Can Macroprudential Policies Counter the Financial Dutch Disease Phenomenon? Empirical Evidence from Panel Data

Tony Cavoli, Sasidaran Gopalan and Ramkishen S. Rajan*[1]

Abstract

Despite a growing body of literature examining the impact of Macroprudential Policies (MaPs) on credit growth and asset prices, there is scant empirical evidence on the impact of MaPs on external competitiveness as narrowly captured by the Real Exchange Rate (RER). Ultra-loose monetary policy in advanced economies could, by leading to surge in capital inflows in search of yield, result in a financial Dutch Disease phenomenon and consequent loss of price competitiveness in the recipient economy. Exploiting the comprehensive dataset on MaPs compiled by Cerutti et al. (2015) for a panel of 93 emerging and developing economies for 2000-2013, we empirically investigate if and what types of MaPs are effective in moderating the financial Dutch Disease phenomenon as well as the factors that determine their effectiveness. Our results show strong evidence that MaPs moderate RER appreciation through the real interest rate channel, though this is limited to MaPs that target financial institutions rather than those that target borrowers. In addition, their effectiveness is limited to EMDEs that have high degrees of capital account openness, financial development, foreign bank presence and low foreign exchange reserves.

Keywords: Macro Prudential Measures; Dutch Disease; Real Exchange Rate; Real Interest Rate; Panel Data

JEL Classification: E43, E52, F31

[1] Tony Cavoli is an Associate Professor at the UniSA Business School, University of South Australia. Email: Tony.Cavoli@unisa.edu.au

Sasidaran Gopalan is an Assistant Professor at the Graduate School of Public Policy, Nazarbayev University, Kazakhstan. Email: sasidaran.gopalan@nu.edu.kz

***Corresponding Author**: Ramkishen S. Rajan is a Professor at the Lee Kuan Yew School of Public Policy (LKYSPP), National University of Singapore (NUS). Email: spprsraj@nus.edu.sg.

Notes: Valuable research assistance by Aizhan Sharipova is gratefully acknowledged. The authors are also thankful for the financial support provided by LKYSPP-NUS under the "Special Project Funding Scheme."

1. Introduction

In the days following the Asian financial crisis (AFC) of 1997-98, emerging market and developing economies (EMDEs) were grappling with the question as to whether they could continue to manage their currencies "in the middle" (Rajan, 2002). Drawing on Mundell's (1963) Trilemma, the dominant paradigm was that in an era of financial globalization the exchange rate choice for EMDEs boiled down to opting for either flexibility, on the one hand, or credible pegging, on the other. Any arrangement that lies in-between these extremes was considered inherently unstable. However, Fischer (2001) and Frankel (1999) have shown that the Impossible Trilemma does not preclude managing intermediate regimes, though empirical evidence suggests that such regimes are relatively more crisis-prone (Willett, 2003).

Over the years many EMDEs have been officially moving towards greater exchange rate flexibility accompanied by inflation-targeting frameworks, thus giving them greater latitude to use monetary policy autonomy to stabilize the economy. However, many EMDEs continue to actively intervene in the foreign exchange markets to manage disorderly movements in exchange rates. For instance, in the case of Asia, while empirical evidence points out that exchange rate flexibility has increased over time and there is definitely less of an inclination towards rigid US dollar pegs, central banks continue to actively intervene in foreign exchange markets (Cavoli et al., 2019).

Following the Global financial crisis (GFC) and the advent of Quantitative Easing (QE), the world has been awash with global liquidity which has impacted all EMDEs. Since then, the debate has shifted to whether exchange rates regimes – fixed, flexible or intermediate -- actually matter at all in the face of the global financial cycle (Rey, 2013). However, since then

there has been a growing body of literature which has argued that the demise of the Trilemma is premature, and that exchange rate flexibility remains associated with greater monetary policy autonomy (Klein and Shambaugh, 2015; Aizenman et al., 2016; Obstfeld et al., 2017 and Cheng and Rajan, 2019).[2]

While the Trilemma itself has not been rendered obsolete by financial globalization, it likely has reduced the effectiveness of exchange rate as a tool to manage the economy. Obstfeld et al. (2017) have highlighted that exchange rate flexibility along with capital controls and Macro Prudential Measures (MaPs) are important components of a broader tool kit for managing domestic financial and macroeconomic conditions. More pointedly, Aizenman (2018) has argued against the existence of either a Dilemma or Trilemma but instead suggests that there exists a Quadrilemma where financial stability is an additional goal in addition to exchange rate stability, monetary policy autonomy and financial integration.

The emphasis on financial stability has itself led to a growing awareness and use of MaPs which are designed to limit systemic vulnerabilities by focusing on the entire financial system, reducing the extent of financial interconnectedness, and managing excessive credit growth. Long before MaPs became prominent in the Advanced Economies (AEs) (since 2009), EMDEs in Asia and elsewhere have been actively using MaPs (credit, liquidity and capital based), especially those that are property related (Zhang and Zoli, 2016). After all, housing is the largest component of household wealth and real estate market stability is usually closely linked to overall financial stability. According to the IMF (2018), as of April

[2] Also see Nelson (2017) for a critique of the Rey (2013)'s Dilemma thesis.

2018, 141 countries reported a total of just over 1,300 MaPs or an average of 9.3 per country, more or less evenly divided between AEs and EMDEs.

While advanced economies appear to emphasize the role of MaPs in enhancing financial resilience and interconnectedness, EMDEs have primarily used MaPs to constrain credit and property market booms. While there has been a growing body of literature examining the impact of MaPs on credit growth and asset prices,[3] one can also think about the issue from the perspective of external competitiveness as proxied by the real exchange rate. In particular, ultra-loose monetary policy abroad could, by leading to a surge in capital inflows in search of yield, result in a financial Dutch Disease phenomenon and consequent loss of price competitiveness in the recipient economy (Corden and Neary, 1982). To our knowledge there is scant empirical evidence on the impact of MaPs on external competitiveness.

To be sure, other things equal, if US interest rates decline, a typical open EMDE is potentially faced with a deluge of liquidity. If the country maintains a fixed exchange rate, credit growth would show up in the form of a rise in the price of non-tradable and consequent RER appreciation unless it is sterilized. However, if the country operated a more flexible exchange rate regime, conventional wisdom suggests that there would not necessarily be any credit build-up (as the central bank could maintain monetary policy autonomy), though there would still be a RER appreciation via a nominal exchange rate appreciation.[4]

[3] Credit growth and housing prices are leading banking crisis indicators (See Aldasoro et al., 2018).

[4] Even with a flexible exchange rate, a decline in US interest rates may cause a depreciation of the US dollar and if some liabilities of banks/corporates are held in US dollars, while assets and cash flows are predominantly in domestic currency that would improve the balance sheet in domestic currency terms. This in turn may increase

Apart from exchange rate changes, a typical EMDE has a few choices to manage the financial Dutch Disease phenomenon, including active use of capital controls (i.e. intensify controls on inflows or loosen controls on outflows) or tightening fiscal policy. Given the general inflexibility of fiscal policy as well as the bluntness of capital controls (as well as persistent ideological unwillingness to use it in many countries), the preferred option may well be to use MaPs.[5]

Given this context, exploiting the comprehensive dataset on MaPs compiled by Cerutti et al. (2015) for a panel of 93 EMDEs for 2000-2013, we contribute to the literature in three distinct ways. First, we empirically investigate whether MaPs are effective in managing the financial Dutch Disease phenomenon, an issue that has not been paid attention to in the literature before. In the process, we also check whether the impact of MaPs vary by their type, i.e. instruments that target borrowers versus financial-institutions.

Second, we attempt to identify the conditions under which MaPs tend to be more effective in our sample of EMDEs. In other words, what are the determinants of effectiveness of MaPs? Taking a cue from the related literature, we test the importance of four specific variables – capital account openness, foreign exchange reserves, financial development, and foreign bank presence – in determining the effectiveness of MaPs.

Third, motivated by the literature that suggests that MaPs are more effective in limiting booms than preventing busts (Aizenman et al. 2017), we consider the issue of

the willingness and/or ability of banks to extend credit. This is the so-called risk-taking channel of monetary policy given the dominant role of the US dollar as a funding currency in EMDEs (Borio and Zhu, 2012; Bruno and Shin, 2015).

[5] That said, at times there could be significant overlap between capital controls and some credit-related MaPs, such as limits on external commercial borrowings. The overlap between the two is somewhat greater in EMDEs which tend to impose more credit and liquidity related MaPs than in Advanced Economies which tend to impose capital-based MaPs.

interest rate asymmetry to ascertain if MaPs are more effective during periods of rising interest rates or falling interest rate differntials.

To preview the main empirical results of our paper, we find that MaPs consistently moderate the financial Dutch disease through the interest rate channel. This result turns out to be quite robust to a variety of alternative specifications and tests. Further, we also find that MaPs that target financial institutions consistently work better compared to those that target borrowers. More specifically, instruments such as dynamic loan-loss provisioning, limits on foreign currency loans, reserve requirement ratios and concentration limits appear to be more effective than other MaPs in moderating REER appreciations in EMDEs.

With regard to the conditions under which MaPs tend to be effective, we observe that MaPs tend to be more effective only in EMDEs that maintain relatively open capital accounts, have low foreign exchange reserves, are financial well-developed, and are open to greater foreign bank presence. These results appear to be consistent whether we examine these determinants individually or jointly and they are also robust to various definitions.

Finally, we also document evidence of asymmetry with regard to real interest rates, in that that the moderating effect of MaPs seems to be significant only during periods of rising rather than falling real interest rates.

The remainder of the paper is organized as follows. Section 2 offers a selective review of the literature on the effectiveness of MaPs involving EMDEs. Section 3 provides an overview of the data and discusses the details of our empirical model along with the priors. Section 4 furnishes the empirical results from the baseline model followed by some robustness tests. Section 5 discusses the empirical results pertaining to the determinants of effectiveness of MaPs in moderating REER appreciation. Section 6 examines whether

asymmetric real interest rate movements have a varied impact on effectiveness of MaPs. Section 7 concludes the paper.

2. Review of Selected Literature

This section provides a brief overview of the selected literature on the effectiveness of MaPs in EMDEs. The body of literature on MaPs, although recent, is fast growing. The primary focus of the literature to date has been on the effectiveness of MaPs in limiting pro-cyclicality of credit growth and/or house price inflation across a cross-section of countries. We briefly review a selected set of panel studies below.[6]

In a pioneering study, Lim et al. (2011) conduct a panel regression analysis using data of 49 countries over a period of 10 years from 2000 to 2010. The paper uses data from a 2010 IMF survey on financial stability and macroprudential policies as well as internal surveys of desk economists. The authors find that selected MaPs can reduce pro-cyclicality of credit growth and leverage, and that the results are not dependent on the country although the effect varies based on the phase of business cycle.

Using data for 57 AEs and EMDEs over the period 1980q1 to 2011q4 based on Shim et al. (2013), Kuttner and Shim (2013) empirically investigate the effectiveness of various housing-related MaPs (as well as other non-interest rate policy tools) in moderating house prices and housing credit. They find that while housing credit growth is affected by changes in the various MaPs, the debt-service-to-income (DSTI) ratio turns out to be the most robust indicator.

[6] In addition to panel studies at an aggregate level, there is a growing literature examining country-specific impacts as well as a smaller set of studies that look at micro-level data (Ayyagari et al. 2018).

In a study focusing on 13 Asian economies as well as 33 AEs and EMDEs from other regions, Zhang and Zoli (2016) examine the impact of MaPs and capital flow measures on credit growth over the period 2000q1 to 2013q2. Drawing on the database by Lim et al. (2011) as well as national central banks' and banking supervisors' websites, they find that housing-related MaPs appear to have contributed to reduced credit growth in Asia.

In one of the most comprehensive studies on the subject, Cerutti et al. (2015) document the use of MaPs across 119 countries from 2000-2013 across various instruments. The data comes from the 2013 IMF Survey on Global Macroprudential Policy Instruments (GMPI) spanning 18 different instruments (of which the study uses 12). They find that more open economies and those with deeper and more developed financial systems have a weaker correlation between implementation of MaPs and mitigation of credit booms. The authors also find that MaPs work better during boom periods.

Constructing indices of MaPs for 57 AEs and EMDEs over the period 2000q1 to 2013q4 drawing on national sources and the GMPI, Akinci and Olmstead-Rumsey (2018) show that tightening of MaPs is associated with lower bank and credit growth and house price inflation.

Bruno et al. (2017) analyze the use and effectiveness of MaPs and capital flow management for 12 Asia-Pacific countries over the period 2004q1 to 2013q4.[7] Using data from the BIS Quarterly Review (Shim et al., 2013) the authors find that intensified use of MaPs (as well as capital flows management tools) helps to slow down banking and bond

[7] The countries included are Australia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore and Thailand.

inflows and that they are more effective when they complement monetary policy rather when they work at cross-purposes.

Examining the impact of financial development on the effectiveness of MaPs, Baskaya et al. (2015) focus on 37 AEs and EMDEs over the period of 1996q1 to 2011q4. Using the macroprudential database compiled by Shim et al. (2013), they find that while the quantity-based tools are effective in lessening credit cycles almost irrespective of the level of financial development, the price-based tools effectively curb excess variations in total credit in relatively more developed financial markets.

Using data from the GMPI, Erdem et al. (2017) address the effectiveness of MaPs in controlling domestic credit growth for 30 emerging economies over the period 2000 to 2013. The authors find that MaPs are effective in dampening domestic credit growth during a phase of credit expansion.

Kim and Mehrotra (2018) focus specifically on four inflation targeting regimes in Asia-Pacific (Australia, Indonesia, Korea and Thailand) for the broad period of 2000 to 2012 and examine the effects of MaPs. Using quarterly data on MaP related housing they find that tighter MaPs contain credit growth but also have impact on inflation and real GDP, suggesting the need for complementary monetary policy.

Aizenman et al. (2017) use data from the GMPI for 119 countries from 2000 to 2013 and divides the countries into central economies (includes U.S., Japan and Eurozone) and peripheral economies to understand the effect of monetary polies of the former on the latter. The authors also estimate spillover effects and global synchronization of financial or macroeconomic variables. The empirical results show that the impact of MaPs is asymmetric and occurs when lax monetary policy of a central economy results in capital inflows into a

peripheral economy and that MaPs are more effective in countries that run current account deficits financed by rising portfolio flows.

As noted earlier, the foregoing is just a subset of the growing body of literature on the effectiveness of MaPs in a panel of countries.[8] While much of the literature on assessing the effectiveness of MaPs has focused on mitigating risks from credit booms, excessive credit growth could lead to loss of price competitiveness and increased RER volatility more generally, an issue that has not been given much attention to in the literature. In the remainder of the paper we attempt to fill this gap in the literature by undertaking a systematic empirical examination of the nexus between MaPs and RER, with the aim of assessing the effectiveness of MaPs in managing the financial Dutch Disease phenomenon in selected EMDEs for a panel of about 85 EMDEs over the period 2000-2013.[9]

3. Data and Empirical Model

As the first step, our estimating equation will attempt to address the following research question: how effective are MaPs in managing financial Dutch Disease in selected EMDEs? We start by specifying a parsimonious model that explains movements in RER. In other words, we take a cue from the well-established literature on determinants of RER and specify a baseline regression that models movements in RER as a function of a matrix of economic

[8] There are other papers that look at a narrower set of housing-related MaPs (for instance, see Crowe et al., 2015).

[9] Since our primary source of data on MaPs comes from Cerutti et al. (2015), we focus on the time period used in their original database (2001-2013). Although the authors have updated their MaP dataset to include later years, based on consistent availability of data for all the variables in our model, we have undertaken our empirical analysis until 2013.

determinants (see Edwards, 1988; Macdonald, 1997; Chinn, 2006; De Broeck and Wolf, 2006; Elbadawi and Soto, 2007; Kakkar and Yan, 2014).

More specifically, the basic estimating equation will take the following form:

$$REER_{it} = \delta_i + \beta_1 RIR\ diff_{it} + \boldsymbol{\gamma Z}_{it} + \rho_t + u_{it} \qquad \text{-- (1)}$$

$REER_{it}$ is our measure of Real Effective Exchange Rate (REER) of country *i* at time *t;*

$RIRdiff_{it}$ captures the Real Interest Rate (RIR) differential given by the difference between country *i's* RIR at time *t* and the real US Fed Funds Rate;

$\boldsymbol{Z}_{it}$ is the vector of economic determinants of REER in country *i* at time *t*;

δ_i denotes country fixed effects; and

ρ_t denotes time fixed effects.

u_{it} is the idiosyncratic error term.

The dependent variable throughout our empirics is a measure of Real Effective Exchange Rate (REER) compiled by the Bruegel institute. This index has been recognized as one of the most comprehensive as it has REER data available for 172 trading partners in the world, which aligns with our needs for panel estimation.[10]

As shown in our baseline specification, one of the focal determinants of REER is the real interest rate differential.[11] More specifically, we take the differential of a country's real interest rate and the US (real) fed funds rate for that particular year. We hypothesize that an increase in the real interest rate in the home country could trigger a surge in capital inflows

[10] The dataset is accessible from the following link: http://bruegel.org/publications/datasets/real-effective-exchange-rates-for-178-countries-a-new-database/

[11] There is a well-established literature documenting the importance of RIR differential as a key determinant of REER (See Hoffmann and Macdonald, 2009 and references cited within for a discussion).

that could possibly lead to an appreciation of REER and loss in external competitiveness, i.e. the financial Dutch Disease phenomenon.

Regarding the other control variables of interest, guided by the broader literature on determinants of REER noted earlier, we add the following vector of variables in the baseline specification:

$$\boldsymbol{Z}_{it} = \left\{ \begin{array}{c} Gross\ Domestic\ Product\ Per\ Capita \\ Labour\ Productivity \\ Government\ Consumption\ Expenditure \\ Terms\ of\ Trade \\ External\ Liabilities \\ Exchange\ Rate\ Regimes \end{array} \right\}$$

A *priori*, we would expect to see an appreciation of REER as a response to higher levels of economic development captured by GDP per capita. *Ceteris Paribus*, higher levels of economic development in a country could increase the demand for non-tradables resulting in a REER appreciation. Another standard determinant of REER considered in the literature is labour productivity, where higher labour productivity tends to result in appreciation pressures of REER *a la* Balassa-Samuelson effect. A similar positive relationship can be expected between REER and government consumption expenditure if a significant proportion of such expenditures are towards the non-tradable sector in an economy.

While an increase in a country's external liabilities could also result in an appreciation of the REER (i.e. greater stock of capital inflows), the nexus between favourable terms of trade and a country's REER is ambiguous. On the one hand, there is a possibility that higher export prices relative to import prices could result in higher demand for non-tradables through income effects. On the other hand, a terms of trade improvement due to a rise in

price of exports could lead to a depreciation of the currency as non-tradables become relatively cheap (see Edwards, 1988 for a discussion).

Finally, we expect countries that have a greater flexibility in their exchange rates to experience better adjustment to shocks which in turn could help moderate the impact on REER (Combes et al. 2012).

We undertake a panel fixed effects estimation incorporating both country and year fixed effects. By employing a two-way linear panel fixed-effects model in our estimation we control for both unobserved country-specific fixed characteristics as well as year fixed effects that might affect REER. We also recognize that our fixed-effects estimates will remain robust only if the potential source of endogeneity arises from the correlation between the time-invariant component of the error term and the regressor of interest. In any event, the conventional Hausman test also overwhelmingly rejects the null hypothesis that random effects provide consistent estimates of our model.[12]

As the next step, we explicitly incorporate a measure of macroprudential policies (MaPs) in our specification. Considering that one of the channels of transmission of the financial Dutch Disease into an economy work through interest rates, any policy attempt to manage REER appreciation through MaPs would operate through its interactions with the real interest rate differential. A rise in the RIR differential will trigger capital inflows that could lead to a REER appreciation either through NEER appreciation or through increase in credit/overall rise in asset prices (assuming ineffective/incomplete sterilization). Thus, we augment the baseline specification given in (1) as follows:

$$REER_{it} = \delta_i + \beta_1 RIR\ diff_{it} + \boldsymbol{\gamma Z}_{it} + \beta_2 MaP_{it} + \beta_3\, MaP * RIR\ diff_{it} + \rho_t + u_{it} \text{ -- (2)}$$

[12] Results are available upon request.

The measure of MaPs we use is the Macro Prudential Index (MPI), compiled by Cerutti et al. (2015) based on the GMPI database. We hypothesize that higher MaPs on their own could lead to greater macroeconomic stability which could attract higher capital inflows, leading to REER appreciation. However, if the interaction term (β_3) between MPI and RIR turns out to be negative, it would imply that MaPs are helping to moderate the financial Dutch disease through interest rates. Thus β_3 is our key parameter of interest that enables us to test the effectiveness of MaPs on REER.

All the sources and detailed definitions of the variables are presented in Annex Table A1. Table 1 provides the summary statistics of the key variables of interest, while Table 2 provides a matrix of correlation between the variables used in our empirical analysis. From Table 1 we observe that none of the variables are time-invariant as reflected in their within-standard deviations. Eye-balling the correlations in Table 2, we can infer that, with the exceptions of GDP per capita and labour productivity, there are no obvious issues of extremely high correlations between any other pair of variables that would lead to multicollinearity issues. In light of the extremely high correlation between GDP per capita and labour productivity, we use only one in our empirical estimation.[13]

[Insert Tables 1, 2 and Annex Table A1 here]

4. Empirical Findings

4.1. Baseline Fixed Effects Estimates

[13] Our estimation results (elaborated in Section 4) remain unaffected by this choice between GDP per capita or labour productivity as control variables.

We start with baseline two-way fixed effects estimates of Equation (1). As Table 3 shows, we estimate REER as a function of macroeconomic determinants outlined earlier. Several interesting observations are worth highlighting from Table 3. Focusing on the baseline results in Column (1), the first key point to underline is the high statistical significance of the RIR differential, consistent with our priors. In terms of economic significance, an increase in the RIR differential by ten percent points results in an appreciation of the REER index by approximately two percent points. We also find that GDP per capita, government consumption expenditure and exchange rate regimes to significantly influence REER in the appropriate direction as hypothesized earlier.

[Insert Table 3 here]

In Column (2), we show the results of the augmented regression with the inclusion of our MaP variable and its interaction with RIR differential, the latter being the focus of our attention. The coefficient carries the appropriate negative sign and is highly statistically significant at the 1 percent level. This confirms our key hypothesis about the stronger role for MaPs in moderating the Dutch Disease through the interest rate channel in EMDEs.

Further, in addition to the direct effect of exchange rate flexibility on REER, greater flexibility in exchange rate regimes could also influence REER movements via the interest rate channel. To be sure, in countries with highly flexible exchange rate regimes, the RIR differential on its own may not have any notable impact on REER appreciation because it may be compensating for expected exchange rate changes. In contrast, in the case of regimes with greater exchange rate fixity, abstracting from risk premium issues, one would expect RIR differentials to lead to significant capital inflows which would result in REER appreciation. Thus, we can expect greater exchange rate flexibility through the interest rate

channel to moderate capital inflow booms as investors understand that it is not a one-sided bet (see Combes et al. 2012 for a discussion). Consistent with this argument, our results incorporating an interaction term between exchange rate regime and RIR differential to Equation (2) returns a negative and statistically significant coefficient.

Next, we focus on the issue of whether there are any observable differences between the broad types of MaPs in terms of their effectiveness in moderating the financial Dutch Disease. There are two broad types of MaPs as compiled by Cerutti et al. (2015). The first type consists of two instruments that target borrowers. They specifically include caps on loan-to-value (LTV) ratio and limits to debt-to-income (DTI) ratio. The second type consists of ten different types of instruments that target financial institutions. They comprise dynamic loan loss provisioning (DP), counter-cyclical capital buffers (CTC), leverage ratios (LEV), capital surcharges on systemically important financial institutions (SIFI), limits on inter-bank exposures (INTER), concentration limits (CONC), limits on foreign currency loans (FCL), reserve requirement ratios (RR), limits on domestic currency loans/credit growth (CG), and levies/taxes on financial institutions (TAX).

While Column (3) in Table 3 shows the results for the effectiveness of borrower-type instruments in moderating REER, Column (4) provides the estimation results capturing the effectiveness of MaPs that target financial-institutions. In each column, we re-estimate the determinants of REER by replacing the aggregate MaP index with the specific type of MaP instrument and its corresponding interaction with RIR differential. Interestingly, we find that the impact of MaPs that collectively target financial-institutions are far more effective in moderating REER appreciation relative to borrower-type instruments. This seems to be true

for the signs and statistical significance of the control variables in the augmented baseline model as well, as evident from comparing the results shown in Columns (2) and Column (4).

There is one more layer of disaggregation available from the Cerutti et al. (2015) dataset in terms of the countries usage of individual macroprudential instruments over time. The data allows us to empirically check which among the financial-institution targeted instruments stand out individually in terms of their effectiveness in curbing REER appreciation. Table 4 summarizes the breakdown for four of the ten financial-institution targeted MaPs.[14]

[Insert Table 4 here]

From Table 4, we find that those MaPs pertaining to dynamic loan-loss provisioning requirements mandating banks to hold more loan-loss provisions during boom periods ("upturns") tend to be effective in curbing REER appreciation, as evident from the highly statistically significant interaction term. In addition, MaPs imposing asset (concentration) limits, as well as on foreign currency loans designed to reduce vulnerabilities to foreign currency risks also turn out to be statistically significant MaPs in moderating the financial Dutch Disease. Finally, MaPs raising reserve requirement ratios aimed at limiting credit growth in the economy also appear significant among the financial-institution targeted instruments.

4.2. System-GMM Estimation

[14] In the interest of space, we only show the results for the four instruments that turned out to be statistically significant. Neither the remaining six instruments under the financial-institution targeted MaPs nor the borrower-type MaPs turned out to be statistically significant. Results are available upon request.

When the dependent variable exhibits path dependency or that there could be potential reverse causality concerns between MaPs and REER appreciation, it might be useful to use lagged values of REER and MaPs to mitigate endogeneity concerns. A system-GMM estimator mitigates some of these above concerns as it allows us to use lagged levels of endogenous variables as instruments in the equation in first differences while we can use the lagged differences as instruments for the equation in levels. We undertake a standard test of serial correlation for the error terms of the differenced equation in order to check the validity of the instruments. Further, we also apply Roodman correction to avoid overfitting of instruments, which is a common problem in system-GMM estimation.

The results of our estimation are summarized in Table 5. The results are consistent with the baseline results with regard to the relationship between MaPs and REER through the interaction with RIR. The lagged dependent variable also appears to be positive and statistically significant, with the coefficient being close to unity, indicating persistence. We also re-estimate the baseline results for individual MaPs that were significant earlier. With the exception of foreign currency loans the other financial-institution targeted instruments turn out to be statistically significant and consistent with what we found earlier.

[Insert Table 5 here]

4.3. MaP Effectiveness by Income Levels

One of the stylized facts that emerges from Cerutti et al. (2015)'s data is that the usage of MaPs is significantly higher in emerging markets and least developed countries relative to the industrialized countries. Aizenman et al. (2017) have also noted the higher "extensity of MaP implementation" by EMDEs relative to the industrialized countries, especially after the

GFC. Considering the high usage of MaPs among EMDEs, do we observe any differences when we examine the effectiveness of MaPs across countries with different income levels? In other words, do we find any potential heterogeneity in the effectiveness of MaPs across different income levels? In Table 6 we re-estimate our augmented baseline model of REER determinants for EMDEs split by their income levels based on the most updated World Bank classification. We group our sample of EMDEs into lower and middle-income countries. We find no substantive differences between the two groups of countries in terms of the moderating effect of MaPs on REER appreciation. However, the statistical significance of the interaction term is clearly higher for middle-income countries in our sample relative to low-income countries.[15]

[Insert Table 6 here]

5. What Determines the Effectiveness of MaPs?

Having empirically established that MaPs tend to be effective in countering REER appreciation in EMDEs, we now attempt to understand the determinants of their effectiveness. In particular, we test for the importance of four specific factors in determining the effectiveness of MaPs in EMDEs: (a) the degree of capital account openness, (b) the extent of foreign exchange reserve accumulation, (c) the levels of financial development, and (d) the extent of foreign bank presence.

For each case, we split our sample into (exogenously determined) *high* and *low* thresholds of the respective variable under consideration by grouping all countries in

[15] When we further split the middle income countries into lower middle income and upper middle income countries we find that the interaction term between MaP and REER is statistically significant only in lower middle income countries but not in upper middle income countries.

specific years (based on above and below sample mean) and verify the significance of our key interaction term between MaP and RIR in each case. We subsequently check which of the broad types of MaP instruments (borrower targeted versus financial-institution targeted) turn out to be effective in each case. After examining each of these determinants individually, we also probe the importance of all the three variables jointly by considering their inter-relationships.

5.1. Degree of Capital Account Openness and Effectiveness of MaPs

To what extent does the degree of capital account openness matter in determining the effectiveness of MaPs in EMDEs? Several EMDEs may not actually use explicit capital controls but rather prefer the use of MaPs more proactively/counter-cyclically. To examine this further we split our EMDE sample into countries with high and low degrees of capital account openness based on the Chinn-Ito index. We split the sample on either side of the mean values of the Chinn-Ito index (normalized to one) and test for the effectiveness of MaPs in each of these cases.

Table 7a summarizes the results of this empirical exercise. The results clearly show that MaPs are relatively more effective in the EMDE sample with high degrees of capital account openness. Despite carrying the right sign, the interaction term between MaP and RIR differential is statistically insignificant in the low capital account openness sample. This is in fact at variance with the results of Aizenman et al. (2017, p.16) who show that MaPs tend to be effective in relatively more financially closed economies. In Table 7b we repeat this exercise for the two broad types of MaPs to check if there are any discernible differences in their effectiveness. Consistent with our results so far we can observe that only the MaPs

targeting financial institutions appear to work relative to those targeting borrowers as shown in Column (3) of Table 7b.

[Insert Tables 7a and 7b here]

The results obtained above offer indicative evidence that MaPs tend to be effective in moderating the financial Dutch Disease in EMDEs only when countries have higher degrees of capital account openness. This suggests that MaPs act somewhat as a substitute for capital controls among more open EMDEs in terms of shielding the economy from the effects of capital flows.

5.2. Foreign Exchange Reserves and Effectiveness of MaPs

Our next determinant of effectiveness of MaPs in moderating REER is the level of foreign exchange reserves. As Aizenman et al. (2017) point out, there is also a possibility of MaPs being relatively more effective in countries with low levels of foreign exchange (forex) reserves because they can be substitutes (an alternative way to handle external shocks).

To test this WE split our sample into those that have high and low forex reserves (using mean as the benchmark for sample splitting) and estimate the importance of MaPs. As Table 8 points out, consistent with Aizenman et al. (2017), we find evidence for the significance of MaP*RIR only in the sample with low forex reserves. This suggests that MaPs tend to work through the RIR channel more effectively in countries with low levels of forex reserves relative to those with more reserves, signaling a "substitution" effect between MaPs and forex reserves. Columns (3) and (4) show the results for financial-institution targeted MaPs which work in the low reserves sub-sample.

[Insert Table 8 here]

5.3. Financial Development and Effectiveness of MaPs

To what degree does financial sector development determine the effectiveness of MaPs? A nascent literature has recognized the importance of financial sector development for the effectiveness of MaPs (See for instance Baskaya et al. 2015). In so far as MaPs predominantly work through the financial (banking) system, *ceteris paribus*, we hypothesize that higher levels of financial development should make MaPs more effective.

To examine the effectiveness of MaPs under countries with different degrees of financial development we estimate our augmented baseline model on two different sub-samples split based on the degrees of financial development.[16] While there are several accepted measures of financial development in the literature, we start with the most commonly used indicator in the form of credit-to-GDP ratio in the first instance. We also test the consistency of the resultant findings using alternative indicators such as credit creation by deposit money banks and a composite financial development index produced by the World Bank as robustness checks.

We split our sample using the mean of financial development of the entire sample as the threshold (0.47 or 47% of GDP). More specifically, countries in specific years that have credit-to-GDP ratios above the mean threshold of 0.47 are classified as the high financial development sample and those below the mean get represented in the low financial

[16] A tangential literature on financial development (Kose et al. 2009) emphasizes a role for thresholds in the way financial development operates in EMDEs. Specifically, a growing strand of papers appear to suggest that the beneficial impacts of financial development in EMDEs are non-linear in nature in the sense that there could be certain threshold levels of financial sector development that EMDEs need to possess before intended outcomes materialize. Thus, a complementary hypothesis is that the effectiveness of MaPs in moderating financial Dutch Disease could also vary by different degrees of financial development in EMDEs.

development sample. Table 9a furnishes the results of this exercise, while Table 9b shows the breakdown for the two broad MaPs.

[Insert Tables 9a and 9b here]

As we can observe from the results, MaPs appear to be effective relatively more in the high threshold sample compared to the low threshold sample. The interaction term between MaP and RIR differential carries the right sign in both samples but is statistically significant at the 5 percent level only in the sample where financial development is above the mean threshold.

We check for the robustness of the results by using two alternative measures of financial development. In Table 9c, Columns (1) and (2) show the results of re-estimating the relevant regression reported in Table 9a using a composite index of financial development given by the financial institutions depth index produced by the World Bank. Columns (3) and (4) use private credit by deposit money banks as a proxy for financial development. As we observe, our fundamental results about the relative effectiveness of MaPs in highly financially developed EMDEs tend to be consistent and robust. Further, we also find that the results continue to be consistent for the two broad types of MaPs in that MaPs targeted at financial institutions are statistically significant relative to borrower-type MaPs.[17]

[Insert Table 9c here]

Overall, the above results broadly suggest that regardless of the proxy used to represent financial development, MaPs tend to be more effective in moderating the effects of REER appreciation through the RIR channel when EMDEs appear to be beyond a certain

[17] Results not shown in the interest of space, but available from authors upon request.

threshold of financial development, compared to the cases where they are below the mean threshold.

5.4. Foreign Bank Presence and Effectiveness of MaPs

Our final determinant in question is foreign bank presence in EMDEs. How important is foreign bank presence in influencing the effectiveness of MaPs? While several studies have broadly pointed to possible efficiency gains to the financial sector arising from greater presence of foreign banks in EMDEs (see the survey in Claessens and Van Horen, 2013 for instance), an important strand of literature has documented concerns that a highly internationalized banking system could, through internal capital markets, make capital accounts more porous and monetary policy less effective (see Gopalan and Rajan, 2017 and references cited within). If this is the case, we hypothesize that MaPs could be more effective in controlling credit creation via the banking system in EMDEs that have higher degrees of foreign bank presence.

To test the importance of foreign bank presence as a determinant of effectiveness of MaPs, we split our sample into high and low threshold of foreign bank presence using the share of foreign bank assets to total assets in the domestic banking system as the yardstick. We re-estimate the augmented baseline specification for the two sub-samples. As Table 10a shows, we find strong evidence that the interaction term between MaP and RIR is significant only in the high threshold sample. The overall results of the low threshold sample are not only insignificant for the key variables but also quite inconsistent with the baseline results. We can observe similar results for the broad types of MaPs (Table 10b), where the financial institution targeted MaPs turn out to be significant only in the high threshold sample.

[Insert Tables 10a and 10b here]

5.5. Joint Impact of Capital Account Openness and Financial Development

The preceding discussion so far has outlined the importance of greater capital account openness and higher levels of financial development in determining the effectiveness of MaPs. We have also found that MaPs tend to be more effective in countries with lower forex reserves. While each of them are important individually, we now aim to understand the joint impact of these determinants on the effectiveness of MaPs.

In Table 11, we show the detailed estimation results for the determinants of REER for the sub-sample of countries that have different degrees of capital account openness and financial development. Figure 1 summarizes these various possibilities. The four quadrants correspond to four different combinations of capital account openness and financial development. The shaded boxes reveal that the coefficient of the interaction term MaP*RIR is statistically significant at either the 1% or 5% level of significance only for those sub-samples representing those quadrants.

The results shown in Table 11 reveal that the interaction between MaP and RIR is highly statistically and economically significant only in the sub-sample of countries with high degrees of financial development and high degrees of capital account openness. As before, we repeat this exercise for the two broad MaPs, and consistent with what we have found so far, financial-institution targeted MaPs are effective in moderating REER appreciation and that too only in the sub-sample of countries with high capital account openness and high financial development.[18]

[18] Results not shown in the interest of space, but available from authors upon request.

[Insert Figure 1 and Table 11 here]

5.6. Joint Impact of Capital Account Openness and Foreign Bank Presence

Next, we consider the joint impact of capital account openness and foreign bank presence. As Figure 2 summarizes, we re-run our augmented baseline model of the determinants of REER for the sub-sample of countries that have different degrees of capital account openness and foreign bank presence. Each of the four quadrants in Figure 2 correspond to four different combinations of capital account openness and foreign bank presence and the shaded boxes reveal that the coefficient of the interaction term MaP*RIR is significant at either the 1% or 5% level of significance only for those sub-samples representing those quadrants.

[Insert Figure 2 here]

The results shown in Table 12 point out, the interaction between MaP and RIR is highly statistically and economically significant only in the sub-sample of countries with high degrees of capital account openness and foreign bank presence and not for any other sub-sample. This conclusion holds for the financial institution targeted MaPs as well when we re-estimate the regression for the two broad type of MaPs.

[Insert Table 12 here]

6. Asymmetry of Real Interest Rates and Effectiveness of MaPs

We turn to explore whether the effectiveness of MaPs vary by asymmetry of real interest rates. To this end, it would be useful to test if there is an asymmetry in the impact of MaPs on REER during periods of rising versus falling in real interest rates.

If the RIR differential increases, i.e. (D (RIR)) > 0, the implication is that liquidity conditions are relatively more attractive locally than in the US which are likely to stimulate capital inflows. On the other hand, if RIR differentials decrease, i.e. (D (RIR) < 0)), this represents a tightening of foreign liquidity conditions which make capital inflows less likely. On this basis, we create a binary variable that takes the value 1 for D (RIR) > 0, and zero for D (RIR) < 0. We estimate the augmented baseline specification for these two cases of increasing and decreasing RIR differentials and the results are summarized in Table 13.

[Insert Table 13 here]

We find that the results are consistent only when the RIR differential is increasing. It does not produce consistent results when RIR differential is decreasing. A case of RIR > 0 appears to be indicate that MaPs are better at preventing RER appreciations due to capital inflows than outflows. This is also consistent with some of the related literature like Aizenman et al. (2017) and Cerutti et al. (2017) who find that MaPs work better during boom periods. More generally, there is a growing recognition that MaPs play a role in helping countries regain a degree of monetary policy autonomy during periods of capital inflow booms by attenuating the effects of global financial cycles (For more see Rajan, 2019).

7. Conclusions

The use of MaPs globally has intensified since the GFC. While there has been a rapidly-growing body of literature assessing the impact of MaPs on credit growth and asset prices, there is sparse empirical evidence on how MaPs affect external competitiveness proxied by the real exchange rate. In this paper, we have relied on the comprehensive dataset on MaPs compiled by Cerutti et al. (2015) for a panel of 93 EMDEs for 2000-2013 to empirically

investigate whether MaPs are effective in moderating managing the financial Dutch Disease phenomenon. We have also examined whether the impact varies based on the type of MaPs as well as on a set of factors, viz. capital account openness, financial development and foreign bank presence.

Our empirical results show strong and consistent evidence that MaPs enable a moderation of the financial Dutch disease through the interest rate channel. This result turns out to be quite robust. We also observe consistently that only specific MaPs such as dynamic loan-loss provisioning, limits on foreign currency loans, reserve requirement ratios and concentration limits -- all of which target financial institutions -- turn out to be statistically significant relative to those that target borrowers, suggesting some heterogeneity in the effectiveness of the types of MaPs. Our empirical results also suggest that MaPs tend to be more effective in EMDEs that have relatively more open capital accounts, high degrees of financial development, high foreign bank presence and low forex reserves. Finally, we document some evidence of asymmetry with regard to real interest rates, in that that the moderating effect of MaPs seems to be significant only during periods of rising rather than falling real interest rates.

References

Aizenman, J. 2018. "A Modern Reincarnation of Mundell-Fleming's Trilemma," *Economic Modelling*, Forthcoming.

Aizenman, J., Chinn, M.D., and Ito, H. 2017. "Financial Spillovers and Macroprudential Policies," NBER Working Paper No. 24105, December.

Aizenman, J., Chinn, M.D., and Ito, H. 2016. "Monetary Policy Spillovers and the Trilemma in the New Normal: Periphery Country Sensitivity to Core Country Conditions," *Journal of International Money and* Finance, 68: 298-330.

Akinci, O. and Olmstead-Rumsey, J. 2018. "How Effective are Macroprudential Policies? An Empirical Investigation," *Journal of Financial Intermediation*, 33, 33-57.

Aldasoro, I., Borio, C., and Drehmann, M. 2018. "Early Warning Indicators of Banking Crises: Expanding the Family," *BIS Quarterly Review*, March.

Ayyagari, M., Beck, T., and Peria, M.S.M. 2018. "The Micro Impact of Macroprudential Policies: Firm-Level Evidence," IMF Working Paper 18/267, December, Washington DC.

Baskaya, Y.S., Kenc, T., Shim, I., and Turner, P. 2015. "Financial Development and the Effectiveness of Macroprudential Measures," BIS Papers No.86, 103-116.

Borio, C. and Zhu, H. 2012. "Capital Regulation, Risk-Taking and Monetary Policy: A Missing Link in the Transmission Mechanism?," *Journal of Financial Stability*, 8: 236-251.

Bruno, V. and Shin, H.S. 2015. "Capital Flows and the Risk-Taking Channel of Monetary Policy," *Journal of Monetary Economics*, 71: 119-132.

Bruno, V., I. Shim and H. S. Shin, 2017. "Comparative Assessment of Macroprudential Policies," *Journal of Financial Stability* 28, 183-202.

Cavoli, T., Gopalan, S., and Rajan, R.S. 2019. "Exchange Rate Policies in Asia in an Era of Financial Globalization: An Empirical Assessment," *The World Economy*, Forthcoming.

Cheng, R. and Rajan, R.S. (2019). "Monetary Trilemma, Dilemma or Something in Between?" mimeo.

Chinn, M.D., and Ito, H. 2006. "What Matters for Financial Development? Capital Controls, Institutions, and Interactions," *Journal of Development Economics,* 81, 163-192.

Claessens, S., and N. Van Horen. 2013. Foreign Banks: Trends and Impact. *Journal of Money, Credit and Banking*, 46: 295-326.

Combes, J.L., Kinda, T., and Plane, P. 2012. "Capital Flows, Exchange Rate Flexibility, and the Real Exchange Rate," *Journal of Macroeconomics*, 34(4): 1034-1043.

Cordon, W.M. and Neary, J.P. "Booming Sector and De-Industrialisation in a Small Open Economy," *The Economic Journal*, 92(368): 825-848.

Cerutti, E., Claessens, S., and Laeven, L. 2015. "The Use and Effectiveness of Macroprudential Policies: New Evidence," IMF Working Paper 15/61, March, Washington DC.

Crowe, C.W., Igan, D., Dell'Ariccia, D., and Rabanal, P. 2011. "How to Deal with Real Estate Booms," IMF Staff Discussion Note 11/02.

Edwards, S. 1988. "Real and Monetary Determinants of Real Exchange Rate Behavior: Theory and Evidence from Developing Countries," NBER Working Paper No. 2721, September.

Erdem, F.P., Ozen, E., and Unalmis, I. 2017. "Are Macroprudential Policies Effective Tools to Reduce Credit Growth in Emerging Markets?," Working Paper No. 17/12, Central Bank of Republic of Turkey, May.

Ilzetzki, E., Reinhart, C.M., and Rogoff, K.S. "Exchange Arrangements Entering the 21st Century: Which Anchor Will Hold?" *Quarterly Journal of Economics*, Forthcoming.

Fischer, S. 2001., "Exchange Rate Regimes: Is the Bipolar View Correct?" *Journal of Economic Perspectives*, 15(2), 3–24.

Frankel, J. 1999. "No Single Currency Regime is Right for All Countries at All Times" *Essays in International Finance*, 215, Princeton University.

Gopalan, S. and Rajan, R.S. 2017. "Does Foreign Bank Presence Affect Interest Rate Pass-Through in Emerging and Developing Economies?," *Journal of Macroeconomics*, 54: 373-292.

International Monetary Fund. 2018. "The IMF's Annual Macroprudential Policy Survey—Objectives, Design, and Country Responses," April, Washington DC.

Kim, S., and Mehrotra, A. 2018. "Effects of Monetary and Macroprudential Policies—Evidence from Four Inflation Targeting Economies," *Journal of Money, Credit and Banking*, Forthcoming.

Klein, M.W., and Shambaugh, J.C 2015. "Rounding the Corners of the Policy Trilemma: Sources of Monetary Policy Autonomy", *American Economic Journal: Macroeconomics*, 7(4): 33–66.

Kose, A.M., Prasad, E., Rogoff, K., and Wei, S.J. 2009. "Financial Globalization: A Reappraisal," *IMF Staff Papers*, 56(1): 8-62.

Kuttner, K.N. and Shim, I. 2013. "Can Non-Interest Rate Policies Stabilize Housing Markets? Evidence from a panel of 57 economies," BIS Working Papers No 433.

Lim, C.H., Columba, F., Costa, A., Kongsamut, P., Otani, A., Saiyid, M., Wezel, T., and Wu, X. 2011. "Macroprudential Policy: What Instruments and How Are They Used? Lessons from Country Experiences", IMF Working Paper 11/238.

Lombardi, D., and Siklos, P.L. 2016. "Benchmarking Macroprudential Policies: An Initial Assessment," *Journal of Financial Stability*, 27: 35-49.

Magud, N.E., Reinhart, C.M., and Rogoff, K.S. 2018. "Capital Controls: Myth and Reality," *Annals of Economics and Finance*, 19(1): 1-47.

Montiel, P., and Reinhart, C.M. 1999. "Do Capital Controls and Macroeconomic Policies Influence the Volume and Composition of Capital Flows? Evidence from the 1990s," *Journal of International Money and Finance*, 18: 619-635.

Mundell, R.A. 1963. "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates". *Canadian Journal of Economic and Political Science*, 29(4): 475–485.

Nelson, E. 2017. "The Continuing Validity of Monetary Policy Autonomy Under Floating Exchange Rates," Finance and Economics Discussion Series 2017-112, Board of Governors of the Federal Reserve System, Washington DC.

Obstfeld, M., Ostry, J.D., and Qureshi, M.S. 2017. "A Tie That Binds: Revisiting the Trilemma in Emerging Market Economies." IMF Working Paper 17/130, June.

Rajan, R.S. 2002. "Exchange Rate Policy Options for Southeast Asia: Is there a Case for Currency Baskets?", *The World Economy*, 25 (1): 137-63.

Rey, H. 2013. "Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence," Federal Reserve Bank of Kansas City Economic Policy Symposium.

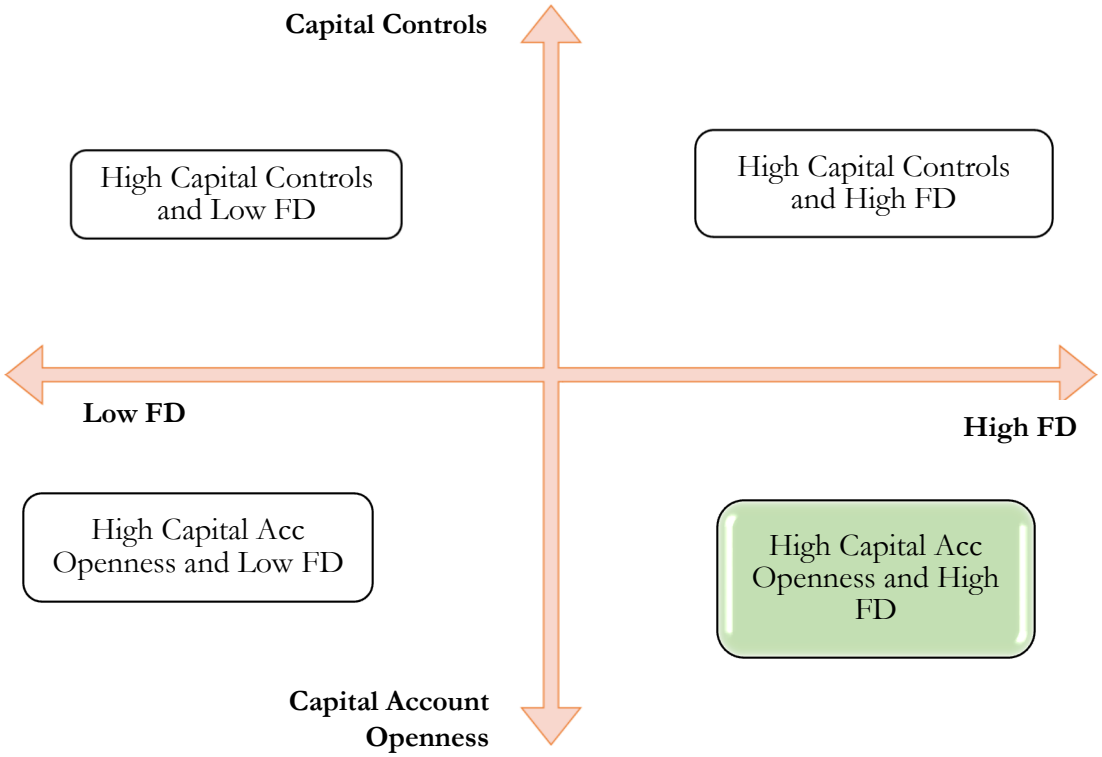
Shim, I., Bogdanova, B., Shek, J., and Subelyte, A. 2013. "Database for Policy Actions on Housing Markets," *BIS Quarterly Review*, September: 83-95.

Willett, T.D. 2003. "Fear of Floating Needn't Imply Fixed Rates: An OCA Approach to the Operation of Stable Intermediate Currency Regimes," *Open Economies Review*, 14(1): 71-91.

Zhang, L., and Zoli, E. 2016. "Leaning Against the Wind: Macroprudential Policy in Asia," *Journal of Asian Economics*, 42(C): 33-52.

Figure

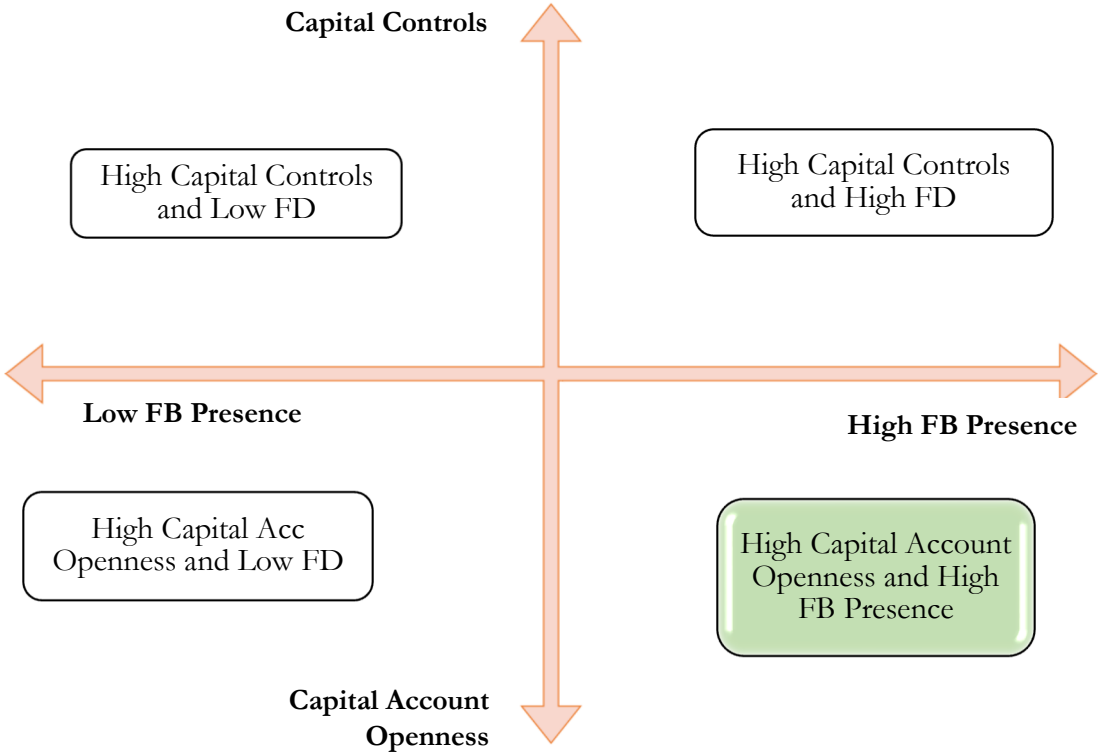
Figure 1: Capital Account Openness and Financial Development



Note: Shaded boxes reveal that the coefficient of the interaction term MaP*RIR is statistically significant at either the 1% or 5% level of significance only for those sub-samples representing those quadrants.

Source: Authors

Figure 2: Capital Account Openness and Foreign Bank Presence



Note: Shaded boxes reveal that the coefficient of the interaction term MaP*RIR is statistically significant at either the 1% or 5% level of significance only for those sub-samples representing those quadrants.

Source: Authors

Tables

Table 1: Summary Statistics

Variable	Obs	Countries	Mean	SD	Min	Max
Ln REER	1911	101	4.613514	0.228144	3.495625	6.178507
RIR Diff (%)	1384	88	0.087	0.261923	-0.9658	5.707863
Ln GDPPC	1924	103	7.514911	1.203259	4.848116	10.08132
Ln Lab Prod	1880	99	9.643493	1.006249	6.941504	11.81936
Gov Exp (%)	1901	103	14.92204	5.478901	0	47.19156
TOT Index	1747	103	110.534	32.6152	21.39672	290.9035
Ext Liab (%)	1922	102	0.959912	1.726503	0.039322	36.80625
EX Regime	1596	101	2.494987	1.163973	1	4
MaP	1302	93	1.72427	1.675893	0	9
Chinn-Ito Index	1864	100	0.469453	0.336647	0	1
Credit-to-GDP (%)	1868	101	34.82821	29.36717	1.17	165.72
FB Asset (%)	822	95	47.82603	31.88416	0	100

Table 2: Correlation Matrix

	REER	RIR Diff	**GDPPC**	Lab Prod	Gov Exp	TOT	Ext Liab	EX Regime	MaP	Chinn-Ito	Credit-to-GDP	FB Asset
REER	1											
RIR Diff	0.0847	1										
GDPPC	-0.0399	-0.1076	1									
Lab Prod	0.114	-0.1295	**0.8418**	1								
Gov Exp	0.0637	-0.0732	0.296	0.2683	1							
TOT	0.1243	-0.0561	0.005	0.1142	0.0353	1						
Ext Liab	-0.0119	0.0008	0.0912	0.0438	0.0455	-0.1138	1					
EX Regime	-0.1497	0.0866	-0.0589	-0.032	-0.198	0.0213	-0.0047	1				
MaP	0.0809	0.1053	0.1342	0.0627	-0.0957	0.0005	-0.0142	0.0306	1			
Chinn-Ito	-0.0199	-0.016	0.3763	0.2966	-0.0112	-0.091	0.1337	0.0311	0.0399	1		
Credit-to-GDP	0.0936	-0.0267	0.4614	0.3294	0.1073	-0.1158	0.1624	-0.0406	0.1615	0.1232	1	
FB Asset	-0.0344	0.1351	0.07	-0.0125	0.2788	-0.2065	0.0859	-0.1646	-0.2435	0.2763	-0.1959	1

Table 3: Do MaPs Moderate Financial Dutch Disease?
Baseline Fixed Effects Estimates

	(1)	(2)	(3)	(4)
Dep Var: REER	**Baseline**	**MaP**	**Borr MaP**	**Fin MaP**
RIR Differential	**0.220*** **	**0.452*** **	**0.253** **	**0.493*** **
	(0.0518)	(0.136)	(0.119)	(0.141)
GDP Per Capita	0.277***	0.334***	0.339***	0.330***
	(0.0485)	(0.0491)	(0.0490)	(0.0491)
Gov Exp	0.00671***	-8.58e-05	-0.000498	-9.33e-05
	(0.00192)	(0.00206)	(0.00206)	(0.00205)
TOT	0.000209	0.000500**	0.000486**	0.000492**
	(0.000219)	(0.000220)	(0.000222)	(0.000219)
External Liab	-0.00580*	-0.00312	-0.00320	-0.00302
	(0.00339)	(0.00283)	(0.00284)	(0.00282)
Ex Regime	-0.0225***	-0.0136**	-0.0142**	-0.0126**
	(0.00571)	(0.00637)	(0.00640)	(0.00639)
Ex Regime*RIR		-0.0718*	-0.0363	-0.0829*
		(0.0441)	(0.0442)	(0.0451)
MaP		0.00282		
		(0.00794)		
MaP*RIR		**-0.0898*** **		
		(0.0322)		
Borr-Targeted MaP			-0.0139	
			(0.0148)	
Borr MaP*RIR			-0.0570	
			(0.109)	
Fin Inst- Targeted MaP				0.0106
				(0.00974)
Fin Inst MaP*RIR				**-0.110*** **
				(0.0359)
Constant	2.505***	2.102***	2.073***	2.120***
	(0.370)	(0.373)	(0.373)	(0.372)
Observations	1,017	773	773	773
R-squared	0.217	0.328	0.322	0.329
Number of cid	84	78	78	78
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Effectiveness of Individual MaPs

	(1)	(2)	(3)	(4)
Dep Var: REER	**DP**	**CONC**	**FCL**	**RR**
RIR Differential	**0.297****	**0.424*****	**0.227***	**0.373****
	(0.118)	(0.136)	(0.118)	(0.120)
GDP Per Capita	0.331***	0.327***	0.342***	0.369***
	(0.0486)	(0.0488)	(0.0484)	(0.0458)
Gov Exp	-0.000516	-5.75e-05	-0.000417	0.000219
	(0.00204)	(0.00206)	(0.00204)	(0.00201)
TOT	0.000509**	0.000482**	0.000428*	0.000251
	(0.000218)	(0.000220)	(0.000219)	(0.000218)
External Liab	-0.00307	-0.00325	-0.00312	-0.00312
	(0.00281)	(0.00282)	(0.00281)	(0.00284)
Ex Regime	-0.0147**	-0.0121*	-0.0166***	-0.0125**
	(0.00633)	(0.00640)	(0.00641)	(0.00624)
Ex Regime*RIR	-0.0469	-0.0711	-0.0181	-0.0603
	(0.0428)	(0.0447)	(0.0440)	(0.0412)
DP	0.0664**			
	(0.0307)			
DP*RIR Diff	**-0.727*****			
	(0.198)			
CONC		0.0409**		
		(0.0201)		
CONC*RIR Diff		**-0.246****		
		(0.0974)		
FC			-0.0436	
			(0.0297)	
FC*RIR Diff			**-0.425****	
			(0.169)	
RR				0.0157
				(0.0393)
RR*RIR Diff				**-0.162***
				(0.0969)
Constant	2.130***	2.140***	2.067***	1.809***
	(0.371)	(0.371)	(0.369)	(0.347)
Observations	773	773	773	773
R-squared	0.333	0.328	0.333	0.313
Number of cid	78	78	78	78
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: MaPs and Financial Dutch Disease - System-GMM Estimation

	(1)	(2)	(3)	(4)	(5)
Dep Var: REER	**MaPs**	**DP**	**CONC**	**FCL**	**RR**
$REER_{t-1}$	**0.746*** **	**0.737*** **	**0.746*** **	**0.758*** **	**0.744*** **
	(0.00329)	(0.00833)	(0.00553)	(0.00737)	(0.00491)
RIR Differential	**0.0385*** **	**0.0576*** **	**0.0553*** **	**0.0869*** **	**0.0223**
	(0.00714)	(0.0221)	(0.0196)	(0.0111)	(0.0159)
GDP Per Capita	0.000767	0.00342***	0.00103*	-0.000412	0.00337***
	(0.000498)	(0.00103)	(0.000564)	(0.00110)	(0.000932)
Gov Exp	-0.000164	-0.000654***	-0.000196	-0.000632**	-0.000676***
	(0.000146)	(0.000227)	(0.000149)	(0.000255)	(0.000241)
TOT	0.000702***	0.000634***	0.000621***	0.000665***	0.000681***
	(3.98e-05)	(7.62e-05)	(3.55e-05)	(8.85e-05)	(4.75e-05)
Ext Liab	0.00353***	0.00343***	0.00316***	0.00353***	0.00314***
	(0.000205)	(0.000259)	(0.000162)	(0.000222)	(0.000242)
Ex Regime	-0.00484***	-0.00493***	-0.00528***	-0.00583***	-0.00478***
	(0.000772)	(0.00129)	(0.000893)	(0.00128)	(0.00111)
MaP	0.00706***				
	(0.000486)				
MaP*RIR Diff	**-0.0773*** **				
	(0.00290)				
DP		0.0806***			
		(0.00715)			
DP*RIR Diff		**-0.351*** **			
		(0.0354)			
CONC			0.0380***		
			(0.00250)		
CONC*RIR Diff			**-0.297*** **		
			(0.0193)		
FC				0.0101**	
				(0.00473)	
FC*RIR Diff				**-0.0306**	
				(0.0486)	
RR					0.0296***
					(0.00578)
RR*RIR Diff					**-0.264*** **
					(0.0244)
Constant	1.103***	1.143***	1.104***	1.080***	1.103***
	(0.0190)	(0.0438)	(0.0257)	(0.0380)	(0.0245)
Observations	800	800	800	791	800
Number of countries	78	78	78	77	78
Number of Instruments	73	73	73	73	73

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Does MaP Effectiveness Vary by Income Levels?

	(1)	(2)
Dep Var: REER	**MIC**	**LIC**
RIR Differential	**0.548*** **	**0.442***
	(0.155)	(0.253)
GDP Per Capita	0.353***	-0.522**
	(0.0361)	(0.206)
Gov Exp	0.00679***	-0.0109*
	(0.00254)	(0.00591)
TOT	0.000699***	0.000300
	(0.000263)	(0.00106)
External Liab	-0.00331	-0.118
	(0.00295)	(0.136)
Ex Regime	-0.0150*	0.0296
	(0.00787)	(0.0207)
Ex Regime*RIR	-0.0772	-0.0705
	(0.0538)	(0.0824)
MaP	-0.00891	0.0789**
	(0.00940)	(0.0345)
MaP*RIR	**-0.0897****	**-0.214***
	(0.0419)	(0.105)
Constant	1.700***	7.696***
	(0.272)	(1.352)
Observations	565	143
R-squared	0.312	0.201
Number of countries	56	13
Country FE	YES	YES
Year FE	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7a: Effectiveness of MaPs: Does the Extent of Capital Account Openness Matter?

	(1)	(2)
Dep Var: REER	**High KA Open**	**Low KA Open**
RIR Differential	**0.280*** **	**0.234** **
	(0.0924)	(0.0907)
GDP Per Capita	0.353***	0.243***
	(0.0417)	(0.0519)
Gov Exp	0.0136***	-0.00248
	(0.00301)	(0.00270)
TOT	-0.000319	0.000830**
	(0.000316)	(0.000335)
External Liab	-0.00233	-0.0504
	(0.00249)	(0.0323)
Ex Regime	-0.0134*	-0.00733
	(0.00765)	(0.00917)
MaP	0.0183*	-0.00779
	(0.0104)	(0.0132)
MaP*RIR	**-0.0963** **	**-0.0277**
	(0.0418)	(0.0500)
Constant	1.595***	2.810***
	(0.326)	(0.370)
Observations	388	410
R-squared	0.265	0.230
Number of cid	48	49
Country FE	YES	YES
Year FE	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7b: Effectiveness by Types of MaPs: Does the Extent of Capital Account Openness Matter?

	(1)	(2)	(3)	(4)
Dep Var: REER	**Borr-MaP Hi KaOp**	**Borr-MaP Lo KaOp**	**FI-MaP Hi KaOp**	**FI-MaP Lo KaOp**
RIR Differential	**0.142****	**0.215*****	**0.246*****	**0.240****
	(0.0680)	(0.0712)	(0.0892)	(0.0933)
GDP Per Capita	0.357***	0.243***	0.358***	0.210***
	(0.0407)	(0.0425)	(0.0413)	(0.0510)
Gov Exp	0.0141***	-0.00258	0.0132***	-0.00269
	(0.00305)	(0.00265)	(0.00301)	(0.00271)
TOT	-0.000307	0.000815**	-0.000268	0.000880***
	(0.000321)	(0.000332)	(0.000316)	(0.000335)
External Liab	-0.00249	-0.0506	-0.00231	-0.0497
	(0.00250)	(0.0320)	(0.00250)	(0.0323)
Ex Regime	-0.0154**	-0.00683	-0.0139*	-0.00860
	(0.00746)	(0.00904)	(0.00794)	(0.00916)
Borr-Targeted MaP	0.0341	-0.0312		
	(0.0212)	(0.0216)		
Borr MaP*RIR	**-0.134**	**-0.109**		
	(0.138)	(0.166)		
Fin Inst- Targeted MaP			0.0134	0.00754
			(0.0125)	(0.0168)
Fin Inst MaP*RIR			**-0.0823****	**-0.0265**
			(0.0432)	(0.0581)
Constant	1.578***	2.808***	1.568***	3.033***
	(0.324)	(0.313)	(0.324)	(0.361)
Observations	388	410	388	410
R-squared	0.258	0.235	0.260	0.230
Number of cid	48	49	48	49
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Effectiveness of MaPs: Does the Extent of Forex Reserve Accumulation Matter?

	(1)	(2)	(3)	(4)
Dep Var: REER	**High Res**	**Low Res**	**FI-MaP Hi Res**	**FI-MaP Lo Res**
RIR Differential	0.255**	0.310***	0.198*	0.363***
	(0.113)	(0.0854)	(0.108)	(0.0889)
GDP Per Capita	0.644***	0.228***	0.489***	0.139***
	(0.0856)	(0.0664)	(0.0519)	(0.0506)
Gov Exp	0.0132***	0.00246	0.0162***	0.00447*
	(0.00474)	(0.00223)	(0.00465)	(0.00233)
TOT	0.000194	-0.000329	0.000102	-8.84e-05
	(0.000303)	(0.000392)	(0.000292)	(0.000415)
Ext Liab	0.0129	-0.00193	-0.0102	-0.000455
	(0.0250)	(0.00269)	(0.0232)	(0.00283)
Ex Regime	-0.0236***	-0.00442	-0.0184**	0.00334
	(0.00850)	(0.00798)	(0.00879)	(0.00857)
MaP	-0.0287***	0.0550***		
	(0.0101)	(0.0131)		
MaP*RIR	**-0.0343**	**-0.221*** **		
	(0.0417)	(0.0525)		
Fin Inst- Targeted MaP			-0.0227	0.0538***
			(0.0139)	(0.0144)
Fin Inst MaP*RIR			**-0.0134**	**-0.254*** **
			(0.0475)	(0.0573)
Constant	-0.706	2.981***	0.429	3.476***
	(0.705)	(0.450)	(0.418)	(0.339)
Observations	438	356	438	356
R-squared	0.368	0.293	0.284	0.140
Number of cid	55	45	55	45
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9a: Effectiveness of MaPs: Does the Degree of Financial Development Matter?

	(1)	(2)
Dep Var: REER	**High FD**	**Low FD**
RIR Differential	**0.396*** **	**0.209** **
	(0.124)	(0.0881)
GDP Per Capita	0.394***	0.327***
	(0.0537)	(0.0524)
Gov Exp	0.00576	-0.00148
	(0.00520)	(0.00254)
TOT	0.000259	-3.08e-05
	(0.000356)	(0.000348)
External Liab	-0.00143	-0.114***
	(0.00239)	(0.0298)
Ex Regime	-0.0236***	0.00899
	(0.00798)	(0.00986)
MaP	-0.0369***	-0.00232
	(0.0130)	(0.0115)
MaP*RIR	**-0.115** **	**-0.0384**
	(0.0526)	(0.0468)
Constant	1.373***	2.276***
	(0.450)	(0.377)
Observations	315	443
R-squared	0.228	0.242
Number of cid	53	55
Country FE	YES	YES
Year FE	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9b: Effectiveness by Types of MaPs: Does the Degree of Financial Development Matter?

	(1)	(2)	(3)	(4)
Dep Var: REER	**Borr-MaP Hi FD**	**Borr-MaP Lo FD**	**FI-MaP Hi FD**	**FI-MaP Lo FD**
RIR Differential	**0.266*** **	**0.182*** **	**0.325** **	**0.189** **
	(0.0949)	(0.0700)	(0.155)	(0.0902)
GDP Per Capita	0.339***	0.322***	0.340***	0.333***
	(0.0486)	(0.0494)	(0.0957)	(0.0531)
Gov Exp	0.00340	-0.00168	0.00618	-0.00163
	(0.00524)	(0.00252)	(0.00813)	(0.00255)
TOT	6.40e-05	-5.29e-05	0.000351	-4.11e-05
	(0.000367)	(0.000351)	(0.000438)	(0.000349)
External Liab	-0.00114	-0.117***	-0.00101	-0.115***
	(0.00242)	(0.0297)	(0.000916)	(0.0298)
Ex Regime	-0.0220***	0.0110	-0.0220*	0.00861
	(0.00812)	(0.00955)	(0.0111)	(0.00992)
Borr-Targeted MaP	-0.0430**	0.0158		
	(0.0203)	(0.0266)		
Borr MaP*RIR	-0.204	-0.210		
	(0.150)	(0.175)		
Fin Inst- Targeted MaP			-0.0341	-0.00738
			(0.0267)	(0.0137)
Fin Inst MaP*RIR			**-0.0877***	-0.0258
			(0.0481)	(0.0523)
Constant	1.827***	2.300***	1.782**	2.242***
	(0.410)	(0.364)	(0.769)	(0.379)
Observations	315	443	315	443
R-squared	0.205	0.243	0.207	0.242
Number of cid	53	55	53	55
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9c: Financial Development and Effectiveness of MaPs: Alternative Definitions of Financial Development

	(1)	(2)	(3)	(4)
Dep Var: REER	**Hi FD-1**	**Lo FD-1**	**Hi FD-2**	**Low FD-2**
RIR Differential	**0.774*** **	**0.139**	**0.797*** **	**0.132**
	(0.215)	(0.0957)	(0.194)	(0.102)
GDP Per Capita	0.619***	0.281***	0.484***	0.432***
	(0.0869)	(0.0609)	(0.0843)	(0.0628)
Gov Exp	0.0166***	-0.00360	0.0146**	-0.00134
	(0.00497)	(0.00240)	(0.00568)	(0.00247)
TOT	0.000691*	-0.000105	0.000600	-0.000416
	(0.000417)	(0.000430)	(0.000410)	(0.000404)
External Liab	-0.00224	-0.117***	-0.000750	-0.125***
	(0.00268)	(0.0295)	(0.00205)	(0.0303)
Ex Regime	-0.0224**	0.0119	-0.0104	-0.00644
	(0.00872)	(0.0109)	(0.00799)	(0.0103)
MaP	-0.0343***	0.0457***	-0.0335***	0.00698
	(0.0107)	(0.0127)	(0.0111)	(0.0119)
MaP*RIR	**-0.117***	**-0.0658**	**-0.144****	**-0.00811**
	(0.0619)	(0.0469)	(0.0557)	(0.0448)
Constant	-0.737	2.664***	0.351	1.594***
	(0.716)	(0.415)	(0.719)	(0.449)
Observations	345	283	254	371
R-squared	0.454	0.408	0.402	0.365
Number of cid	42	35	39	49
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10a: Effectiveness of MaPs: Does the Degree of Foreign Bank Presence Matter?

	(1)	(2)
Dep Var: REER	**High FB**	**Low FB**
RIR Differential	**0.630*** **	**-0.152**
	(0.163)	(0.171)
GDP Per Capita	0.540**	0.214*
	(0.205)	(0.121)
Gov Exp	0.00438	0.00834
	(0.00430)	(0.00595)
TOT	0.00175**	0.00110*
	(0.000805)	(0.000574)
External Liab	-0.000267	-0.0518
	(0.00112)	(0.0504)
Ex Regime	0.0780**	-0.00758
	(0.0366)	(0.0198)
MaP	0.00296	-0.0430*
	(0.0139)	(0.0231)
MaP*RIR	**-0.150*** **	**0.112**
	(0.0445)	(0.0964)
Constant	-0.213	2.820***
	(1.669)	(0.876)
Observations	194	244
R-squared	0.525	0.506
Number of cid	38	47
Country FE	YES	YES
Year FE	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10b: Effectiveness by Types of MaPs: Does the Degree of Foreign Bank Presence Matter?

	(1)	(2)	(3)	(4)
Dep Var: REER	**Borr-MaP Hi FB**	**Borr-MaP Lo FB**	**FI-MaP Hi FB**	**FI-MaP Lo FB**
RIR Differential	**0.330*** **	**-0.0212**	**0.628*** **	**-0.137**
	(0.0939)	(0.0842)	(0.176)	(0.139)
GDP Per Capita	0.597***	0.481***	0.651***	0.500***
	(0.0655)	(0.0635)	(0.102)	(0.0702)
Gov Exp	0.00637	0.0115***	0.00494	0.0119***
	(0.00404)	(0.00426)	(0.00431)	(0.00432)
TOT	0.00129**	0.00139***	0.00150*	0.00138***
	(0.000627)	(0.000401)	(0.000827)	(0.000395)
External Liab	-0.000653	-0.0396	-0.000764	-0.0349
	(0.00218)	(0.0375)	(0.000745)	(0.0377)
Ex Regime	0.0825**	-0.00166	0.0882***	-0.00428
	(0.0367)	(0.0211)	(0.0248)	(0.0207)
Borr-Targeted MaP	0.0430	-0.0137		
	(0.0271)	(0.0225)		
Borr MaP*RIR	**-0.229**	**0.155**		
	(0.182)	(0.136)		
Fin Inst- Targeted MaP			-0.00919	-0.0185
			(0.0137)	(0.0213)
Fin Inst MaP*RIR			**-0.153*** **	**0.0997**
			(0.0502)	(0.0776)
Constant	-0.630	0.691	-1.058	0.569
	(0.512)	(0.481)	(0.828)	(0.522)
Observations	194	244	194	244
R-squared	0.475	0.434	0.510	0.436
Number of cid	38	47	38	47
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Effectiveness of MaPs under Differing Degrees of Capital Account Openness and Financial Development

	(1)	(2)	(3)	(4)
Dep Var: REER	**Hi KaOp & Hi FD**	**Hi KaOp & Lo FD**	**Lo KaOp & Hi FD**	**Lo KaOp & Lo FD**
RIR Differential	**0.364*** **	**0.184**	**0.370**	**0.157**
	(0.136)	(0.187)	(0.288)	(0.101)
GDP Per Capita	0.820***	0.227***	0.160	0.478***
	(0.154)	(0.0856)	(0.141)	(0.0822)
Gov Exp	0.0150*	0.0107***	0.00317	-0.00858***
	(0.00814)	(0.00339)	(0.00979)	(0.00319)
TOT	0.000506	-0.00170**	0.000150	0.000876**
	(0.000496)	(0.000653)	(0.000833)	(0.000421)
External Liab	-0.00179	-0.0746**	0.0455	-0.0774*
	(0.00243)	(0.0372)	(0.0626)	(0.0424)
Ex Regime	-0.0308**	0.00579	-0.0185**	-0.00941
	(0.0127)	(0.0137)	(0.00927)	(0.0135)
MaP	-0.00563	0.0287*	-0.00420	-0.0502**
	(0.0227)	(0.0167)	(0.0165)	(0.0205)
MaP*RIR	**-0.129****	**-0.145**	**-0.106**	**-0.00708**
	(0.0568)	(0.0744)	(0.118)	(0.0537)
Constant	-2.406*	2.892***	3.312***	1.484**
	(1.370)	(0.609)	(1.178)	(0.576)
Observations	167	192	145	251
R-squared	0.477	0.448	0.269	0.469
Number of cid	31	28	30	36
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Effectiveness of MaPs under Differing Degrees of Capital Account Openness and Foreign Bank Presence

	(1)	(2)	(3)	(4)
Dep Var:	**Hi KaOp & Hi FB**	**Hi KaOp & Lo FB**	**Lo KaOp & Hi FB**	**Lo KaOp & Lo FB**
RIR Differential	**0.594*** **	**-0.0851**	**0.974*** **	**-0.345**
	(0.217)	(0.254)	(0.245)	(0.274)
GDP Per Capita	0.502***	-0.00980	0.597**	0.426***
	(0.145)	(0.236)	(0.271)	(0.0800)
Gov Exp	0.00972**	-0.0177**	-0.0107	0.0161***
	(0.00460)	(0.00746)	(0.00973)	(0.00539)
TOT	-0.000293	0.000954	0.00305**	0.00143*
	(0.00101)	(0.000835)	(0.00116)	(0.000744)
External Liab	-0.00106	0.0613	-0.0580	-0.0337
	(0.00206)	(0.0504)	(0.0648)	(0.0382)
Ex Regime	0.0636*	0.0119		-0.0322*
	(0.0358)	(0.0326)		(0.0176)
MaP	0.0141	-0.0418	-0.0177	-0.0133
	(0.0145)	(0.0271)	(0.0281)	(0.0281)
MaP*RIR	**-0.173*** **	**0.0492**	**-0.116**	**0.203**
	(0.0630)	(0.0887)	(0.0868)	(0.135)
Constant	0.0349	4.730**	0.227	1.216**
	(1.236)	(1.831)	(1.876)	(0.552)
Observations	130	99	61	145
R-squared	0.564	0.621	0.638	0.538
Number of cid	24	26	16	29
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Asymmetry of Real Interest Rates and Effectiveness of MaPs

	(1)	(2)
Dep Var: REER	**Decreasing RIR**	**Increasing RIR**
RIR Differential	**0.153**	**0.485*** **
	(0.166)	(0.124)
GDP Per Capita	0.303***	0.313***
	(0.0682)	(0.0862)
Gov Exp	0.00178	0.00588*
	(0.00372)	(0.00315)
TOT	0.000311	0.000648
	(0.000357)	(0.000526)
External Liab	-0.00276	-0.00290
	(0.00368)	(0.00450)
Ex Regime	-0.0221**	-0.000231
	(0.00874)	(0.0123)
MaP	-0.00741	0.0122
	(0.0107)	(0.0151)
MaP*RIR	**-0.0885**	**-0.116** **
	(0.0604)	(0.0541)
Constant	2.255***	1.988***
	(0.529)	(0.644)
Observations	368	258
R-squared	0.345	0.400
Number of cid	62	60
Country FE	YES	YES
Year FE	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Annex Table A1: Sources and Definitions

Variable	Definition	Source
Macro Prudential Index (MPI)	Index constructed by Cerutti et al. (2015) based on IMF survey on Global Macroprudential Policy Instruments (GMPI). For details see Cerutti et al. (2015)	Cerutti et al. (2015)
Real Fed Funds Rate	Nominal Fed Funds Rate adjusted for inflation	St, Louis FRED Database
Real Effective Exchange Rate (REER)	CPI-Based REER is calculated from the nominal effective exchange rate and a measure of the relative price or cost between the country under study and its trading partners.	Bruegel. Available from http://bruegel.org/publications/datasets/real-effective-exchange-rates-for-178-countries-a-new-database/
Chinn-Ito Index	Normalized Chinn-Ito Index ranging between 0 and 1; indicates extent of capital account openness in a country, with higher values indicating higher openness and lower values otherwise.	Chin and Ito
Government Consumption Expenditure (% of GDP)	General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation.	Global Financial Development Database – World Bank
Terms of Trade Index	Net barter terms of trade index is calculated as the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000.	Global Financial Development Database – World Bank
Foreign Bank Assets (%)	Share of foreign bank assets in total banking assets	Global Financial Development Database - World Bank
GDP Per Capita (Constant 2000 USD)	GDP Per Capita measured in 2000 US dollars	Global Financial Development Database - World Bank

Exchange Rate Regime	1 – no separate legal tender/ pre-announced pegs 2- crawling pegs narrower than or equal to+/-2% 3-managed floating 4-freely floating 5-freely falling 6-dual market in which parallel market data is missing	Ilzetzki, Reinhart and Rogoff (2018)
Private Credit to GDP	The financial resources provided to the private sector by deposit money banks as a share of GDP. Deposit money banks comprise commercial banks and other financial institutions that accept transferable deposits, such as demand deposits. (International Monetary Fund, International Financial Statistics, and World Bank GDP estimates)	Global Financial Development Database - World Bank