a sporadic (or temporary) instrument from those that permantly imposed capital controls. The first group included Latin America and some developed countries, while the second consisted mostly of Asian economies. Thus, some panel regressions analyse the differences between countries in terms of economic performance, financial vulnerability, and exchange rate due to their different approaches to capital controls. The first estimation established that for 1995-2010, the countries that imposed permanent capital controls showed higher rates of economic growth and lower rates of financial variables growth.

This strand of the literature on different approaches on capital controls also includes Fernández *et al*.'s (2016) study. The authors use a database that lists several financial assets subject to controls[7] and analyze the effectiveness of capital controls by means of co-movements between these regulatory measures and by an agregate control indicator. The study of co-movements consisted of calculating the correlation of the controls imposed on different financial assets and between the controls on inflows and outflows over time. For the 'gate' countries (that sporadicly imposed capital controls), the results indicate a moderate correlation between the controls imposed on the most liquid class of financial assets to both controls on inflows and outflows. However, the controls imposed by 'wall' countries (that permantly imposed capital controls) presented a high correlation, specially between the controls imposed on the most liquid assets and financial credit, to both the controls on inflows and outflows.

7 Fernández *et al*. (2016) include 100 countries for 1995-2013, and their database includes 10 types of financial assets/debts involved in 32 types of financial transactions subject to some kind of capital control.

In other words, this methodology indicates that permanent capital controls were more efficient than are sporadic capital controls, which were imposed mostly by middle income countries over the sample period (Fernández *et al*., 2016). One of the main criteria underlying the effectiveness of these controls is that due to the high co-movement (correlation) between the controls imposed on inflows and outflows, there was a strong regulatory and administrative capacity to avoid, or at least to soften, capital control evasion.

4.3 **CFMs: Emerging economies vis-à-vis developed economies**

An important research topic that stands out in the new literature on capital controls is the comparison, under several methodologies, of the effectiveness of capital controls imposed by emerging and developing economies vis-à-vis financial regulatory measures imposed by developed countries. These last measures are characterized by prudential measures that affect, even indirectly, outflow investments from domestic agents. Several studies point out that prudential measures imposed by developed countries on its capital outflows are more effective at countering cross-border fluxes compared to inflow controls imposed by emerging economies. This new evidence, summarized below, is very important due to the debate about the multilateral aspects of capital controls and to the need for international coordination between capital recipient and capital source countries.

Binici *et al*. (2010) conducted one such study. The authors aim to identify the effectiveness of capital controls and other regulatory measures in managing the volume of financial fluxes. The study examined 74 countries for the sample period 1995-2005 to analyze the effectiveness of CFMs on three classes of financial instruments: equity, FDIs, and debts. Their regressions illustrate that, for the high income countries in the sample, CFMs on outflows were effective in reducing the gross volume of financial instruments, and were the most effective for the debt class. Additionally, the effectiveness of the CFMs on outflows implemented by high-income countries was comparatively superior to similar regulatory measures imposed by medium and low-income countries.

Aizenman and Binici (2016) provide another important contribution to this subject. The authors analyze the pressure of capital flows and CFMs

on the exchange rate and the international reserves of emerging and OECD countries for the 2000-2014 period; that is, the impact of these factors on countries' 'exchange market pressure' (EMP). The main results show that the imposition of CFMs by OECD countries relieved some of other pro-cyclical pressures on these countries' EMP, such that the regulatory measures imposed on inflows were significantly stronger than the ones imposed on capital outflows. However, the imposition of CFMs by emerging countries did not significantly soften the pro-cyclical pressures of short-term capital flows on these economies' EMP, despite the fact that emerging economies resorted to these regulatory measures more frequently and intensively. According to Aizenman and Binici (2016, p. 86), *'While capital controls may mitigate the exposure, the efficacy of this mitigation depends on the quality of institutions and may be greater for OECD countries than for more vulnerable EME.'*

Within this debate about the multilateral aspects of capital controls and prudential policies, and the necessity for international coordination on the subject, Ghosh *et al*.'s (2014) study also stands out. They investigate if capital controls and other regulatory measures (such as macroprudential policies) were efficient if countries implemented them simultaneously on capital inflows and capital outflows, from emerging recipient and advanced source countries. To identify the effectiveness of capital controls and other regulatory instruments in reducing the volume of cross-border banking flows, the authors collect a sample of 76 capital recipient and 31 capital source countries, and perform isolated regressions for both the recipient and source countries. On the regulatory measures on capital outflows from source countries, the results show that prudential regulation on the financial system, especially on external loans, have a strong impact in reducing bank flows over the sample period. The regulatory measures imposed on capital inflows by recipient countries also show some effectiveness in reducing cross-border banking flows.

An extremely important point these regressions establish is that the regulatory measures imposed by source countries on their capital outflows were relatively more efficient than the inflow controls imposed by recipient economies (Ghosh *et al*., 2014). Based on their regressions, the authors defend the necessity for global coordination for capital controls and other regulatory measures, both between source and recipient economies, and between recipient economies, since this kind of coordination can potentially soften currency wars, such in Korinek (2012).

5 **The new phase of mainstream economics: Theoretical reorientation**

A new theoretical literature is emerging in the mainstream that supports the pertinence of capital controls. This new literature responds to the flaws of orthodox models that support full capital account liberalization, as well the empirical evidence of the effectiveness, under several parameters, of capital controls and macroprudential policies imposed by several countries. This article thus argues that these new orthodox models are ex-post constructions, since they benefit from empirical studies on the effectiveness of capital controls. It is therefore an important reorientation in the mainstream, given the important influence of theoretical modeling on future economic policies.

One of the first theorists that grounded the use of capital controls in this context was Korinek (2011). The theoretical construction formalizes the prudential use of capital controls. According to the model, emerging economies show an excess of external indebtedness due to capital inflows because private agents do not internalize the consequences of a future debt constraint due to excessive indebtedness. According to the model, over the boom phase, debt inflows raise internal consumption, promote asset inflation (which is also used as collateral in financing operations), and provoke currency appreciation. However, a negative shock on one of these variables promotes financial amplification, which is characterized by currency depreciation, asset deflation, and a contraction in aggregate demand. In this scenario, private agents experience a vicious circle that leads to a relative interruption of external financing and/or to an increase in its costs.

The use of prudential capital controls would then induce domestic agents to internalize their indebtedness decisions, and therefore avoid a financial amplification process. Additionally, prudential capital controls can promote the intertemporal smoothing of consumption and raise economic growth, thus confronting the orthodoxy until in force (Korinek, 2011). Following a similar line of reasoning, Ostry *et al*. (2012) argue that the capital influx controls, when focusing on such externality, aim to reduce this component of the consumption function of the representative agent, and therefore to promote an intertemporal smoothing in consumption.

Facing the empirical literature on the relative effectiveness of capital controls, orthodox models aimed to theoretically explain why some controls

reached their aims more frequently than others did. One of the main studies to formalize this new economics of capital controls was by Magud *et al*. (2011). The authors first assume that countries impose capital controls to reach four goals: reduce short-term capital inflows (hot money); reduce the large magnitude in capital inflows, which can bring financial risks; smooth the pressure of exchange rate appreciation; and increase the degree of monetary policy autonomy. Capital controls can be efficient in reducing the volume of short-term debt, and therefore stretch the maturity of external liabilities, as well as increasing monetary policy autonomy if the elasticity of short-term inflows in relation to the sum of external liabilities is above one. In this way, the imposition of capital controls would lead to a relative reduction in short-term inflows compared to total external liabilities. An increase in monetary policy autonomy would also characterize this scenario since the controls would create a wedge in the interest rate differential between external short-term and long-term liabilities (Magud *et al*., 2011).

Given the new evidence on the effectiveness of capital controls, several economists aimed to identify the classes of capital flows for which the use of CFMs would be theoretical desirable. In the research in this field, Blanchard *et al*.'s (2017) study stands out due to the theoretical innovation on conventional open economy models. The authors distinguish between capital flows destined for emerging economies in terms of bonds and non-bonds, in which the first class encompasses debt bonds and the second one encompasses mainly equity instruments and FDIs, as a method to identify whether capital flows are expansionist or contractionary. According to the authors, debts bonds are contractionary, following the IS-LM-BP models, because this kind of capital flows appreciate the exchange rate and do not contribute to an expansion of internal credit backed in a foreign currency. On the other hand, non-bond flows can be expansionist or contractionary depending on its net effect on economic activity. This is because non-bond flows provoke exchange rate appreciation and an expansion of internal credit backed in a foreign currency. If the latter effect prevails over the former, then non-bond flows will be expansionist. Consequently, the use of capital controls on bond inflows is always desirable, and the use of capital controls on non-bond inflows will be desirable only if the net effect of these inflows is contractionary (Blanchard *et al*., 2017).

In addition, in this new theoretical literature some models also support the international coordination of capital controls, which represents a

significant shift in the orthodox presumptions that advocated full capital account liberalization, such as the ones derived from the efficient markets hypothesis. In other words, the multilateral aspects of capital controls are gaining theoretical formalization, since new studies suggest international coordination among capital recipient countries and between capital recipient and capital source countries. One of the main arguments present in these studies is that the unilateral imposition of capital controls by emerging recipient economies has an increasing and convex cost, so there is a reduction of the welfare in private agents' utility function in economies that resort to these regulatory measures very intensely. Policies aimed at the international coordination of capital controls should then be elaborated to share the burden of the capital controls imposition among capital recipient countries and between capital recipient and capital source countries and, therefore, reduce the convex cost associated to unilateral controls on capital inflows (Ostry *et al*., 2012; Korinek, 2012).

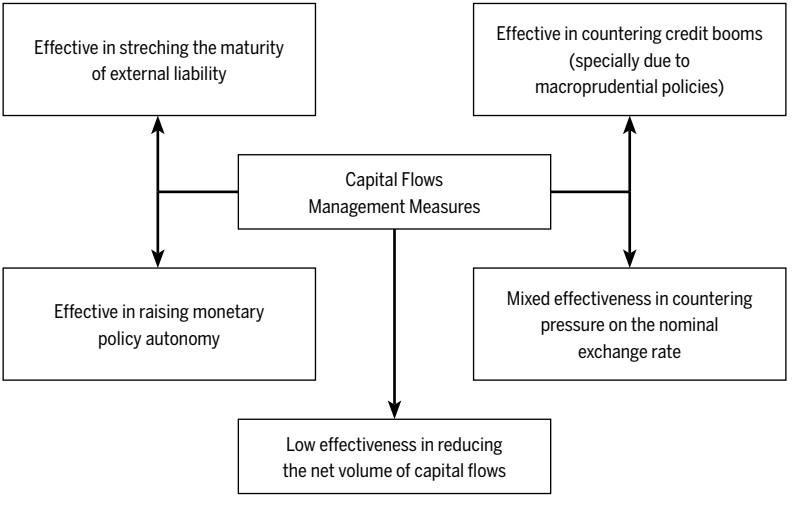
When it comes to currency wars, which are characterized by successive impositions of capital controls by emerging economies hit by spillover effects, Ostry *et al*. (2012) argue that the unilateral imposition of capital controls in such scenario is no longer Pareto efficient in correcting the externalities provoked by an excessive external indebtedness, as in Korinek (2011). Therefore, the coordination of capital controls among capital recipient countries can potentially soften these currency wars. In addition to reduce the convex costs associated to the unilateral imposition of these regulatory measures, Korinek (2012) proposes a coordination that takes into account the influence that each economy exercises on international interest rates. Following his model, such influence is compound by the capital flows and the current account balance of each country, so that the capital outflows from advanced economies should be subjected to greater intensity of controls. However, Ostry *et al*. (2012) correctly point out that unlike the emerging economies, capital source economies do not have an explicit incentive to resort to tighter regulation on their capital outflows, because their private agents' utility functions are not constrained by the 'costly controls' component. A possible argument to convince capital source economies to increase the intensity of regulation on their capital outflows is that this kind of coordination can avoid future financial crises in emerging economies, what in turn would bring losses to the financial institutions based on developed countries (Ostry *et al*., 2012).

5.1 A systematization

This article analyzed the main discontinuity points of important reorientations in the mainstream perspective on capital account liberalization and capital controls over the past few years. The econometric rigor in these studies made it possible to establish the goals that CFMs can achieve easily and those with more difficulty. These results, summarized below, can provide a useful guide to future regulatory measures for policy makers.

The results of cross-country studies point to the relative efficacy of CFMs in increasing monetary policy autonomy, stretching the maturity of external liabilities, and countering credit booms, though this last goal is mainly reached via macroprudential policies. On the other hand, the results on the goal of countering pressures on exchange rate appreciation were mixed, and little evidence exists that CFMs could effectively reduce the net volume of capital flows. These results were provided mainly by Magud *et al*. (2011), Habermeier *et al*. (2011), Fernández *et al*. (2015), Aizenman and Binici (2016), Pasricha *et al*. (2018), and Forbes *et al*. (2016). Figure 1 systematizes the common results on the effectiveness of CFMs found by the joint analysis of these studies.

Figure 1 **Synthesis of the effectiveness of CFMs based on mainstream economics**

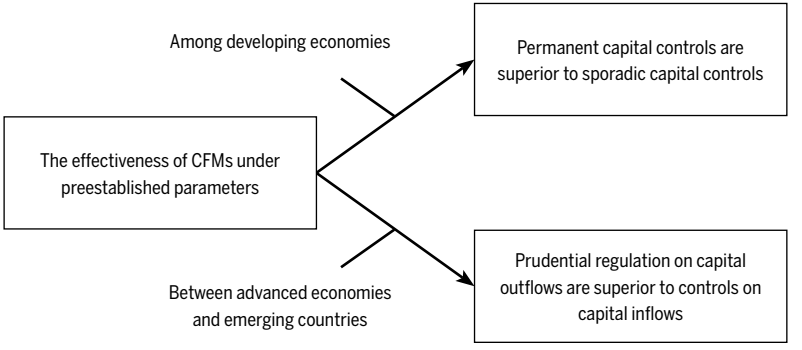


Source: Elaborated by the authors.

Since the results above refer especially to sporadic CFMs, some other studies that analyze permanent versus sporadic capital controls provide a measure of their relative effectiveness. Permanent capital controls were superior to sporadic capital controls in boosting economic growth and reducing financial risks. Permanent capital controls also showed a stronger co-movement between the different classes of assets/debts subject to controls, indicating a higher effectiveness in avoiding evasion. Klein (2012) and Fernández *et al*. (2016) conduct the main studies from which one can draw this conclusion.

Another important contribution of these mainstream studies was the investigation of the relative effectiveness of the prudential measures and capital controls imposed by developed and emerging economies in addition to the analysis of the spillover effects. These studies are extremely useful to the debate on the multilateral aspects of capital controls and are therefore indispensable in future discussions about the international coordination of CFMs. Prudential measures (that discriminate based on the currency denomination of the transaction) imposed by developed countries were more effective in reducing the volume of cross-border capital flows vis-à-vis capital controls (that discriminate based on the investor's residency) imposed by emerging markets. One can derive these conclusions from the studies by Binici *et al*. (2010), Ghosh *et al*. (2014), and Aizenman and Binici (2016). Figure 2 systematizes the relative effectiveness of CFMs imposed by developing and developed economies – in the latter case, the measures are basically prudential policies.

Figure 2 **Synthesis of the relative effectiveness of CFMs based on mainstream economics**



Source: Elaborated by the authors.

Moreover, capital controls were relatively more efficient in increasing the maturity of external liabilities and monetary policy autonomy during the period up to global financial crisis in 2007-2008. The capital controls imposed in the post-crisis period, which was characterized by global low interest rates, were less effective and had stronger spillover effects, according to results in Pasricha *et al*. (2018) and Forbes *et al*. (2016), and the model by Korinek (2012).

Chart 1 categorizes the effectiveness of CFMs based on the selection of papers analyzed here. To simplify the exposition, CFMs have the following goals: 1) to stretch the maturity of external liabilities, 2) to increase monetary policy autonomy, 3) to reduce the gross volume of capital flows, 4) to reduce the net volume of capital flows, 5) to counter pressure on nominal exchange rate appreciation, and 6) to counter credit booms. Additionally, in the classification, a Null/Low effectiveness is attributed to studies that find that only one (or none) of the CFMs' goals were reached, while a Medium/High effectiveness refers to the studies that find that at least two of the CFMs' goals were reached.

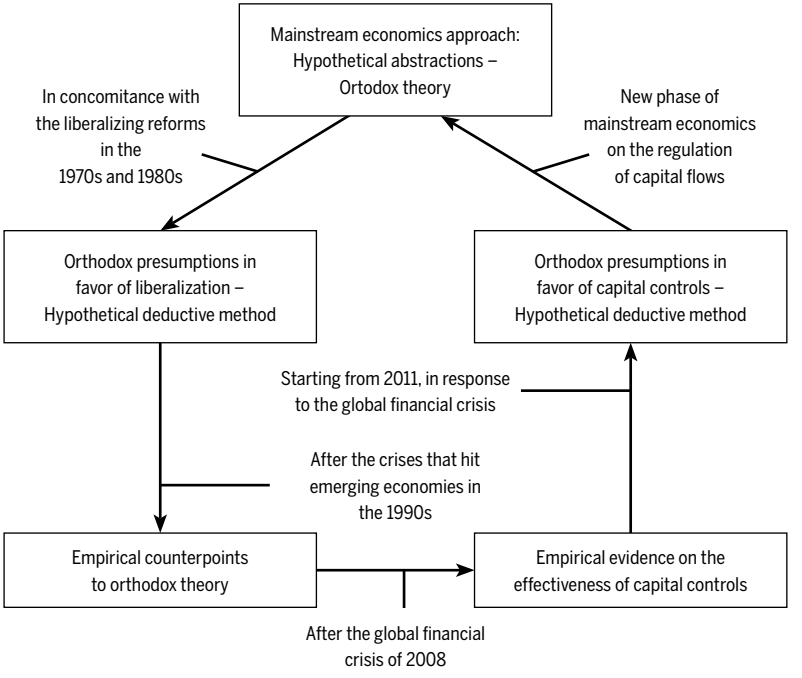
Chart 1 **Synthesis of the effectiveness of CFMs in each analyzed study**

Authors	Research methodology		CFMs' effectiveness based on its goals							
	Empirical	Theoretical	1	2	3	4	5	6	General effectiveness	
									Null/ Low	Medium/ High
Habermeier *et al.* (2011)	X		X	X				X		X
Pasricha *et al.* (2018)	X			X					X	
Forbes *et al.* (2016)	X				X				X	
Klein (2012)	X			X			X	X		X
Fernández *et al.* (2016)	X			X					X	
Binici *et al.* (2010)	X				X				X	
Aizenman and Binici (2016)	X			X					X	
Ghosh *et al.* (2014)	X				X				X	
Korinek (2011)		X	X		X			X		X
Ostry *et al.* (2012)		X	X		X		X	X		X
Magud *et al.* (2011)	X	X	X	X						X
Blanchard *et al.* (2017)	X	X	X		X		X			X
Korinek (2012)		X			X				X	

Source: Elaborated by the authors.

Based on the papers discussed here, Figure 3 illustrates the evolution of mainstream economics on capital account liberalization and capital controls from the liberalizing reforms to the post-crisis period. A clear theoretical reorientation in the orthodox approach on capital controls appears, suggesting the emergence of a new orthodox paradigm in mainstream economics.

Figure 3 **Evolution of mainstream economics on capital account liberalization and capital controls: From the liberalizing reforms to the post-global crisis period**



Source: Elaborated by the authors.

Lastly, it is noteworthy that the above-mentioned processes is not concluded yet. Given the reorientation that has been taking place within mainstream economics over the last two and a half decades, one can expect that orthodox theory may incorporate even more greatly the use of capital controls over time.

6 **Conclusion and remarks**

This article concludes that the orthodox models that favor full capital account liberalization in the 1980s and 1990s were gradually contradicted by empirical studies showing flaws in these models, as well as by studies that demonstrate the desirability of capital controls. In response to all of this evidence, new orthodox models that support the use of capital controls stand out. These new models are therefore ex-post theoretical constructions, while the former ones were ex-ante theoretical models. For this theoretical reorientation process, the period after the global crises of 2008 was fundamental due to the negative effects on national economies, especially emerging economies, generated by the instability of international capital flows.

Therefore, these new ex-post models may mark a new phase in the theoretical mainstream and orthodox perspective on capital account liberalization and capital controls. This change recognizes that reality is right; that is, it was not the theory that was right and the reality wrong. From this perspective, it is possible to affirm that the new mainstream models represent a new phase in its theoretical approach on the regulation of capital flows. Currently, capital controls are admitted with fewer restrictions by the mainstream economics, being conceived as important instruments available to central banks.

However, despite some mainstream economists started to defend the use of capital controls and macroprudential policies aimed at similar objectives to those defended by Keynesian economists, our study suggests that their respective theoretical basis still differ from each other. From the Keynesian/Structuralist tradition, the main *rationale* for the use of capital controls resides in the inherent asymmetry of the contemporaneous International Monetary and Financial System, in which the volatility of capital flows and its negative side effects derive greatly from the existence of a 'currency hierarchy'. The theoretical reorientation that has been taking place under orthodoxy, in turn, is mainly based on the notion of correction of externalities and, therefore, its research method focuses greatly on individual agents and their responses to government interventions.

Such differences implies the following practical consequences: from the Keynesian perspective, the use of capital controls should be conceived as a permanent instrument of economics policy, given the fact that currency

inconvertibility may remain for undetermined time. From the major orthodox perspective, in turn, capital controls and macroprudential policies should be used sporadically – more specifically when facing a surge in capital inflows that could potentially increase financial risks and promote an exchange overvaluation.

Only time will tell, however, whether the ongoing evolution within the literature on open economics will generate a new consensus on capital controls.

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About the authors

Diego Garcia Angelico – diego_angelico@hotmail.com
Institute of Economics, University of Campinas, Campinas, SP, Brazil.
ORCID: https://orcid.org/0000-0002-4606-3408.

Giuliano Contento de Oliveira – giueco@unicamp.br
Institute of Economics, University of Campinas, Campinas, SP, Brazil.
ORCID: https://orcid.org/0000-0001-6791-2643.

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