The theoretical reorientation of the "mainstream economics" on capital controls: it was not the reality that was wrong

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ABSTRACT

Mainstream studies on financial openness and capital controls were subjected to important changes over the last two decades. Starting from theoretical models that grounded a full capital account liberalization, the financial crises that hit emerging markets in the 1990s and the global financial crisis of 2007 provided new evidences on financial globalization and capital controls, which were incorporated by mainstream's empirical studies. In response to several evidences that counterpointed earlier theoretical models, currently mainstream has been developing new theoretical models that ground the use of capital controls. This article's understanding is that these new orthodox models, taken as consequence of a long evolution processes in mainstream's studies scope, may be marking a new phase in orthodox perspective on financial openness and capital controls.

Key-words

Capital controls; capital account liberalization; financial openness; mainstream economics; global financial crisis

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1 Introduction

The mainstream researches and prescriptions on financial openness and capital controls have been continuously changing over the last two decades. On the one hand, the orthodox presumptions that theoretically grounded the financial openness processes in the 1980s and the 1990s have been empirically counterpointed since the sequence of crises that hit emerging economies in the late of 1990s. On the other hand, the global financial crisis deflagrated in 2007-2008 added another important shift in these mainstream studies, which were also boosted by the use of capital controls by several emerging countries in post-crisis period.

In the past few years, the mainstream literature that has been surging is characterized by: i) new recommendations on regulation measures on capital flows; ii) studies that empirically investigate the effectiveness of capital controls and macroprudential policies; iii) new orthodox models that ground the use of capital controls. Unlikely two decades ago, in which the mainstream advocated the free mobility of capital, currently new empirical studies and new theoretical models state the use of capital controls as a way for countries – especially emerging economies – to ensure financial stability, monetary policy autonomy and even greater rates of economic growth.

The definition of mainstream economics adopted in this article follows Dequech (2012), for whom the mainstream is characterized by theoretical and empirical studies published by economists and institutions that have strong prestige in academia. There is, therefore, a sociological aspect to be considered, since these relevant institutes and economists' publications exercise a considerable influence on economic policy formulation of several countries. Following Colander et al. (2004), mainstream economics incorporates orthodoxy, but the former is not limited to the latter. According to Davidson (1991), orthodoxy is characterized for presenting the following axioms: i) money neutrality in long-term; ii) full employment of production factors in long-term; iii) ergodic processes and predictable probability of events.[3]

Being that said, this article aims to analyze the main reorientations incorporated by mainstream authors over financial openness and capital controls, focusing on post-global crisis period. For this, it was made a bibliographical research of the most reputed authors that published in prestigious journals, besides the National Bureau of Economic Research (NBER) working papers, International Monetary Fund (IMF) papers, among others. Therefore, the criterion to select the papers to compose this article's analysis was based on the relative importance that each one exercises on the debate about capital controls.[4]

After this brief introduction, this article is divided as follows: section II presents a brief description of important mainstream studies that counterpointed orthodox presumptions that theoretically grounded the capital account liberalization processes in emerging economies during the 1990s. Section III shows some mainstream studies that empirically ground new recommendations on capital controls and macroprudential policies. Section IV presents the mainstream studies on effectiveness and spillover effects of capital controls and macroprudential policies. Section V presents a comparative analysis of permanent and sporadic capital controls imposed by emerging markets. Section VI performs a comparative analysis of prudential measures on capital outflows vis-à-vis

[3] In this way, it is understood that orthodoxy is presented not only in neoclassical presumptions, but also in presumptions of the New Macroeconomic Consensus (NMC). On the NMC, see Blanchard et al (2010).
[4] Hence, all the papers selected have a high number of citations.

inflows controls imposed by advanced and emerging countries, respectively. Both analysis from Section V and VI aim to establish which are, under some pre requisites of effectiveness, the superior measures of capital controls and prudential policies. Section VII presents the main orthodox models that ground the use of capital controls. In the Conclusion section, it was made an effort to synthetize the main results found by the selected papers on capital controls and prudential policies effectiveness. It is also made an effort to synthetize the evolution of mainstream economics on financial openness and capital controls from the 1980s and 1990s liberalizing reforms to the post-crisis period.

2 Empirical counterpoints to a full capital account liberalization

The mainstream's new emphasis on capital controls did not happen suddenly, considering that two decades ago the mainstream used to advocate a full financial openness. This article's understanding is that there was an evolution on its studies' scope, in which the occurrence of currency and financial crises in several emerging economies in the late 1990s marked the first mainstream reorientation on capital account liberalization.

These financial crises that hit emerging economies in the late 1990s and beginning of 2000s boosted empirical studies that counterpointed orthodox presumptions about financial openness benefits, especially those that would supposedly be directed to emerging economies. The main results established by literature can be summarized as follows:

i) Lack of relationship between financial openness and greater rates of economic growth, such as presented by Prasad et al (2003); Kose et al (2006); Rodrik and Subramanian (2008);

i) A superior risk sharing observed in advanced economies in relation to emerging countries, due to a higher degree of financial integration and interconnection between the former ones, such as presented by Kose et al (2006); Bluedorn et al (2013); Lane and Milesi-Ferretti (2006). As consequence, it was observed that the consumption volatility did not precisely fall for emerging countries, instead, this indicator has even raised during some periods, such as observed by Prasad et al (2003); Levy-Yeyarti and Calderón (2009);

ii) International capital flows tend to be pro-cyclical, being directly influenced by advanced countries' monetary policy and conditions, such as evidenced by Arora and Cerisola (2000); Calvo and Reinhart (2002) and Kaminsky et al (2005);

iii) Institutional investors' dynamics impose restrictions to emerging economies' issue of external liability and, consequently, to the absorption capacity of foreign savings, such as pointed out by Eichengreen et al (2003); Reinhart et al (2003) and Eichengreen et al (2007).

iv) As consequence, largely, of the last two findings, the accesses of international financial markets by emerging economies present interruptions and reversions, what in turn negatively affects the economic activity in these countries, such as found by Rodrik and Velásco (1999); Calvo et al (2004) and Edwards (2007). These processes also induce to a loss in monetary policy autonomy for emerging economies, what in turn contradicts the impossible trinity.

Despite all these new evidence, mainstream in general did not defend the use of capital controls as an external insertion alternative for emerging economies. The main

authors' recommendations were based on the threshold approach, which is characterized by the assumption that the benefits of capital account liberalization may take a certain time to promote the expected benefits in emerging economies. In other words, the benefits of financial openness only work from a certain level of financial integration in relation to GDP.[5]

3 New recommendations on capital controls

The global financial crisis of 2007-2008 has given a new impulse on the mainstream's reorientation on capital account liberalization. Unlikely the period past the emerging economies' crises, the post-global crisis period was characterized by a literature favorable to capital controls. Differently from the threshold approach on financial openness that marked the period between the emerging economies' crises and the global one, several mainstream studies now ground an explicit defense of capital controls in their recommendations.

Before proceeding, two caveats are noteworthy. The first one is that the capital controls and (macro) prudential policies on capital outflows relate to restrictions on exit of domestic resources, not involving restrictions on repatriation of invested resources from non-domestic agents. For example, during the 1990s and the 2000s several emerging economies intensified the liberalization of domestic capital outflows. In other words, they released the restrictions of cross border operations (such as loans and investments) on domestic residents, among them banking institutions, non-banking financial institutions (such as institutional investors), non-financial companies and physical person.

The second caveat is that the mainstream literature has been adopting the typology used by authors such as Ostry et al (2010; 2011) and Ghosh et al (2012; 2014) that classify capital controls as regulation measures that discriminate by the criterion of 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. It is because the macroprudential policies are the regulation measures that do not discriminate by the criterion of the investor's residency. The macroprudential policies discriminate by the criterion of currency denomination of cross border financial transactions. For example, a raise in the restriction degree on banking institutions in forming open positions on foreign currency is a macroprudential policy (this is one in the example is under the classification "Foreign Exchange related measures").

The term that has been used in the literature, 'Capital Flows Management Measures (CFMs)' englobes these two types of regulation, i.e., the capital controls and the macroprudential policies. It explains why some papers approach the effectiveness of CFMs imposed by developed countries vis-à-vis emerging countries, conforming presented in Section VI.

In other words, the CFMs imposed by developed countries necessarily relate to macroprudential policies, since any advanced country imposed capital controls (discriminatory by the criterion of investors' residency) since the liberalizing reforms that took place in the 1970s and 1980s. But, differently, the CFMs imposed by emerging economies refer to both capital controls and macroprudential policies. Having clarified these caveats, now it is necessary to present the main studies that offered new recommendation on the subject.

Ghosh et al. (2012) analyzed the main determinants of net financial fluxes surges, as well as its magnitude, in such a way that the innovation proposed by the authors was

[5] For more details, see Prasad et al (2003) and IMF (2007).

to distinguish these surges between the ones that are originated by foreign investors and the ones that come from the behavior of domestic investors. In other words, liability-driven and asset-driven surges, respectively.[7]

The regressions elaborated by Ghosh et al. (2012) showed that external factors had a superior explanatory power, relatively to domestic factors, in relation to the probability of surge occurrence, what explains a strong synchrony of this phenomenon between emerging markets. According to the authors, the domestic factors, in turn, were the main determinants to explain the surges magnitude, in which it stands out the current account deficit, the level of financial openness and the degree of stiffness of the exchange rate.

The liability-driven surges, besides being predominant in the probability of this phenomena occurrence, were the most sensible to changes in external factors, as well to the contagion effect and to the degree of financial interconnection. To the extent of these evidences, Ghosh et al. (2012) defended the use of capital controls in order to avoid a strong volatility in this surge category, as well coordination policies between emerging economies that are recipient of this financial fluxes and advanced countries that are source of such capital outflows.

The conventional economic policy mix was also subjected to important shifts in the last few years. Facing the strong capital inflows that characterized emerging economies in the post-global crisis period, De Gregorio (2013) defended the adoption of an economic regime based on: i) flexible exchange rate, in order to avoid one-way speculations and arbitration; ii) inflation target regime; iii) a sustainable fiscal balance. However, the author pointed 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. Although, the adoption of these regulation measures must serve as support to the adoption of sustainable macroeconomic policies, according to the authors' prescriptions.

Especially in relation to the use of capital controls, De Gregorio (2013) distinguished controls that aim financial stability from controls that are denominated 'competitive', i.e., controls that aim a currency devaluation. In relation to the first type of regulation, the author pointed out that controls must be aimed to capital gross fluxes (gross inflows and gross outflows), but if the goal is to counter an appreciation of the exchange rate, capital controls must fall on net fluxes (gross inflows minus gross outflows).

Facing the capital flows volatility in the last years, several economists started to inquire presumptions and theories that advocate a free mobility of capital. One of the more important examples is the denial of the macroeconomic trilemma (or impossible trinity) validity for emerging economies stated by Rey (2013). From econometric regressions, the author stated that cross borders financial fluxes that are canalized through banking institutions (the so called financial credits) have been causing deviations in emerging economies' interest rates uncovered parity, despite the exchange rate regime and the macroeconomic fundaments of these countries. According to Rey (2013, p. 17):

> This channel invalidates the "trilemma", which postulates that in a world of free capital mobility, independent monetary policies are feasible if and only if exchange rates are floating. Instead, while it is certainly true that countries with fixed exchange rates cannot have independent monetary policies in a world of

[7] The liability-driven surges are provoked by foreign inflows, while asset-driven surges are occasioned by a reduction in capital outflows from domestic residents. The regressions covered the period 1980 to 2009 and included 56 emerging economies.

> free capital mobility, my analysis suggests that cross-border flows and leverage of global institutions transmit monetary conditions globally, even under floating exchange-rate regimes.

Facing these results, the author pointed out that only the use of capital controls can raise the degree of monetary policy autonomy of emerging countries, in such a way that these instruments (CFMs) must fall on financial credit and debt bonds fluxes.

Rey (2013) also defended that capital controls be well targeted instruments and that be imposed in combination with macroprudential policies, since capital controls can be evaded through non-banking institutions. Besides that, these regulation measures should be imposed during booms of financial inflows and relaxed during the phases of bursts.

This movement in direction to new prescriptions on a stronger regulation on cross border capital flows counted on one of the most important names of international monetary system, Barry Eichengreen.

Following a similar direction, Eichengreen et al. (2011) pointed out the role that macroprudential regulation must assume to counter asset inflation and credit booms, besides recognizing that small and liberalized countries don't have autonomy in implementing domestic policies. Being that said, macroprudential measures and temporary capital controls should be used by these economies, especially referring to capital inflows that fund domestic financial institutions, since there was the recognition that the external equilibrium of emerging economies isn't guaranteed by the hypothesis of real adjustments of exchange rate.

4 Capital controls effectiveness: main goals and spillover effects

This article's understanding is that the use of capital controls and macroprudential policies by emerging economies facing strong capital inflows after the global financial crisis boosted several mainstream exponents to investigate the effectiveness, under several parameters, of these regulation measures. This new researches' strand also can be interpreted as part of mainstream's scope reorientation.

The emerging economies that triggered the CFMs had, mainly, six goals: i) to counter an appreciation of exchange rate; ii) to raise the degree of monetary policy autonomy; iii) to stretch the maturity of external liability; iv) to reduce the net volume of financial inflows; v) to counter credit booms; vi) to counter asset inflation (HABERMEIER ET AL., 2011). Capital controls, however, are not analyzed only by the effects they cause over the economies that use them, since the literature has also been pointing out the spillover effects caused by the CFMs.

Concerned in investigating the effectiveness of capital controls imposed by influent emerging economies, Habermeier et al. (2011) estimated VAR regressions[9], in which the authors distinguished the regulation measures in: i) temporary controls; ii) permanent controls; iii) outflows controls/liberalization, besides constructing indexes of capital controls intensity.

The results pointed out to a relative effectiveness in raising the degree of monetary policy autonomy for Brazil, Colombia and Thailand, being that in the latter one, the

[9] The capital controls analyzed by the regressions were the IOF tax (the Portuguese acronym for "Tax on Financial Operation") imposed by Brazil in 2009; the URRs imposed by Colombia in 2007-2008 and by Thailand in 2006-2008; the process of capital outflows liberalization promoted by Korea in 2005-2008.

outflow liberalization exercised an important role, and stretching the maturity of external liability in Colombia.

Along the post-global crisis period in which several emerging economies imposed capital inflows controls, many economists inquired about the their potential effectiveness under a context of global high liquidity, as well to the concerning possibility that these CFMs could form the new "impoverish the neighborhood" policy.

Between these economists, Pasricha et al. (2015) accomplished a great contribution to the literature about capital controls and macroprudential policies. The authors used a capital controls database in order to analyze the effectiveness of capital controls imposed by emerging economies[10] before and after the financial crises in relation to the 'trilema' variables, i.e., its impacts over financial fluxes, exchange rate appreciation and monetary policy autonomy.

The authors elaborated two models in order to analyze the domestic impacts of the capital controls and the spillover effects caused by the imposition of controls by some of the BRICS members over the other emerging economies.

Firstly, in relation to the domestic impacts, in the period up to the crisis initiated in 2008, the impulse-response functions established that a net restriction on inflows raised the 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, along the post-crisis period (2008-2011), the regressions showed that the domestic effects of net restrictions on inflows only raised, in a smaller degree, the monetary policy autonomy, and the net loosening on outflows did not present any significant effect on the 'trilemma' variables. This relative loss of the controls effectiveness was primarily due, according to Pasricha et al. (2015), to the context of global high liquidity.[11]

In relation to the spillover effects, the impulse-response functions estimated by Pasricha et al. (2015) 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 promoted the reduction of monetary policy autonomy in other emerging markets. According to the these regressions, the spillover effects were more intense to Latin American economies relatively to the Asian ones, since the first ones have a stronger degree of financial openness and rely heavily on bank flows as external funding.

An important result of Pasricha et al. (2015) regressions is that from all the 'trilema' variables affected by spillover effects, the one representing exchange rate appreciation was the most impacted, even surpassing the transmission via net financial fluxes. According to Pasricha et al. (2015, p. 46):

> The key role of exchange rates as a transmission channel for these shocks suggests that, to the extent that they are not accompanied by movements in net capital flows, capital control changes in the BRICS may have an impact on exchange rate expectations in other EMEs.

[10] The regressions covered 17 emerging economies from 2001 to 2011.

[11] It is interesting to make a parallel between this conclusion pointed out by Pasricha et al (2015) with the theoretical model developed by Korinek (2013) (Section VII) that points out that the effectiveness of capital controls can be reduced in a context of global low interest rates.

Given the fact that Brazil was the country that most imposed capital controls after the global financial crisis, a study of this case brought an important contribution to this subject. Unlikely cross-country studies about effectiveness and spillover effects of capital controls, Forbes et al. (2012) analyzed if the controls adopted by Brazil over the period 2006-2011[12] exercised, besides a direct impact over the Brazilian capital account, spillover effects on other economies.

As research methodology, Forbes et al. (2012) focused the analysis over reallocation movements of portfolios from big institutional investors after the imposition of new control measures, in such a way that these movements, besides occurring with a certain delay after the measures announcement, also occurred for other Brazilian classes of assets and for other countries from the investors' portfolios analyzed.

A regression estimated by Forbes et al. (2012) showed that the imposition of IOFs over the stipulated period reduced the position of institutional investors on the asset class subjected to the controls, which were specially fixed income instruments. However, the regression established that the effect to reduce investor's positions was even larger to equity classes, demonstrating a certain fear from the investors in relation to the controls adopted by the government.

After finding evidences of the capital controls effectiveness on reducing the volume of portfolio fluxes to Brazil over the stipulated period, Forbes et al. (2012) also investigated if there were spillover effects to other countries in response to the regulation measures adopted by the Brazilian government.

The regression elaborated by the authors to investigate this hypothesis pointed out to positive indications, i.e., there was positive spillovers (a raise in the position assumed by the investors) to countries in the same region (Latin America), to countries that have financial markets similar to the Brazilian one and to big exporters to China. On the other hand, there was negative spillovers (reduction in the position assumed by the investors) to countries seen as 'susceptible' to impose capital controls. It is noteworthy that this last regression is related to equity institutional investors, in such a way that there were not spillover effects in relation to debt investors.

These regressions elaborated by Forbes et al. (2012) are extremely important in the debate about multilateral aspects on capital controls, since there is a risk that these regulation measures become a new 'impoverish the neighborhood' policy. Besides, the portfolio reallocations realized by the institutional investors in response to the capital controls were conditioned on these agents' valuations about the government policy, the expectative on similar actions in other countries and economic criteria that resembled several countries to Brazil.

In other words, the reactions to the capital controls imposed by the Brazilian authorities were not simply guided according to the presumption that these measures impose a capital cost to foreign investors.

5 Permanent capital controls versus sporadic controls

One of the biggest controversies about capital controls is if the instruments should be imposed on a permantely basis, or on a sporadcly one. The experience envolving emerging economies in the post-crisis seems to point out to the second option. In order to

[12] Forbes et al (2012) analyzed the four IOF taxes imposed by the Brazilian authorities during the period, being that three of them were incident on fixed income debts and the other one, on equities.

counter the trade-offs between these two types of capital account regulation, several econometric studies were elaborated as a way to identificate, under several parameters, if a type of regulation can be considered superior to the other one.

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 regulation measure over time. This classificcation is independent from the level of taxation, or administrative measure, of the capital control imposed. A sporadic capital control, in turn, refers to a regulation measure, that can be a stronger one, that is rapidly changed or lifited over time.[15]

Between this research strand, the study made by Klein (2012) is one of the most relevant. The author precisely distinguished countries that presented capital controls as a sporadic (or temporary) instrument from those that permantly imposed capital controls. In the first group analyzed by the author, there were Latin America and some developed countries, while the second one was majoritary formed by Asian economies.

Being that said, the panel regressions estimated by Klein (2012) aimed to analyse the differences between countries in relation to economic performance, financial vulnerability and exchange rate due to their different approaches on capital controls. The first estimation established that, over the period 1995-2010, countries that permantely imposed capital controls presented larger rates of economic growth and smaller rates of financial variables growth. Also, these countries presented a greater resilience – in relation to these two criteria – during the Great Recession.

This strand about different approaches on capital controls was also Fernández et al (2015) subject of study. The authors started from the database that compile several financial assets subjected to controls.[18] The paper's methodology consisted in analyzing the effectiveness of capital controls by means of co-movements between these regulation measures and by an agregate control indicator.

The study of co-movements consisted in calculating the correlation, over time, of the controls imposed on different financial assets and between the controls on inflows and outflows.[19]For the 'gate' countries (that sporadicly imposed capital controls), the results pointed out a moderate correlation between the controls imposed on the most liquid class of financial assets, both to controls on inflows and on outflows.[20]

However, the controls imposed by 'walls' countries (that permantly imposed capital controls) presented a high correlation between the controls imposed on the most liquid assets and between the financial credit, both to controls on inflows and on outflows (those last ones presented an even larger correlation between the regulation measures imposed on the several types of financia assets).

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[15] See Klein (2012) and Fernández et al (2015).

[18] Fernández et al (2015) englobed 100 countries for the period 1995-2013. Their database contemplates 10 types of financial assets/debts, which unfold in 32 types of financial transactions subjected to some kind of capital control.

[19] The authors collected information about *de jure* capital controls imposed by countries based on the AREAR/IMF database, at an annual frequency.

[20] Two caveats are noteworthy. Fist, because the database starts in 1995, some 'gate' countries imposed sporadic controls on capital outflows in some sub periods. Besides that, this database includes some macroprudential policies, in which stands out limits on formed positions on foreign currency. These two facts help to explain the existence of restrictions on capital outflows.

In other words, this methodology pointed out that permanent capital controls were more efficient in relation to the sporadic capital controls, mostly imposed by middle income countries, over the stipulated period.

One of the main criteria that grounded these controls' effectiveness was that, because there was a high co-movement (correlation) between the controls imposed on inflows and on outflows, there was a strong regulatory and administrative capacity to avoid, or at least to soften, an evasion of the capital controls.

6 Capital Flows Management Measures (CFMs): emerging economies vis-à-vis developed economies

An important research that has been standing out in the new literature about capital controls is the comparison, under several methodologies, of the effectiveness of capital controls imposed by emerging and developing economies vis-à-vis financial regulation measures imposed by developed countries. These last ones are characterized by prudential measures that affect, even indirectly, outflow investments from domestic agents.

Several studies have pointed out that prudential measures imposed by developed countries on its capital outflows have a superior effectiveness on countering cross border fluxes comparatively to inflows controls imposed by emerging economies. These new evidences, summarized below, are very important due to the debate about multilateral aspects of capital controls and to the need of international coordination between capital recipient and capital source countries.

One of these studies is elaborated by Binici et al. (2009). The authors aimed to identify the effectiveness of capital controls and other regulation measures on the volume of financial fluxes. The study contemplated 74 countries, over the period 1995-2005, in order to analyze the effectiveness of CFMs on three classes of financial instruments: equity, FDIs and debts.

The regressions elaborated by the authors pointed out, in relation to the high income countries present in the sample, to an effectiveness of CFMs on outflows in reducing the gross volume of the financial instruments, being that this efficacy was superior for the debt class.[22] By the way, the effectiveness of the CFMs on outflows implemented by high-income countries was comparatively superior to similar regulation measures imposed by medium and low-income countries.

These results showed the importance of developed countries raising the degree of regulation on its financial systems in order to soften capital outflows from their domestic residents to emerging countries, congruent to the study presented in Ghosh et al. (2014). Moreover, these results are also compatible with the heterodox approach, that defense the preponderance of the "push factors" in the process of capital international flows determination, notably the international liquidity level and the US interest rate.

Another important contribution to this subject was provided by Aizenman and Binici (2015). The authors analyzed the pressure that capital flows and CFMs exercised on the exchange rate and the international reserves of several economies during the last years, i.e., the impact that these variables exercised on countries' 'Exchange Market

[22] Such as described by Ghosh et al (2014), the CFMs on capital outflows imposed by advanced high-income countries referred to macroprudential policies (discriminatory by the currency denomination of the cross border transactions). The capital controls that discriminate by the investor's residency criterion were only imposed by emerging and low-income countries. For the latter, generally the capital controls are permanently imposed, such as categorized by Klein (2012).

Pressure' (EMP). The authors stated that short-term capital flows were the main responsible in exercising pro-cyclical pressures on economies' exchange rate, what in turn lead to spillover effects between them.

In order to analyze the impact of capital flows and CFMs on emerging and OECD countries' EMPs, Aizenman and Binici (2015) estimated several regressions over the period 2000-2014.[24]The main results showed that external factors and portfolio capital flows significantly affected emerging economies' EMP. On the other hand, portfolio capital flows did not significantly exercise pro-cyclical pressures on OECD countries' EMP. According to the authors, this happened due to the stronger degree of financial integration between these advanced countries.

Other results found by Aizenman and Binici (2015) showed that the imposition of CFMs by OECD countries relieved the pro-cyclical pressures on these countries' EMP, in such a way that the regulation measures imposed on inflows were significantly stronger than the ones imposed on capital outflows.[25]

However, according to the regressions elaborated by Aizenman and Binici (2015), the imposition of CFMs by emerging countries did not significantly soften the pro-cyclical pressures that short-term capital flows exercise on these economies' EMP, despite the fact that emerging economies resorted to the use of these regulation measures more frequently and intensively. According to Aizenman and Binici (2015, p. 17), "*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 multilateral aspects of capital controls and prudential policies, indispensable for the task of international coordination, the paper elaborated by Ghosh et al (2014) also stands out.

The authors aimed to investigate if capital controls and other regulation measures (such as macroprudential policies) were efficient if simultaneously implemented on capital inflows and capital outflows from, respectively, emerging recipient and advanced source countries.

In order to identify the effectiveness of capital controls and other regulation instruments on reducing the volume of cross border banking flows[26], Ghosh et al. (2014) collected a sample of 76 capital recipient and 31 capital source countries.[27]

As methodology, Ghosh et al. (2014) elaborated isolated regressions for both recipient and source countries.[28] In relation to the regulations measures on capital

[24] The regressions elaborated by Aizenman and Binici (2015) involved 28 emerging economies and 22 OECD countries.

[25] The CFMs imposed by OECD countries over this period referred to prudential policies on the financial systems. These regulation measures were not discriminatory based on the investor's residency criterion, such as described by Ghosh et al (2014).

[26] Under the category of cross border banking flows, there are the following transactions: external banking loans; debt bonds; equity shares and external investment shares hold by banks.

[27] The capital recipient countries group was primarily formed by emerging and developing economies, while the capital source countries group was mostly formed by advanced economies. The regressions covered the period 1995-2012.

[28] The regulation measures that Ghosh et al (2014) analyzed were the capital controls that discriminate by the investor's residency criterion, which were computed by Shindler (2009) index; regulation measures on the financial system, in which stands out regulations on loans to foreign agents; prudential measures, such as limits on purchased/sold positions formed in foreign currency (the "FX related measures"), among

outflows from source countries, the results showed that prudential regulation on the financial system, especially the ones incident on external loans, presented a strong impact in reducing banking flows over the stipulated period.[29]

The regulation measures imposed on capital inflows by recipient countries also presented effectiveness in reducing cross border banking flows. The regulation measures that presented the most effectiveness were the capital controls on bond inflows and the macroprudential policies that aimed to limit purchased/sold positions on foreign currency (the so-called 'FX related measures').

However, an extremely important point established by these regressions was that the regulation measures imposed by source countries on their capital outflows were relatively more efficient than the inflows controls imposed by recipient economies. According to Ghosh et al. (2014, p. 16):

> If, as could be the case, the costs associated with the imposition of CARs are convex in the "tax" rate, then it may be globally more efficient to use a combination of low outflow and inflow restrictions than to put the full burden at either end.

Based on the regressions elaborated in their paper, Ghosh et al. (2014) defended the necessity of global coordination between capital controls and other regulation measures, both between source and recipient economies, as well between these last ones, since this kind of coordination potentially soften currency wars, such as formalized in Korinek (2013).

7 Theoretical reorientation under orthodoxy

In this perspective, a new theoretical literature has been emerging under the mainstream in order to ground the pertinence of capital controls. This new literature responds to the flaws of orthodox models that grounded a full capital account liberalization, as well to empirical evidences of effectiveness, under several parameters, of capital controls and macroprudential policies imposed by several countries.

This article's interpretation is that these new orthodox models are, therefore, ex-post constructions, since they benefited from empirical studies about capital controls' effectiveness. It is, therefore, an important reorientation under mainstream, given the importance of theoretical modeling in influencing future economic policies.

One of the first theorists that grounded the use of capital controls within this context was Korinek (2011). The theoretical construction elaborated by the author formalizes the prudential use of capital controls. According to the model, emerging economies are characterized for presenting an excess of external indebtedness, due to capital inflows, because the private agents do not internalize the consequences of a future debt constrained that will be due to an excessive indebtedness.

According to the model, over the boom phase, debt inflows raise the internal consumption, promote assets inflation (which are also used as collateral in financing

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others. It is noteworthy that, except for the Shindler (2009) index, the other regulation measures must be considered macroprudential policies, since they do not discriminate by the investor's residency criterion.

[29] The regulation measures that advanced source countries imposed on their capital outflows were not capital controls that discriminate by investor's residency criterion. The mains regulation measures were macroprudential policies, such as regulations on open positions in foreign currency; requirements on Initial Public Offering (IPOs) for external investments; requirements on pension funds for external investments; regulation measures on banking loans to foreign agents, among others.

operations) and provoke a currency appreciation. However, the occurrence of a negative shock on one of these variables[31] promotes the financial amplification, which is characterized by a currency depreciation, assets deflation and contraction of aggregate demand. In this scenario, the private agents are subjected to a vicious circle that leads to a relative interruption of external financing and/or to a raise in its costs.

According to Korinek (2011), the use of prudential capital controls would be desirable to induce domestic agents to internalize their indebtedness decisions and, therefore, to avoid a financial amplification process. This type of intervention can avoid the pecuniary externalities, such as a currency depreciation, asset deflation and contraction of aggregate demand.

Besides that, the prudential capital controls can promote the intertemporal smoothing of consumption and raise economic growth, confronting, in this way, the orthodoxy until in force.[32]

Following a similar line of reasoning, the theoretical construction elaborated by Ostry et al (2012), IMF staff note, defends the use of prudential capital controls by emerging economies as a correction of internal externalities, in which stands out the excess of external indebtedness. It is noteworthy that the capital influx controls, when focusing on this externality, has the goal to reduce this component from the consumption function of the representative agent and, therefore, to promote an intertemporal smoothing in consume.

Facing the empirical literature that investigated the relative effectiveness of capital controls (Section IV), orthodox models aimed to theoretically ground the reasons why some controls' goals were more frequently reached than others. One of the main papers that formalized this new economics of capital controls was the one published by Magud et al (2011). The authors started from the presumption that capital controls are imposed in order to reach four goals: reduction of short-term capital inflows (hot money); reduction of large magnitude capital inflows, which can engender financial risks; smoothing on the pressure of exchange rate appreciation; increase in degree of monetary policy autonomy.

According to Magud et al. (2011), capital controls can be efficient in reducing the volume of short-term debt and, therefore, stretching the maturity of external liability, as well raising monetary policy autonomy if the elasticity of short-term inflows in relation to the sum of external liability is superior to one. In this way, given the imposition of capital controls, there would be a relative reduction of short-term inflows in relation to the total external liability. A raise in monetary policy autonomy would also characterize this scenario since the controls would create a wedge in interest rate differential between external short-term and long-term liability.

Given new evidences on capital controls' effectiveness, several economists aimed to identify which classes of capital flows the use of CFMs would be theoretical desirable. Between some researches on this field, the study elaborated by Blanchard et al (2015)

[31] The shocks can occur on the real side of economy, such as a productivity negative shock. However, exogenous shocks can also occur, like a raise in VIX index. Besides that, the payment of an excessive external debts contracted promotes itself a depreciation of domestic currency, what can induce to financial amplification.

[32] In other words, the main goal of the prudential capital controls developed by Korinek (2011) is to make, by internalizing the decisions of external indebtedness, that the private cost of such indebtedness be equal to the social cost of possible financial crisis that can happen if there is not such intervention.

stands out due to the theoretical innovation that the authors proposed on conventional open economy models.

Blanchard et al. (2015) distinguished capital flows destined to emerging economies in bonds and non-bonds, in which the first class encompasses debt bonds and the second one encompasses mainly equity instruments and FDIs, as a methodology to identify if capital flows are expansionist or contractionary. According to the authors, debts bonds are contractionary, as advocated in 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 foreign currency.

On the other hand, non-bond flows can be expansionist or contractionary, depending on its net effect on economic activity. It is because non-bond flows provoke exchange rate appreciation and an expansion of internal credit backed in foreign currency. If the latter effect prevails over the former, non-bond flows will be expansionist.

Following Blanchard et al. (2015), bond inflows have a direct relation with short-term interest rate, a monetary policy instrument. On the other hand, the volume of non-bond inflows has a negative relation with its interest rate. In other words, in a scenario characterized by a strong influx of non-bond capital, there will be a reduction in financial intermediation cost and an expansion of internal credit. The authors also demonstrated that a strong influx of bond flows promotes a raise in non-bonds interest rate. Therefore, there is a positive relation between the volume of bond flows with the interest rate of non-bond flows.

The implications developed by Blanchard et al. (2015) can be summarized as follows: bond inflows promote exchange rate appreciation and do not promote expansion of internal credit, hence they will always be contractionary. On the other hand, non-bond inflows will be expansionists if the effect of the expansion of internal credit over economic activity overcompensates the effect of exchange rate appreciation on domestic firms' competitiveness.

In other words, 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. Under this new theoretical literature, models that ground the international coordination of capital controls are also arising. It is, therefore, a significate shift in relation to orthodox presumptions that used to advocate in favor of a full capital account liberalization, such as the ones derived from the efficient markets models. This international coordination is suggested to be applied between capital recipient countries and between capital recipient and source countries. In other words, the multilateral aspects of capital controls are also gaining theoretical formalization.[34]

8 Mainstream theoretical adequation to reality: a systematization

This article aimed to analyze the main discontinuity points that characterized important reorientations under mainstream's perspective on capital account liberalization and capital controls over the past few years. The econometric rigor presented in these studies made possible to establish which goals are easily and which ones are hardly reachable by CFMs. These results, summarized below, can provide an useful guide to future regulation measures for policy makers:

[34] See Ostry et al. (2012) and Korinek (2013).

The cross-country studies' results pointed to a relative efficacy of CFMs in raising the monetary policy autonomy, stretching the external liability maturity and countering credit booms (being that this last goal is mainly reached due to macroprudential policies). On the other hand, the results found were mixed in relation to the goal of countering pressures on exchange rate appreciation and there were few evidences that the CFMs were efficient in reducing the net volume of capital flows. These were, basically, the results found by Magud et al. (2011); Habermeier et al (2011); Fernandéz et al (2014); Aizenman and Binici (2015); Pasricha et al (2015) and Forbes et al. (2012). Figure 1 systematizes the common results of CFMs effectiveness found by the joint analysis of these papers.

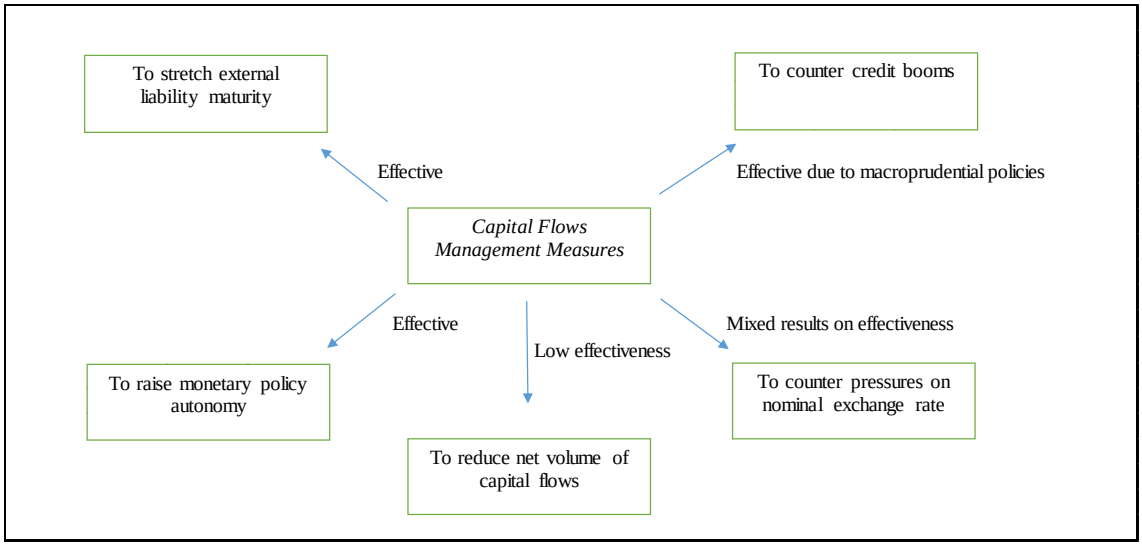

Figure 1: Synthesis of Capital Flows Management Measures' effectiveness based on mainstream economics.
Own elaboration.

Since the results showed above refer especially to sporadic CFMs, some other papers focused on the analysis of permanent vis-à-vis sporadic capital controls in order to provide a measure of relative effectiveness:

Permanent capital controls were superior to sporadic capital controls in relation to goals of boosting economic growth and reducing financial risks. Permanent capital controls also presented a stronger co-movement between different classes of assets/debts subjected to controls, what indicated a higher effectiveness in avoiding controls evasion. Klein (2012) and Fernández et al (2015) wrote the main papers of which this conclusion can be drawn.

Another important contribution provided by these mainstream studies was the investigation of prudential measures and capital controls' relative effectiveness imposed by, respectively, developed and emerging economies, besides the spillover effects analysis. These studies are extremely useful to the debate about multilateral aspects of capital controls and, therefore, are indispensable for future discussions about CFMs' international coordination:

Prudential measures (discriminatory by the transactions' currency denomination) imposed by developed countries had a superior effectiveness in reducing the volume of cross border capital flows and countering pressures on exchange rate vis-à-vis capital controls (discriminatory by the investor's residency criterion) imposed by emerging markets. These conclusions are derived from the studies elaborated by Binici et al. (2009),

Ghosh et al (2014), Aizenman and Binici (2015). Figure 2 systematizes the relative effectiveness of CFMs imposed by emerging and developed economies, being that for the latter the CFMs are basically prudential measures.

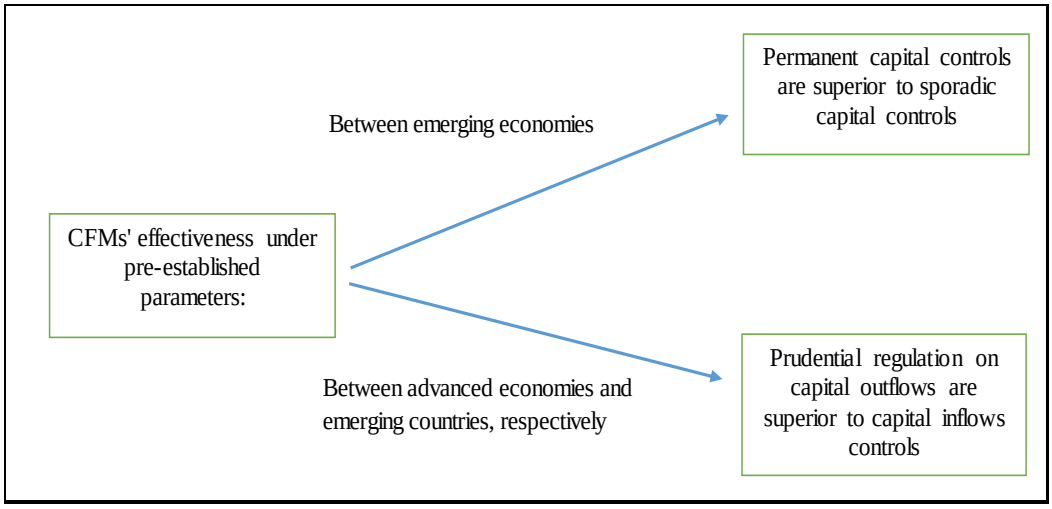

Figure 2: Synthesis of Capital Flows Management Measures' relative effectiveness based on mainstream economics.
Own elaboration.

Moreover, capital controls were relatively more efficient in raising the external liability maturity and raising the monetary policy autonomy during the period up to global financial crisis deflagrated in 2007-2008. The capital controls imposed in the post-crisis period, characterized by global low interest rates, presented lower effectiveness and stronger spillover effects, such as evidenced by Pasricha et al. (2015), Forbes et al (2012) and modeled by Korinek (2013).

The frame 1 categorizes the effectiveness of CFMs based on the authors whose papers were analyzed. In order to simplify the exposition, the goals of CFMs are numbered as follows: 1) to stretch the external liability maturity; 2) to raise the monetary policy autonomy degree; 3) to reduce the gross volume of capital flows; 4) to reduce the net volume of capital flows; 5) to counter pressures on nominal exchange rate appreciation; 6) to counter credit booms. It was also created a general effectiveness index based on the synthesis of each paper. As classification criterion, a Null/Low effectiveness is attributed to studies that found out that only one (or none) of CFMs' goals was reached. On the other hand, a Medium/High effectiveness refers to the papers that concluded that at least two of CFMs goals were reached.

Frame 1: Synthesis of CFMs' effectiveness based on each paper analyzed

Authors	Research methodology		CFMs' effectiveness based on its goals							
			1	2	3	4	5	6	General effectiveness	
	Empirical	Theoretical							Null/Low	Medium/High
Habermeier et al (2011)	X		X	X				X		X
Pradhan et al (2011)	X		X					X		X
Pasricha et al (2015)	X			X					X	
Forbes et al (2012)	X				X				X	
Klein (2012)	X			X			X	X		X
Fernández et al (2014)	X								X	
Fernández et al (2015)	X			X					X	
Binici et al (2009)	X				X				X	
Aizenman and Binici (2015)	X			X					X	
Ghosh et al (2014)	X				X				X	
Korinek (2011)		X	X		X			X		X
Ostry and Korinek (2012)		X	X		X		X	X		X
Magud et al (2011)	X	X	X	X						X
Blanchard et al (2015)	X	X	X		X		X			X
Ostry et al (2012)		X			X				X	
Korinek (2013)		X			X				X	

Own elaboration.

Based on the papers discussed in this article, Figure 3 illustrates the evolution of mainstream economics on capital account liberalization and capital controls from the liberalizing reforms to post-crisis period. It is possible to observe a clear theoretical reorientation in the orthodox approach on capital controls, suggesting the emergence of a new orthodox paradigm under mainstream economics.

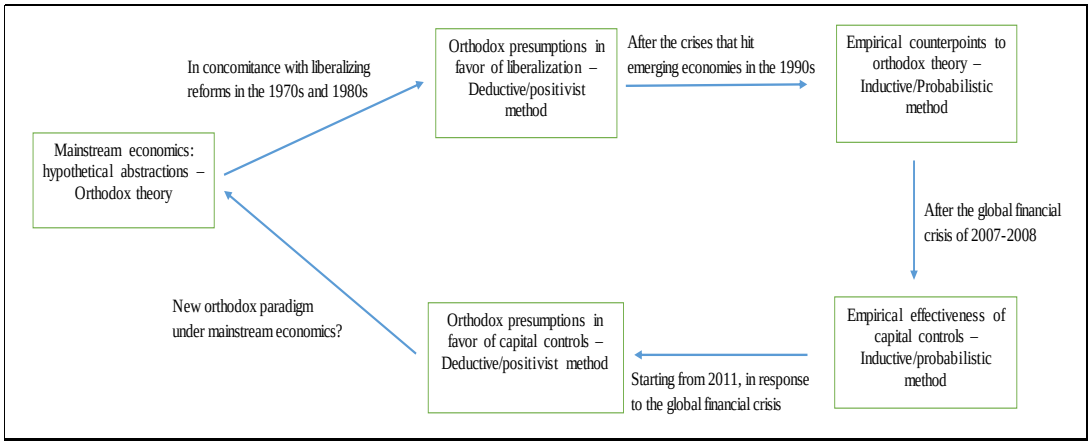

Figure 3: Evolution of mainstream economics on capital account liberalization and capital controls, from liberalizing reforms to post-global crisis period.
Own elaboration.

9 Conclusion and remarks

This article's conclusion is that the orthodox models that were formulated in favor of a full capital account liberalization in the 1980s and 1990s were gradually counterpointed by empirical studies that evidenced these models' flaws, as well as by studies that demonstrated the desirability of capital controls.

In response to all these evidences, currently new orthodox models that ground the use of capital controls are standing 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 post the global crises of 2008 was fundamental, due to its unwanted effects on national economies, notably on emerging economies, generated by the instability of the capital international flows.

This article's understanding is that these new ex-post models may be marking a new phase in theoretical mainstream and orthodox perspective on capital account liberalization and capital controls. A recognition that reality, though problematic, was right, that is, it was not the theory that was right and the reality wrong. In this perspective, can be observed a convergence process of the orthodox approach in relation to heterodox approach about capital controls – that defense the permanent use of the capital controls. If this process will generate a new consensus about capital controls, only the time will tell. However, it is already possible affirm that the ex-post theoretical orthodox constructions suggest a capital account liberalization process quite different from the ones suggested by the ex-ante theoretical orthodox constructions.

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