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LaGarda, Guillermo and Gallagher, Kevin and Linares, Jennifer

Boston University, Interamerican Development Bank

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Capital Openness and Income Inequality: A Cross-Country Study and The Role of CCT in Latin America*

Guillermo LaGarda[1,2], Jennifer Linares[1], and Kevin Gallagher[2]

[1]Inter-American Development Bank
[2]Boston University Global Economic Governance Initiative

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Abstract

Recently, capital controls have made a comeback as both policymakers and academia have questioned the net benefits of liberalization and economic growth, especially after the 2008 Great Recession. While that literature has largely concluded that capital account liberalization may have detrimental effects on growth and accentuate financial instability in emerging markets, relatively little literature has examined the impacts of capital account liberalization on income inequality. Thus, this paper investigates the extent to which liberalization is beneficial for countries, conditional on institutional strength and financial depth. We specifically explore the differential impacts of capital account liberalization on income inequality during periods of economic expansion and contraction. The main findings suggest that the net impact of financial liberalization on income inequality is ambiguous during periods of economic expansion but detrimental during contractions. However, we also find that capital account openness needs not to be detrimental on income inequality if institutions are strong or - as it is the case in Latin America -if social safety nets are available.

1 Introduction

Capital openness has long been associated with financial and banking crises. Most recently, the financial crisis raised concerns among policymakers about the effects of capital openness and the growing income inequality within countries. This reaction is not baseless: Over the past three decades, increases in financial liberalization and economic downturns have coincided with income inequality aggravation. In response, there has been an increase in capital controls and the re-regulation of the financial account.[1] This return to *orthodoxy* could be a set back for claimants in favor and even for those who believe in global coordination.

The troubling decision of choosing sides between *closing* rather than *opening* has not been exclusive of policymakers. Capital controls are making an intellectual comeback, too:

 Corresponding author Guillermo LaGarda (glagarda@iadb.org)

[1]The concept of -capital flow liberalization is used in this paper interchangeably with -capital account liberalization and -financial account liberalization that are used traditionally in the literature

"The general presumption was that capital account liberalization was always good, and capital controls were nearly always bad. I've seen the thinking change, partly because it was already wrong then, and because it was particularly wrong in the crisis."

said Olivier Blanchard, former professor of The Massachusetts Institute of Technology (MIT) and Chief Economist of the International Monetary Fund (IMF). As Blanchard said, openness has traditionally been seen as pareto improving since it expands possibility frontiers. In contrast, closing or restricting the capital account has been seen as detrimental to countries' economies. It can, for instance, discourage inward investment, as investors may fear they will not be able to easily withdraw their money during an economic downturn. This was the case of Iceland, which, during its 2008 financial crisis, imposed capital controls that not only led to colossal outflows, but also crimped investment and financing for Icelandic companies. Eight years later, the country only now is inching toward eliminating these controls.

But is capital account liberalization the way to go? Claimants of openness have long argued that it increases risk-sharing and domestic consumption smoothing. However, when financial institutions are weak and access to credit is not inclusive, liberalization may bias financial access in favor of those better off and therefore increase income inequality. It could go the other way as well: on the likelihood of financial crises, income inequality could fall as bankruptcies and falling asset prices may have a greater impact on those with access to financial markets. On the other hand, long-lasting recessions may disproportionately hurt the poor as they have limited access to banking services to hedge against risks. Finally, capital account openness may affect the distribution of income through its effect on the labor share of income. The best way to think of this is in the context of a bargaining game between labor and capital. If capital account liberalization represents a credible threat to reallocate production abroad, it may lead to an increase in the profit-wage ratio and to a decrease in the labor share of income.[2]

The switch to orthodoxy could be partly attributed to the empirical work finding evidence to support the *cons* over the *pros*. Should we change gears and revert capital openness? A surge of discussions addressing this question suggests that this issue is far from being a closed or even a cold case. Most of the literature focuses on within-country experience[3] or on a limited set of countries[4], thus leaving key issues unaddressed.Important questions remain, including: under what circumstances is capital openness negatively related with income inequality, or if there is evidence that capital account openness only exacerbates income inequality during downturns and improves it during economic expansion? Ultimately we would like to answer if there is a right moment to restrict the capital account during contractions and if these measures should be coordinated worldwide.

This paper contributes to the empirical literature on the effects of capital openness on income inequality by examining the distributional consequences of capital account liberalization for a large (unbalanced) panel of 141 countries from 1990 to 2013. We specifically focus on answering four questions: i) Is there (on average) a positive or negative relation between income inequality and capital account openness? ii) Are the negative effects of income distribution larger during booms, busts and/or regular periods? iii) Have *ex-ante* and *ex-post* capital openness policies contributed to reduce income inequality? iv) Can safety nets explain the favorable relationship between capital openness and income inequality in Latin America? To the best of our knowledge, there is still no research document covering these issues. Therefore, our research contributes to the literature and also brings to consideration if capital account liberalization occurred too rapidly relative to the implementation of other policies.

We find that the level of financial development and the occurrence of crises play a key role in shaping the incidence that financial globalization reforms have on income inequality. In particular, we present evidence that capital account

[2] Harrison et al. (2002)
[3] Larrain (2014)
[4] Das and Mohapatra (2003)

liberalization reforms are associated with a statistically significant and persistent increase in income inequality *ex post* a crisis. However, results are ambiguous during economic expansions. The increase of income inequality is, however, conditional on the policies that accompanied liberalization reforms. In particular, we find that *ex-ante* implementation of social safety nets (specifically conditional cash transfers) reduces the magnitude of negative impact. Closing the accounts *ex post* also alleviate the negative effects, albeit, in a lower magnitude.

The rest of the paper is organized as follows. Section 2 presents a brief summary of the related literature. Section 3 focuses on describing data and showing some descriptive statistics regarding the evolution of inequality and capital account openness. Section 4 specifies the methodology and is followed by a discussion of results in Section 5. Chapter 6 concludes.

2 Related Literature

A number of studies have found a positive relationship between financial openness and economic growth (Quinn and Toyoda (2008); Arteta et al. (2001)[5]; Henry (2006)). However, although financial integration has been historically associated with positive outcomes in the developed world, the results are mixed for emerging economies. Among the empirical evidence, Reinhart and Reinhart (2008), using a panel of 181 countries for the period 1960 to 2007, concluded that periods of high capital flows result in a greater likelihood of subsequent financial and economic crises. This could be the case for countries with "premature" liberalization, such as Mexico in the mid-90s and several Asian economies in the late 90s (Glick et al. (2006)), which, after a period of foreign direct investment and portfolio investment bliss, experienced massive capital outflows. Financial openness has also been detrimental to economies with distorted domestic markets, as domestic resources were concentrated in less efficient sectors Wang (2002). In other instances, liberalization has resulted in a minimal increase in inflows, as the case of some African countries[6].

More optimistic results are presented in Bussiere and Fratzscher (2008), who, using a panel of 45 advanced and emerging economies found short-term positive causality between economic growth and income inequality but low significance in the long-term. Klein and Olivei (2008) find a significant positive effect between financial liberalization, financial depth and growth in OECD countries, which suggests that the benefits of financial account openness are obtained in the presence of institutions and sound macroeconomic policies. Similarly, Prasad and Rajan (2008) mention that there may be a threshold of institutional development where liberalization costs outweigh the benefits, or that collateral benefits of liberalization are greater at higher levels of development. Ferreira and Laux (2009), using a panel of 50 countries from 1988 to 2001, find a positive relationship between portfolio investment and growth in both developed and emerging economies. In a similar manner, Henry (2003) explores 18 episodes of equity market liberalization and find benefits reflected in the cost of capital, accumulation of capital stock and output growth per worker. Finally, in a recent discussion,Quinn and Toyoda (2008) identified significant causality between equity market liberalization and economic growth. This statistical ambiguity is also present at the theoretical level. In principle, improved access to private savings would allow a more efficient selection of investment and thus induce growth in the recipient country. However, distortions could limit the benefits of integration in several instances, as argued in Hellmann et al. (2000). A similar case of information asymmetries is presented in McKinnon and Pill (1996). Even Gourinchas and Jeanne (2006) show limited benefits of transitioning from an autarkic state to an open economy, with regards to improvements in domestic productivity.

[5]However, the effects vary with time
[6]Kose and Prasad (2012)

A less researched topic is the relationship between financial liberalization and income inequality. Claessens and Perotti (2007) explore how political influence encourages liberalization reforms that improve the financial access of the elite. This induces inequality because the benefits of openness are absorbed by the elites while risks are assimilated by the rest of the population. The authors concluded that financial reforms are only beneficial when accompanied by supervisory institutions. Similarly, Bumann and Lensink (2016) develop a theoretical model of the banking sector and explore two types of countries: one with more financial depth than the other. Liberalization reduces credit costs, driving demand for loans and raising interest rates to attract savings deposits. This improves income distribution. Empirically, the authors prove that the direct relationship between openness and inequality is positive, but that it is subject to financial depth. Our research complements the above findings. In addition to incorporating institutional components and financial depth into our analysis, we explore atypical economic events. This allows us to confirm if capital account liberalization is beneficial in absence of an atypical economic cycle. This method is different from Bumman and Lensink's, who do not account for economic booms or busts.

Furceri (2015) proposes a similar approach with objectives different from ours: The author estimated a dynamic panel using an exogenous monetary shock. However their goal is to document the resulting multipliers from the impulse-response function. They find that after a monetary shock, inequality and labor share of income reduces both in the short and medium term. His results suggest that the largest increases in income inequality occurred in countries with weaker financial institutions and when followed by financial crises. Atkinson and Morelli (2011) also sought to quantify the changes in income distribution during atypical periods-crises. However, unlike this paper and that of Furceri (2015), they did not control for financial openness. They conclude that there are no consistent patterns within the sample. This is because a crisis can encourage the creation of policies that permanently change the level of income inequality, such as the creation of the Social Security program in the United States after the 1929 depression.

Larrain (2014) links financial openness with the labor market. Liberalization allows financially constrained companies to receive capital. Since capital and skilled labor are relative complements, there is an increase in the relative demand for skilled labor, thus resulting in an uneven salary increase. Larrain's hypothesis is confirmed using industry-level data for 20 European countries. Our methodology does not include correlations between financial liberalization and increases in skilled labor (or relative wages); at least not explicitly. However, we include in our estimations schooling and trade openness to account for *wage-skill* differentials.

Arora et al. (2013), Gallagher et al. (2012), and Helleiner (2011) discuss the role of international coordination and global governance. Their common denominator is that capital openness requires comprehensive planning. Liberalization polices should be timed and sequenced in order to ensure that their benefits outweigh their costs. Contrary to other academic research, they consider that financial liberalization policies should be designed as a function of both domestic and multilateral effects. Appropriate policy responses comprise a range of measures and involve, both, countries that are senders and recipients of capital flows. Our investigation does not test hypotheses on the degree of financial linkages within countries or discuss the direct effects of international assistance by multilaterals. However, our findings encourage the request for better coordination that may help minimize the detrimental effects on income distribution that greater financial openness may bring.

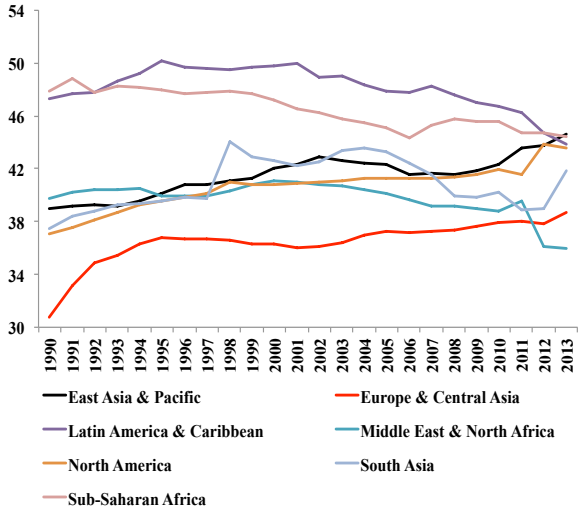
3 Measures and Correlations

The current section explains all of the variables used in our model and their relationships with one another.

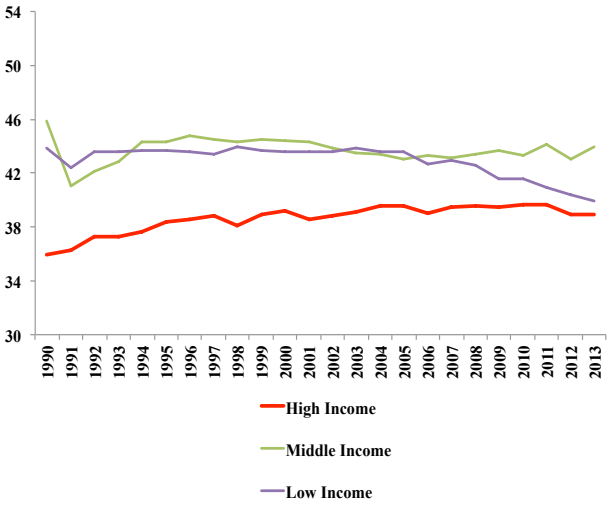
Income Inequality

The Gini coefficient is the most widely used measure of income inequality. The Standardized World Income Inequality Database (SWIID) (Solt (2014)) contains post-tax income estimates represented in 100 separate imputations per country. For simplification purposes, we averaged the 100 imputations for each country, per year. Figure 1a shows time series for seven world regions. Income inequality has increased in most countries, especially in the developed economies. Interestingly though, in Latin America, the most unequal region of the world, income distribution seems to be improving, even after the late 90s when the large countries region experienced recessions. Figure 1b shows all countries divided by income groups. Once again, high-income countries seem to have the worst trend. Low-income countries seem to be the least affected, possibly because of the countries' fewer linkages with the global economy.

Figure 1: Inequality Measured by Gini Coefficient



(a) World Bank Regions



(b) Income Groups Based on GDP per Capita PPP

Capital Account Liberalization

Capital Account liberalization *de jure* measures are typically constructed from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), which measures over 60 different types of controls. Measures typically result in binary variables where 1 equals the presence of financial controls, and 0 otherwise. One such *de jure* measure is the Chinn-Ito index, which has been fine-tuned for the extent of openness in capital account transactions.[7] It does not, however, measure the intensity of capital controls as Quinn (1997) and Quinn (2003) do. Chinn-Ito's correlation with Quinn, though, is 0.84, suggesting that it captures capital control intensity to a reasonable extent.

Fernández et al. (2015) recently developed a *de jure* dataset (KA-Uribe hereafter) using AREAER and the methodology in Schindler (2009). The dataset offers information on capital controls that are disaggregated both by type (i.e. whether the controls are on inflows or outflows) , and by 10 different categories of assets, including money market instruments; derivatives; collective investment securities; guarantees, sureties, and financial back-up facilities; and direct investment accounts. KA-Uribe construct an index from these data that ranges from 0 to 1, where 0 is equivalent to a capital account lacking restrictions, while 1 is equivalent to a fully "closed" account. The correlation between KA-Uribe and the Chinn-Ito index stands strong at -0.87. It is important to recall that it is normal that the Chinn-Ito index and KA-Uribe move in opposite directions, because in the former, the maximum value is equivalent to a fully liberalized account, while in the latter, the maximum value is equivalent to a fully restricted account.

Several *de facto* measures have also been generated in response to *de jure* measures' shortcomings. Lane and Milesi-Ferretti (2007), proposed a stock-based *de facto* database that captures a country's exposure to international financial markets. It includes countries' aggregate assets and liabilities in the following categories: portfolio equity, foreign direct investment, debt, and financial derivatives. For this paper, we summed all portfolio investment and debt assets and liabilities[8], as a percentage of GDP. The resulting "index" was used as a *de facto* measure. It should be noted that gross capital flows are more volatile than equity based measures (Quinn et al. (2011)) [9].

For our empirical analysis, we considered both *de jure* and *de facto* measures, as many countries legally allow capital account transactions but do not receive flows.[10] Only a handful of countries with liberalized capital accounts receive a high percentage of capital flows. Therefore, utilizing only *de jure* measures could bias results. Similarly, omitting variables that explain the difference between the degree of *de jure* and *de facto* liberalization could cause heterogeneity issues if we only use *de facto* measures. To reduce the possibility of omitting these variables, we used additional controls, including depth of financial system (i.e.: credit to private sector as a percentage of GDP) and institution strength.

It should be noted that having a closed capital account does not guarantee a lack of investment flows into a country either. For instance, direct investment and funds recorded as "other investment" in the balance of payments can enter a country through the banking system or any other mean offered by the central bank. However, this research focuses on portfolio investment flows. It would be unlikely to find a situation where portfolio investment enters a country without a *de jure* framework that allows for it.

[7] Chinn and Ito (2008) argue that this index could be used as a proxy for strength of capital controls
[8] Flows
[9] These measures usually suffer from endogeneity and may not reflect changes induced by policies.
[10] A scatterplot of Chinn-Ito vs. Lane and Milesi-Ferretti shown in the Annex, provides evidence for this argument.

Relationship between Financial Liberalization and Income Inequality

A quick glance at our panel shows that the Chinn-Ito and the Gini coefficient are negatively correlated. In other words: the opening of the capital account is associated with a reduction in income inequality. However, this correlation is rather weak (-0.15). The effect of openness is also beneficial (but weaker) when comparing the Fernández-Uribe index to the Gini coefficient. As mentioned above, considering only *de jure* measures can provide an inaccurate picture of reality. Therefore, we also evaluated the relationship between capital flows (as a percentage of GDP) from the Lane and Milesi-Ferretti database and the Gini index. The result (-0.07), although very weak, also suggests that a greater amount of capital flows is associated with a fall in income inequality.

These correlations contrast with the econometric findings in the literature - a proof that the effects of financial openness on inequality are not uniform across countries.There is clearly more to explore than just a simple correlation. Some of the reasons for this contrasting effects discussed in the literature include political, institutional and market efficiency differences. While the reasons are many, researchers seem to agree on the role of institutions, as countries with solid institutions usually have a higher penetration of financial services. To control for institutions, we assume that the degree of institutional strength is correlated with GDP per capita. Thus, we classified countries into three income groups: high income, middle income and low income based on the following rule[11]:

$$IncomeGroup^{12} = \begin{cases} Low & if \quad GDPpc < 4,999 \\ Middle & if \quad 5,000 \leq GDPpc < 19,999 \\ High & if \quad GDPpc \geq 20,000 \end{cases}$$

Correlations by income group, although generally weak, vary significantly. For instance: while the correlation between the Chinn-Ito index and Gini is negative for the entire panel, it is positive (although weak) for the low and middle income groups, implying that only high income groups have benefited (in terms of inequality reduction) from liberalizing their capital account.

In addition to income groups, we further disaggregated the panel into three periods that we consider fundamentally different from each other: 1990-1999; 2000-2007; and 2008-2013. Between 1990 and 1999, more than 80 countries opened their capital accounts. However, it was actually starting in 2000 that de facto openness accelerated. Finally, 2008marks the beginning of the Great Recession[13]. This additional disaggregation allowed us to visualize whether there were characteristics between income groups and over time that contrast the aforementioned correlations.

Correlations by time period also show inconsistent results: for the high income group, the relationship between capital account liberalization (using Chinn-Ito) and income inequality is unfavorable during most periods[14]: that is, that capital account liberalization is associated with an increase in income inequality. The correlations are even stronger when using the Fernandez-Uribe index. We run a final check by exploring the relationship between Gini and the lags of each of the de jure measures, given that the Gini coefficient usually reports the previous year's inequality. However, correlations remain virtually identical to those found with their contemporary values.

We also explored the relationship between our de facto measure and income inequality by income groups. For these

[11] We used GDP per capita, PPP, constant 2011 international dollars from the World Bank.

[12] The rule above allowed us to account for countries' transitions between groups throughout time. For a detailed list of countries by income group, please see the Annex

[13] According to the U.S. NBER, the great recession started in December 2007. Given that the panel contains annual data, we marked 2008 as the start of the recession

[14] Except for the low and middle income groups during 1990-1999, where the relationship is practically inexistent

correlations, we used the lag of the de facto measure, for reasons mentioned above. The results are ambiguous: liberalization is usually unfavorable for low and middle income countries[15], but is beneficial to high-income countries. This correlation, along with the correlations mentioned above, are consistent with the arguments of Klein and Olivei (2008) and Prasad and Rajan (2008) on the importance of the strength of institutions for a beneficial reception of capital flows.

Relevant Shocks

The academic literature has identified several shocks that may have an effect on the reduction of income inequality. For purposes of our study, we focused on impacts that are transmitted through portfolio investment. Monetary policy in particular (Coibion et al. (2012)), can have global effects that are reflected in the cost of capital. An exogenous shock that suddenly increases liquidity and persistently maintains low rates can generate changes in investment patterns. In this case, income inequality could improve or worsen, depending on the sector of the economy that absorbs the benefits. The reasoning behind this is that most households primarily rely on labor earnings instead of business and financial income. If expansionary monetary policy shocks raise profits more than wages, then those with claims to ownership of firms will tend to benefit disproportionately. Since these people also tend to be wealthier, this channel should lead to higher income inequality in response to monetary policy shocks. Also, if some agents frequently trade in financial markets and are affected by changes in the money supply prior to other agents, then an increase in the money supply will redistribute wealth toward those agents most connected to financial markets.

Another variety of shocks could be related to internal conditions that suddenly change from optimistic to pessimistic, such as the difference between growth expectations and the actual GDP growth rate. Although there is usually much correlation between this variable and other factors, and while this variable is not the best representation of a domestic shock, it allows for the estimation of an orthogonal component to external factors. In addition, this difference between expectations and reality may be interacting with the capital account liberalization policy or with de facto capital flows. Finally, including this variable into our analysis could be interesting as it allows us to see the effect that an underperforming economy[16] has on income distribution during periods of capital account liberalization.

We thus control for these two types of shocks by including the following variables into our analysis:

- Romer and Romer (2004) (hereinafter RR) shocks, which reflect changes in U.S. monetary policy (agreed at each Federal Open Market Committee meeting) which are orthogonal to the set of information from the Fed, obtained from the GREENBOOK forecasts. This variable can be used to identify monetary policy innovations purged from anticipated effects related to economic conditions.
- To characterize unusual economic episodes we generated a proxy variable that is only weakly correlated with world economic performance, represented by matrix $Y_{i,t}$. To do so we used the real GDP growth rate of each country, $y_{i,t}$, and projected to current and lagged GDP growth of U.S., Japan, Germany, and China[17]. The estimation results are then used to to find the forecast error, $s_{i,t}$, the proxy we seek:

$$y_{i,t} = \theta + w' Y_{i,t} + \epsilon_{i,t},$$

$$\hat{y_{i,t}} = \hat{\theta} + \hat{w}' Y_{i,t},$$

[15] Except for middle-income countries from 2008-2013.
[16] That is, performing slower than expected
[17] China's GDP and lagged GDP is only included from 2004-on

$$s_{i,t} = y_{i,t} - \hat{y_{i,t}}.$$

- We also used a simple categorization of GDP growth performance: regular episode whenever GDP growth is within a 1.5 (historical) standard deviation, boom when it is above, and bust when it is below.

$$UnusualEvent = \begin{cases} Bust & if & GDPg < \mu_i - 1.5\sigma_i \\ Regular & if & \mu_i - 1.5\sigma_i \leq GDPg \leq \mu_i + 1.5\sigma_i \\ Boom & if & GDPg > \mu_i + 1.5\sigma_i \end{cases}$$

4 Methodology

We first performed a baseline estimation that inherits some elements from Bumann and Lensink (2016) as well as Furceri (2015). We then improved the baseline estimations by adding variables that we believe are useful in the identification of unusual economic episodes. Doing so allowed for a better understanding of correlations and helped identify the direction of causality between capital account openness and income inequality over different time periods.

We focused on answering four questions: i) If, on average, there is a positive or negative relation between income inequality and capital account openness; ii) whether or not the negative effects of income distribution are larger during boom, busts, and/or regular periods; iii) if *ex-ante* and *ex-post* capital openness policies have contributed to reduce income inequality, and iv) if safety nets explain the observed correlation between capital openness and income inequality in Latin America.

To address the above we begin describing the general econometric model:

$$g_{i,t} = \phi_i + \varphi_t + \rho g_{i,t-1} + \alpha k_{i,t} + X_{i,t}^{'}\beta + [X_{i,t}^{'}\lambda]k_{i,t} + Z_{i,t}^{'}\gamma + [Z_{i,t}^{'}\lambda]k_{i,t} + \varepsilon_{i,t}. \quad (1)$$

In this equation, $i = 1, \ldots, N$ y $t = 1, \ldots, T$ are indices for country and time, respectively. The variable g is our measure for income inequality –the gini coefficient. ϕ_i and φ_t are fixed effects for country and time, respectively. We included the lag of the gini coefficient as explanatory variable to take into account the persistence of inequality that is observed in the data. k corresponds to the capital openness indicator. X is a matrix corresponding to variables usually associated with inequality changes. Z is a matrix including a set of controls usually associated with shocks or atypical economic performance.

X includes inflation, trade openness, financial depth, age dependency ratio and secondary education enrollment as control variables. Academic research has identified these variables as key correlates of income equality. Some of the arguments are listed as follows: [18]

1. Low-income households normally keep a large percentage of their income in cash to buy goods. Thus, they are more likely to be affected by a generalized increase of prices.[19] However, the effect of price level changes on income inequality might be conditional on the capacity of household to shield against them, (through the banking system, for instance). Therefore we add credit to the private sector as % of GDP as a measure of financial depth.

[18] Bumann and Lensink (2016) include a complete discussion on the selection of these variables.
[19] Albanesi (2007)

2. Trade openness might also be a channel inducing income inequality, as trade flows could cause sudden changes in the relative demand of high skilled workers. In the absence of migration policies or an adequate education system, these trade flows could cause a rise of relative wages thus increasing income inequality.[20]

3. Education deficiencies may also induce income inequality as education levels could create wage differentials.[21]

4. A country's age structure may also have an effect on income inequality. For instance, inequality could be lower among retirees (but so is their average income).[22]

Unlike Bumann and Lensink (2016), we did not include GDP per capita as a proxy for development of institutions. Instead, we grouped the countries by income level, as explained in the previous chapter. This allows us to indirectly control for institutions without having to regress on one additional variable.

Searching for Answers

To better answer question i), we performed two rounds of estimations. First we consider only linear effects regressing on each element of $X_{i,t}$ incrementally:

$$g_{i,t} = \phi_i + \varphi_t + \rho g_{i,t-1} + \alpha k_{i,t} + X_{i,t}^{'}\beta + \varepsilon_{i,t}. \tag{2}$$

Then we performed additional estimations involving non-linear effects. These estimations test if conditional on the prevailing state of secondary enrollment rate, inflation, age dependency ratio, trade openness, or financial depth, the marginal effect of a change in capital openness on inequality is larger than the linear estimates. We therefore expand equation (2) by adding a an interaction variable. The overall effect of capital account openness has two components, a direct (α) and an indirect (λ) effect on income inequality:

$$g_{i,t} = \phi_i + \varphi_t + \rho g_{i,t-1} + \alpha k_{i,t} + X_{i,t}^{'}\beta + [X_{i,t}^{'}\lambda]k_{i,t} + \varepsilon_{i,t}. \tag{3}$$

To address question ii), we follow three approaches. The first one simply assumes that an unusual episode (Z) has a one-to-one correspondence with higher values of the RR indicator. To briefly recapitulate, RR is large when the increase of interest rates is higher than the expected. We associate higher RR values to an unusual episode, which surprises the world economy as a whole. The second scenario uses domestic real GDP growth to assess if a country is facing a slowdown that is only weakly correlated with world economic performance. The third assumption is a simple categorization of GDP growth performance. Equation (4) represents these set of estimations:

$$g_{i,t} = \phi_i + \varphi_t + \rho g_{i,t-1} + \alpha k_{i,t} + X_{i,t}^{'}\beta + Z_{i,t}^{'}\gamma + [X_{i,t}^{'}\lambda]k_{i,t} + \varepsilon_{i,t}. \tag{4}$$

To investigate our third topic we categorized the magnitude of changes in our capital openness variable. First, we understand that a liberalization policy occurred whenever there was a positive change on $k_{i,t}$ between $t-1$ and t. Otherwise, the policy remained unchanged ("none") or had a negative change ("close"):

[20] Anderson (2005)
[21] Goldin and Katz (2007)
[22] Alesina and Perotti (1996)

$$Policy = \{ \begin{array}{rrr} Close & if & \triangle k_{i,t} < 0 \\ None & if & \triangle k_{i,t} = 0 \\ Open & if & \triangle k_{i,t} > 0 \end{array}$$

We then use these variables to answer if income distribution improves:

$$g_{i,t} = \phi_i + \varphi_t + \rho g_{i,t-1} + \alpha k_{i,t} + Policy_{i,t}^{'}\eta + X_{i,t}^{'}\beta + Policy_{i,t}^{'}[Z_{i,t}^{'}\lambda] + \varepsilon_{i,t}. \quad (5)$$

5 Results and Discussion

Table 1 in the annex shows the results after estimating equations (2) and (3) for the entire panel. As it is customary, each column adds an explanatory control. The final column includes the interaction term. The results overall show a positive and statistically significant coefficient for Capital Account Openness (KA hereafter). Interestingly, the magnitude and significance of the KA coefficient increased as we added controls. According to these outputs, capital openness-when controlling for inflation, age structure, trade openness and secondary enrollment-is associated with a 0.9-point increase in the Gini coefficient. But this should not surprise us at all. Schooling differentials, increases on price level, or the wage polarization potentially induced by trade have been extensively discussed as being conducive to higher income inequality. The estimations also confirm the beneficial effects of a developed financial system. The role of financial depth, measured by credit to the private sector as a percentage of GDP is significant, both the linear and the non-linear component. The keynote here is the two-piece decomposition of the total effect on income inequality of opening the capital account. On the one side, the marginal effect of opening the capital account increases inequality by 1.7 points. On the other, financial depth alleviates the detrimental effects the as indicated by the significant coefficient on the interaction term. More precisely, the negative sign implies that the greater the financial depth, the smaller (less detrimental) the effect of capital account liberalization on income inequality will be.

An interesting question to ask is if the sign of the correlations between these two variables is conditional on institutional factors or income. Grouping by income is handy as it proxies both, per capita income and quality of institutions. By doing so we implicitly constrain the distribution of the other factors for instance:[23] i) most of the observations with a private credit ratio below 25 percent come from low income and middle income countries; ii) high school enrollment rate is usually below 44 percent in low income countries, and so on. Since there are significant differences between income groups, using the entire panel for our analysis will not provide an accurate picture of reality: a closer look at KA and inequality's evolution over the years shows that, while a number of countries have opened their capital account, inequality has generally remained the same. This trend is confirmed when separating countries by income groups (using the criteria specified in the methodology section): the median Gini coefficient moved very little in 20 years (1990-2010).

Capital openness is again associated with increased inequality when controlling for income groups. Although our findings suggest that low income is associated with lower statistically significant correlations[24] we still see the same patterns as before. Financial development remains a relevant variable to consider in the analysis, and in every case, there is some kind of beneficial effect as depth increases. Regressions per income group are shown in Tables 2-4 in the annex. Incremental regressions show evidence of KA losing significance in low-income countries. However, this

[23] Tables 12-15 in the Annex have summary statistic tables per income group

[24] It is important to note that low income countries tend to be less unequal and receive less capital flows relative to other income groups.

fact is not surprising at all. As shown in Table 13, low income countries, regardless of their *de jure* openness, their actual portfolio flows as a percentage of GDP (variable *de facto* in the table) are rather small, which also explains the implicit high *p-values* of Table 2. When using Fernandez-Uribe (KA-Uribe hereafter), then the coefficient becomes positive and significant between 5% and 10%. However, this might not be the best indicator for low income countries as their data has plenty of missing values.

In middle income countries, capital openness loses significance (single effect), albeit the indirect effect generated by conditioning capital account openness to financial depth is significant at 10% remains valid when conditioning on financial depth (Table 3). In the former case, the coefficient changed from negative to positive as we added the canonical controls. In the latter, the marginal effect is -0.025, implying that financial development is associated with better income distribution. When using KA-Uribe (Table 6), the results show a different story. First, the direct effect is -1.83 significant at 10%, which should be read as increasing inequality. The indirect effect is 0.035 per level of financial depth, which means that financial development reduces the negative effects on income distribution (Recall that KA and KA-Uribe move in opposite direction). The larger and most significant effects are registered in the high-income countries. High-income countries are usually financially more developed so correlations are stronger in each case (Table 4). For instance when regressing on KA, we find that capital account openness is associated with a 2.01-point increase in income inequality. The interaction term renders a negative coefficient that has significance at only 12%. The low significance of financial depth might not be totally unreasonable: in high income countries, there are no meaningful differences in terms of financial development, which would explain lower correlations. Similarly, when using KA-Uribe, (Table 7) the coefficient is negative and significant at 5% (recall that negative here means increasing inequality). The interaction term increases significance to 5%.

Timing Matters

The first question that we seek to answer is whether or not unusual economic conditions have a particular effect on the correlation between capital openness and income inequality. To progress on this, we estimate a parsimonious version of equation (3) including the lag of Gini, the usual controls, capital openness, and a variable representing the *unusual events*. We are particularly interested on the marginal effect of capital openness on the Gini:

$$\frac{dg_{i,t}}{dk_{i,t}} = \alpha + \lambda Z_{i,t}. \tag{6}$$

The estimations resulted in three main findings. First, global exogenous shock -*monetary as RR*, increases the level of detriment of income distribution. Second, whenever an unusual economic performance is more correlated to the global economic cycles, the negative effects on income distribution magnify. Third, during regular cycles and booms the effect of capital openness on inequality is usually beneficial but not totally conclusive. However, capital openness is unambiguously worse for income equality during bust. Table 8 show the summarized output of these regressions, where each column corresponds to baseline, RR, forecast errors of GDP growth, and the categorized growth performance, respectively. The sign of $\frac{dg_{i,t}}{dk_{i,t}}$ depends on a direct and indirect effect. We find evidence that controlling by monetary shock, the direct marginal effect, α is detrimental on income inequality. Moreover, the size of the shock plays an important role by increasing income inequality through a coefficient of 0.4. We did find weak statistical evidence to argue a possible conditional effect λ, impact of 0.14 but only with *p-values* between 10% and 15%. The RR shock is linked to how developed is the financial system, therefore, we would expect that its effect on inequality is larger in lower and middle income countries compared to high-income, however there was no strong evidence to support this.

Next, we take a look at the spikes on growth rates that are not explained directly by performance in large economies. While the marginal effect of these measures on inequality had low explanatory power on income inequality (see Table 8), the interaction term was significant. In fact, according to the estimation outputs, capital openness direct effect, α, remained positively and significantly correlated with inequality. Furthermore, as atypical economic performances depart from global cycles, capital account openness correlates negatively with inequality, suggesting the existence of a magnifying effect whenever the global economies are the main cause of an *atypical* event.

Finally, we find evidence of increased inequality during *bust*. Table 8 shows how the total marginal effect (equation 4) of capital openness is larger when controlling for an economic contraction (variable "bust"). Economic expansions ("Booms in the contrary resulted in negative coefficients implying a beneficial effect on income distribution. However, the significance level of both the interaction term and the direct effect is not as good as we would expect, with *p-values* within 12%-20%. Our finding prove evidence that openness is more likely to be bad for income distribution during busts, but it is silent about its performance during booms. This conclusion is valid even if we relaxed the definition of boom and bust to 0.5 standard deviation from GDP growth's mean.

To Restrict or Not To Restrict?

Controls on capital account transactions represent a country's attempt to shield itself from risks associated with fluctuations in international capital flows. Capital controls take on special circumstances, for instance in the context of a fixed exchange rate regime. In a country with a fragile banking system, for instance, allowing households to invest abroad freely could precipitate an exodus of domestic savings and jeopardize the banking system's viability. And short-term capital inflows can be quickly reversed when a country is hit with an adverse macroeconomic shock, thereby amplifying its macroeconomic effect. In theory, capital account liberalization should allow for more efficient global allocation of capital, from capital-rich industrial countries to capital-poor developing economies. This should have widespread benefits-by providing a higher rate of return on people's savings in industrial countries and by increasing growth, employment opportunities, and living standards in developing countries. Access to capital markets should allow countries to "insure" themselves to some extent against fluctuations in their national incomes such that national consumption levels are relatively less volatile. Since good and bad times often are not synchronized across countries, capital flows can, to some extent, offset volatility in countries' own national incomes.

The evidence, as we have seen, is not quite as compelling as the theory, however. Middle income countries that have liberalized their capital accounts typically have had questionable improvement on inequality. According to our findings this is associated to the swings in the domestic and world economy, thereby magnifying the negative effects. Is there actually evidence of the goodness of closing the external accounts? Taking into account the whole panel we tested whether or not closing the capital account was significantly followed by periods with lower inequality. Table 9 shows the outputs of this estimation. The coefficients broadly keep the same patterns as baseline. However, our indicator dummy for *closing policy* has a negative sign, which implies that it is significantly related to lower income inequality. The next column presents the interaction of a change in policy and a shock. The interpretation would be as follow: the sign of the coefficient imply that closing the account posterior to a shock reduces the negative effects on income distribution. However, this result could as well be not conclusive since during recovery periods governments usually expand their social spending through transfers that may hide the real impact. Notwithstanding, this result opens the door to explore the role of safety nets as policy instruments to mitigate the negative effects during bad times.

The Role of Safety Nets: Lessons from Latin America?

Like in many other emerging regions, income inequality is one of the top malaises of Latin America and the Caribbean (LAC). In fact, it is the most unequal region in the world, according to the IMF, ECLAC, and WEF. However, the region has made progress in closing the income gap: in our panel, the region's Gini coefficient went from 50.1 in 1995 to 43.8 in 2013. Most LAC countries in our panel belong to the middle income group. The results presented in the previous chapter show that in middle income countries, the opening of capital account is associated with a drop in the Gini coefficient; however, the results are either not statistically significant or weakly significant. What factor(s) could be encouraging the fall of income inequality in these countries? One possible explanation is the existence of programs of redistributive nature, such as cash transfer programs. In theory, these programs should be even more beneficial if they encourage recipients to educate themselves and/or to improve their quality of life, such as with conditional cash transfer (CCT) programs. Soares et al. (2009) explored this issue and found that countries with highly focalized CCT programs (i.e.: Brazil and Mexico) experienced a 21 percent reduction in income inequality, and a 15 percent decrease in Chile, which has a less focalized program. We therefore considered that controlling for CCT programs could possibly explain this favorable relationship between capital account openness and income distribution in LAC.

Using data from ECLAC, the IDB, the World Bank and various LAC government offices, we constructed a binary database indicating the existence (or lack) of CCT programs. In our panel, 21 out of 26 Latin American countries have implemented (or had, at some point) at least one CCT. We included this binary variable in our baseline model, and created an interaction term between capital openness and the binary CCT variable. When these two variables are included in the baseline regression, the Chinn-Ito index becomes statistically significant and is associated with the fall in inequality in LAC. Similarly, the binary CCT variable is also statistically significant in explaining the fall in income inequality. However, the interaction between these two shows the opposite: it implies that greater capital account openness in the presence of a CCT, is associated with an increase in income inequality.

Note that these estimates could be biased for several reasons: for example, some of the CCTs may have low coverage and may not benefit the neediest. Another reason could be a delay in time when the program starts relative to the time when the first disbursement occurs. In addition, many of the programs start with a pilot region, and, if successful, beneficiaries are gradually added. Ideally, the binary CCT variable should be adjusted to reflect the first disbursement. However, not all LAC countries report the date of the first disbursement. To control for low coverage, we use coverage data compiled by Stampini and Tornarolli (2012). The information was generated by directly obtaining the coverage data from each country's social development ministry. While the dataset is rich in content, it also contains missing values that we interpolated where possible. In addition, we created a variable for "program age", to control for program effectiveness. The instrument is weak; however, the oldest CCT programs in Latin America, Oportunidades (Mexico) and Bolsa Familia (Brazil), have been identified as highly efficient on numerous reports.

What can we say about safety nets in Latin America and capital openness? Table 11 shows a simple exercise to support our argument. The impact coefficients (KA) are positive but reduce their magnitude after controlling for coverage of CCTs. As expected, the effect of capital openness conditional on coverage renders a positive estimate. This enforces the previous claim, that safety nets help mitigate the negative effects that we usually see during economic cycles. Table 10 uses the age of the program as an instrument of effectiveness (see paragraph above). The estimates have the same sign and significance as coverage. Are safety net programs the secret to seize all benefits from financial liberalization? Our results seem to imply yes. Latin America is no stranger to financial instability and recurrent crisis, yet inequality has been decreasing. It seems that adoption of CCTs translates into a very useful *ex-ante* type of policy to reduce the negative effects that an open financial account could have. Nonetheless, it would be interesting to analyze the interaction of booms and busts with safety nets. However, the current availability of data is not enough to test these

hypotheses –a bigger data set would provide better inference. Further research should aim at clarifying different questions regarding the role of safety nets and financial liberalization. [25]

6 Conclusions

Literature has largely concluded that capital account liberalization may have negative effects on growth through financial instability in emerging markets. Moreover, the links between economic and financial distress and income inequality have also been frequently revisited, especially in the last decade. In this paper, we attempt to build upon these two literatures to examine the extent to which capital account liberalization is associated with income inequality in emerging market and developing countries. We confirm earlier studies that show there is such a relationship between increased capital account openness and increases in income inequality, and that capital account regulations are associated with less income inequality—at least for emerging economies. We expand on these findings to learn that there are differential impacts of capital account liberalization on inequality during periods of economic expansion and contraction. The impact of financial liberalization on income inequality is ambiguous during economic expansions, whereas during contractions, capital account liberalization appears to exacerbate income inequality. Strong institutions and financial depth are key factors determining the extent of the negative impacts. One possible reason behind this is that financial services may provide households with better risk sharing and the possibility of shield against economic swings. Furthermore, our findings suggest that when a country decides to implement regulations to slow and steer financial flows during atypical economic events, the detrimental effects on income distributions diminish. These findings offer supportive ground in favor of counter-cyclical, temporary, and flexible 'speed bumps' during sudden stops or *similar atypical events*. However, this result might not be as strong since countries usually implement social policies simultaneously.

Finally, it is conceivable that for most developing countries, where institutions are weak, the absence of *ex-ante* policies imply that capital account liberalization will probably increase income inequality during periods of economic contraction. In order to ensure dignifying living conditions, it seems relevant to implement additional protection measures for the initially disadvantaged groups as seems to be the case of Latin America. Thus, further work is required to explain whether or not CCTs are behind these observed differences and if liberalization should be synchronized with social safety net coverage.

The findings discussed in this paper bring to consideration two kinds of policies. On the one hand, policies geared to seize the positive spillovers of openness during economic expansion, albeit designed such that they can also act as safety nets during contractions. On the other hand, our findings support resorting to capital restrictions during busts especially if social safety nets have low coverage. For most developing countries, where institutions are weak, the absence of safety net policies implies that a capital account liberalization will likely increase income inequality. In order to ensure dignifying living conditions, it seems relevant to implement additional protection measures for the initially disadvantaged groups as seems to be the case of Latin America.

[25] We are currently constructing a larger world data set with coverage information that should allow for an interesting analysis. For now however, these results provide some evidence on the relevance of implementing additional protection measures for the initially disadvantaged groups before opening the accounts.

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7 Annex

Figure 2: Relationship between *de jure* and *de facto* Measures

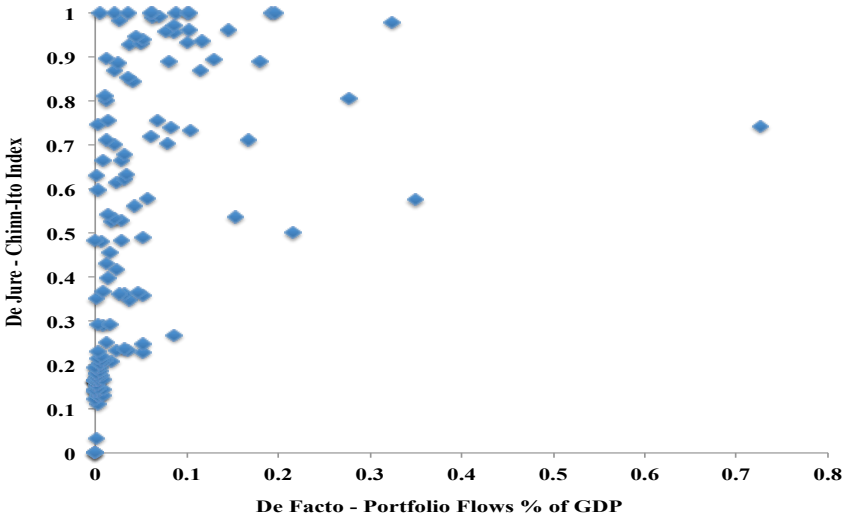

Table 1: Baseline Regression, Arellano-Bover

	(1)	(2)	(3)	(4)
Gini Lag	0.725**	0.749**	0.733**	0.728**
	(59.65)	(40.18)	(40.10)	(39.58)
KA	0.233	0.923**	1.122**	1.739**
	(1.59)	(3.70)	(4.45)	(4.89)
Inflation		0.00283**	0.00281**	0.00296**
		(3.88)	(3.87)	(4.06)
Trade		-0.0216**	-0.0196**	-0.0199**
		(-11.32)	(-10.07)	(-10.22)
School Enrollment		-0.0112**	-0.0141**	-0.0137**
		(-2.74)	(-3.33)	(-3.22)
Age dependency		-0.0145+	-0.00405	0.00169
		(-1.94)	(-0.53)	(0.21)
Private Credit to GDP			-0.00801**	-0.0166**
			(-5.24)	(-4.38)
KA*PrivCredit				-0.0105*
				(-2.49)
Constant	11.55**	13.45**	12.99**	12.42**
	(22.04)	(13.88)	(13.24)	(12.32)
Observations	2438	1722	1664	1664
Adjusted R^2				

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 2: Baseline Regression, low income countries. Arellano-Bover

	(1)	(2)	(3)	(4)
Gini Lag	0.904**	0.933**	0.916**	0.914**
	(19.20)	(14.94)	(16.76)	(15.99)
KA	-1.252+	-0.823	-0.448	-0.482
	(-1.65)	(-0.92)	(-0.46)	(-0.36)
Inflation		-0.00998	-0.00593	-0.00525
		(-1.05)	(-0.69)	(-0.61)
Trade		-0.0275**	-0.0259**	-0.0262**
		(-3.65)	(-2.93)	(-2.76)
School Enrollment		-0.0262	-0.0535*	-0.0539*
		(-1.08)	(-2.01)	(-2.05)
Age Dependency		-0.0572+	-0.102**	-0.103**
		(-1.72)	(-2.65)	(-2.60)
Private Credit to GDP			-0.0274+	-0.0283
			(-1.96)	(-1.37)
KA*PrivCredit				0.000142
				(0.00)
Constant	4.528*	10.71**	16.49**	16.72**
	(2.10)	(2.59)	(3.17)	(2.95)
Observations	790	422	403	403
Adjusted R^2				

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 3: Baseline Regression, Middle income countries. Arellano-Bover

	(1)	(2)	(3)	(4)
Gini Lag	0.807**	0.784**	0.770**	0.767**
	(23.37)	(14.81)	(14.33)	(14.42)
KA	-0.702	-0.509	-0.345	0.631
	(-1.59)	(-0.69)	(-0.51)	(0.74)
Inflation		0.000894*	0.00122**	0.00138**
		(2.40)	(2.81)	(3.10)
Trade		-0.00314	-0.00753	-0.00680
		(-0.41)	(-1.32)	(-1.16)
School Enrollment		0.00689	0.00793	0.00749
		(0.47)	(0.56)	(0.54)
Age Dependency		0.0317	0.0455+	0.0485+
		(1.46)	(1.82)	(1.95)
Private Credit to GDP			0.0116	0.0220
			(1.18)	(1.58)
KA*PrivCredit				-0.0249+
				(-1.64)
Constant	8.844**	7.615**	7.167**	6.669*
	(6.01)	(3.21)	(2.88)	(2.55)
Observations	914	665	662	662
Adjusted R^2				

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 4: Baseline Regression, High income countries. Arellano-Bover

	(1)	(2)	(3)	(4)
Gini Lag	0.872**	0.792**	0.764**	0.763**
	(29.12)	(16.07)	(14.42)	(14.42)
KA	0.335	1.210**	0.920**	2.078*
	(0.66)	(3.23)	(2.96)	(2.13)
Inflation		0.0177**	0.0170**	0.0172**
		(7.80)	(6.09)	(6.25)
Trade		-0.00644	-0.00511	-0.00494
		(-1.31)	(-1.12)	(-1.09)
School Enrollment		-0.0199*	-0.0194*	-0.0227*
		(-2.57)	(-2.43)	(-2.53)
Age dependency		0.0263	0.0317	0.0408
		(1.38)	(1.42)	(1.58)
Private Credit to GDP			0.00309	0.0118
			(1.24)	(1.59)
KA*PrivCredit				-0.0104
				(-1.48)
Constant	4.832**	8.290**	8.886**	7.891**
	(5.26)	(4.54)	(5.07)	(4.98)
Observations	734	635	599	599
Adjusted R^2				

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 5: Baseline Regression, low income countries. Arellano-Bover

	(1)	(2)	(3)	(4)
Gini Lag	0.965**	0.906**	0.870**	0.861**
	(18.96)	(15.66)	(11.65)	(12.08)
KA-Uribe	4.565**	3.217*	3.041*	1.961
	(5.74)	(2.42)	(2.04)	(1.18)
Inflation		0.00952	0.00968	0.00804
		(1.41)	(1.39)	(1.26)
Trade		-0.00753	-0.00538	-0.000666
		(-0.94)	(-0.84)	(-0.10)
School Enrollment		-0.0450*	-0.0367	-0.0362
		(-2.23)	(-1.49)	(-1.28)
Age dependency		-0.0362	-0.0136	-0.00195
		(-1.23)	(-0.30)	(-0.04)
Private Credit to GDP			0.0147	-0.0220
			(0.66)	(-0.59)
KA-Uribe*Privcredit				0.0488
				(1.09)
Constant	-1.020	7.755	6.791	6.768
	(-0.45)	(1.57)	(1.25)	(1.24)
Observations	327	184	184	184
Adjusted R^2				

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 6: Baseline Regression, Middle income countries. Arellano-Bover

	(1)	(2)	(3)	(4)
Gini Lag	0.917**	0.969**	0.941**	0.942**
	(14.16)	(17.18)	(18.35)	(19.09)
KA-Uribe	0.108	-0.453	-0.616	-1.832^{+}
	(0.19)	(-0.63)	(-0.89)	(-1.88)
Inflation		0.00122**	0.00149**	0.00166**
		(2.70)	(3.05)	(3.11)
Trade		0.00482	0.000530	0.00146
		(0.70)	(0.11)	(0.28)
School Enrollment		-0.0158	-0.0153	-0.00939
		(-1.25)	(-1.22)	(-0.70)
Age dependency		-0.00166	0.0155	0.0179
		(-0.05)	(0.48)	(0.56)
Private Credit to GDP			0.0107	-0.00866
			(1.55)	(-0.79)
KA-Uribe*Privcredit				0.0351
				(1.59)
Constant	3.609	2.367	2.525	2.457
	(1.15)	(0.82)	(1.03)	(1.07)
Observations	560	420	419	419
Adjusted R^2				

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 7: Baseline Regression, High income countries. Arellano-Bover

	(1)	(2)	(3)	(4)
Gini Lag	0.894**	0.816**	0.784**	0.779**
	(50.45)	(13.46)	(12.22)	(12.31)
KA-Uribe	-0.218	-0.639*	-0.613+	-2.731*
	(-0.30)	(-2.04)	(-1.85)	(-2.48)
Inflation		0.0195**	0.0192**	0.0198**
		(8.16)	(8.28)	(7.42)
Trade		-0.00318	-0.00228	-0.00172
		(-0.79)	(-0.61)	(-0.44)
School Enrollment		-0.0177*	-0.0192*	-0.0230*
		(-2.15)	(-2.19)	(-2.27)
Age dependency		0.00233	0.00682	0.0265
		(0.15)	(0.34)	(1.20)
Private Credit to GDP			0.00164	-0.000689
			(0.69)	(-0.25)
KA-Uribe*PrivCredit				0.0171*
				(2.22)
Constant	4.272**	9.246**	10.19**	10.04**
	(6.01)	(3.72)	(4.09)	(4.06)
Observations	576	503	468	468
Adjusted R^2				

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 8: Shocks and Interactions. All Sample. Arellano-Bover

	Baseline	RR Shocks	Forecast error	Bust	Boom
Gini Lag	0.739**	0.734**	0.737**	0.735**	0.738**
	(40.46)	(40.26)	(40.41)	(40.39)	(40.35)
KA	1.107**	1.088**	1.124**	1.073**	1.057**
	(4.35)	(4.28)	(4.41)	(4.22)	(4.12)
Inflation	0.00284**	0.00289**	0.00280**	0.00274**	0.00284**
	(3.89)	(3.97)	(3.83)	(3.77)	(3.89)
Trade	-0.0198**	-0.0195**	-0.0194**	-0.0202**	-0.0199**
	(-10.13)	(-10.02)	(-9.92)	(-10.27)	(-10.19)
School Enrollment	-0.0121**	-0.0122**	-0.0125**	-0.0121**	-0.0119**
	(-2.86)	(-2.88)	(-2.95)	(-2.87)	(-2.81)
Age Dependency	0.000514	0.00184	0.000206	0.00204	0.000702
	(0.07)	(0.24)	(0.03)	(0.27)	(0.09)
Private Credit to GDP	0.00824**	0.00839**	0.00822**	0.00878**	0.00823**
	(5.34)	(5.46)	(5.30)	(5.66)	(5.34)
RR Shocks		0.409*			
		(2.09)			
KA*RR Shocks		-0.141			
		(-0.50)			
forecast error			0.0200		
			(1.34)		
KA*Forecast error			-0.0456+		
			(-1.68)		
Bust				-0.252+	
				(-1.82)	
KA*Bust				0.135	
				(0.71)	
Boom					-0.122
					(-0.93)
KA*Boom					0.273
					(1.43)
Constant	12.32**	12.41**	12.40**	12.42**	12.36**
	(12.69)	(12.82)	(12.78)	(12.84)	(12.73)
Observations	1664	1664	1664	1664	1664
Adjusted R^2					

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 9: Policy Changes. All Sample. Arellano-Bover

	Baseline	Dummy; closure	RR Shocks
Gini Lag	0.739**	0.739**	0.735**
	(40.46)	(40.49)	(40.36)
KA	1.107**	1.136**	1.096**
	(4.35)	(4.44)	(4.30)
Inflation	0.00284**	0.00282**	0.00287**
	(3.89)	(3.86)	(3.94)
Trade	-0.0198**	-0.0197**	-0.0195**
	(-10.13)	(-10.06)	(-9.99)
School Enrollment	-0.0121**	-0.0124**	-0.0125**
	(-2.86)	(-2.93)	(-2.97)
Age dependency	0.000514	-0.0000144	0.00110
	(0.07)	(-0.00)	(0.15)
Private Credit to GDP	0.00824**	0.00824**	0.00842**
	(5.34)	(5.34)	(5.48)
Close		-0.254	-0.335
		(-1.19)	(-1.10)
RR Shocks			-1.103
			(-0.57)
Close*RR Shocks			-1.421+
			(-1.73)
Constant	12.32**	12.57**	12.76**
	(12.69)	(12.65)	(12.55)
Observations	1664	1664	1664
Adjusted R^2			

t statistics in parentheses

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 10: Program's Age

	Baseline	Age	Age and Interaction
Gini Lag	0.903**	0.881**	0.874**
	(46.91)	(43.03)	(42.38)
KA	-0.778**	-0.797**	-1.457**
	(-2.71)	(-2.81)	(-4.62)
Inflation	-0.00142	-0.00182	-0.00344^{+}
	(-0.74)	(-0.96)	(-1.77)
Trade	-0.00974**	-0.00782*	-0.00649*
	(-3.14)	(-2.50)	(-2.06)
School Enrollment	-0.0326**	-0.0274**	-0.0220*
	(-3.90)	(-3.24)	(-2.57)
Age dependency	0.0157	-0.000985	-0.00238
	(0.87)	(-0.05)	(-0.13)
Private Credit to GDP	0.0213**	0.0210**	0.0203**
	(3.79)	(3.77)	(3.63)
Program's age		-0.0667**	-0.330**
		(-3.06)	(-5.71)
KA*Program's Age			0.307**
			(4.92)
Constant	6.413**	8.232**	8.741**
	(4.10)	(4.93)	(5.19)
Observations	278	278	278
Adjusted R^2			

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 11: CCT Coverage

	Baseline	Coverage	Coverage and Interaction
Gini Lag	0.903**	0.889**	0.894**
	(46.91)	(42.43)	(42.12)
KA	-0.778**	-0.624*	-0.666*
	(-2.71)	(-2.04)	(-2.15)
Inflation	-0.00142	-0.00169	-0.00223
	(-0.74)	(-0.93)	(-1.21)
Trade	-0.00974**	-0.0121**	-0.0103**
	(-3.14)	(-3.57)	(-2.99)
School Enrollment	-0.0326**	-0.0328**	-0.0321**
	(-3.90)	(-3.32)	(-3.21)
Age dependency	0.0157	0.0221	0.0284
	(0.87)	(0.91)	(1.15)
Private Credit to GDP	0.0213**	0.0183**	0.0147*
	(3.79)	(3.01)	(2.36)
CCT Coverage		-0.0228**	-0.116**
		(-4.48)	(-4.67)
KA*CCT Coverage			0.102**
			(3.83)
Constant	6.413**	6.945**	6.338**
	(4.10)	(3.51)	(3.16)
Observations	278	191	191
Adjusted R^2			

t statistics in parentheses

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table 12: Summary statistics for entire sample

Variable	Mean	Std. Dev.	Observations
KA-Uribe	0.354	0.346	1469
KA	0.538	0.369	2556
Gini	42.099	7.511	2676
RR Shocks	0.028	0.205	2676
Inflation	28.466	244.945	2418
De Facto	0.042	0.448	2533
Private Credit to GDP	49.48	47.17	2523
School Enrollment	76.862	31.275	2045
Trade	83.051	52.101	2623
Age dependency	63.834	18.446	2676
Real GDP growth	3.836	6.622	4460
Forecast error	0	4.575	4313

Table 14: Summary Statistics for Middle Income Countries

Variable	Mean	Std. Dev.	Observations
KA-Uribe	0.436	0.346	562
KA	0.488	0.334	951
Gini	43.713	8.406	1003
RR Shocks	0.027	0.205	1003
Inflation	47.104	347.036	903
De Facto	0.024	0.311	954
Private Credit to GDP	41.44	30.618	974
School Enrollment	76.972	17.653	788
Trade	84.387	37.991	994
Age dependency	58.370	12.414	1003
Real GDP growth	4.098	4.824	979

Table 13: Summary Statistics for Low Income Countries

Variable	Mean	Std. Dev.	Observations
KA-Uribe	0.556	0.349	329
KA	0.318	0.29	840
Gini	43.314	7.109	885
RR Shocks	0.036	0.21	885
Inflation	19.911	143.501	761
De Facto	-0.02	0.254	828
Private Credit to GDP	19.703	18.232	816
School Enrollment	43.646	27.621	553
Trade	70.071	36.89	860
Age dependency	81.689	16.1	885
Real GDP Growth	4.155	5.828	859

Table 15: Summary Statistics for High Income Countries

Variable	Mean	Std. Dev.	Observations
KA-Uribe	0.16	0.224	578
KA	0.841	0.276	765
Gini	38.681	5.326	788
RR Shocks	0.02	0.198	788
Inflation	14.778	163.882	754
De Facto	0.132	0.686	751
Private Credit to GDP	93.313	55.238	733
School Enrollment	102.832	18.781	704
Trade	95.839	74.326	769
Age dependency	50.736	10.043	788
Real GDP growth	2.712	3.678	776

Countries in the Sample

Every year we use the income criteria (Section 3) to assign each country to their corresponding cluster. Tables 16-18 are snapshots of these groups for 1990, 2000, and 2010. Note that countries that do not appear in these particular years may appear in other years. A country is excluded in a given year if it has a missing value for GDP per capita PPP data to make an appropriate assessment of its income level.

Table 16: Country list: 1990

Low Income	Middle Income	High Income
Bangladesh	Algeria	Australia
Bolivia	Botswana	Austria
China (PRC)	Brazil	Belgium
Cote d'Ivoire	Chile	Canada
El Salvador	Colombia	Cyprus
Ethiopia	Costa Rica	Denmark
Ghana	Dominican Republic	Finland
Honduras	Ecuador	France
India	Guatemala	Germany
Indonesia	Iran	Greece
Kenya	Israel	Hong Kong (China)
Lesotho	Jamaica	Hungary
Malawi	Jordan	Ireland
Mali	Malaysia	Italy
Mauritania	Mauritius	Japan
Nigeria	Mexico	Netherlands
Pakistan	Panama	New Zealand
Philippines	Paraguay	Norway
Rwanda	Peru	Portugal
Sierra Leone	Poland	Singapore
Sri Lanka	South Africa	Spain
Uganda	Thailand	Sweden
Zimbabwe	Trinidad and Tobago	Switzerland
	Tunisia	United Kingdom
	Turkey	United States
	Uruguay	
	Venezuela	

Table 17: Country list: 2000

Low Income	Middle Income	High Income
Armenia	Albania	Australia
Azerbaijan	Algeria	Austria
Bangladesh	Barbados	Belgium
Bolivia	Belarus	Canada
Burkina Faso	Bosnia and Herzegovina	Cyprus
Burundi	Botswana	Czech Republic
Cambodia	Brazil	Denmark
Cameroon	Bulgaria	Finland
Central African Republic	Chile	France
China	Colombia	Germany
Cote d'Ivoire	Costa Rica	Greece
Djibouti	Croatia	Hong Kong
Ethiopia	Dominican Republic	Iceland
Gambia	Ecuador	Ireland
Georgia	El Salvador	Israel
Ghana	Estonia	Italy
Guinea	Fiji	Japan
Guinea-Bissau	Guatemala	Netherlands
Guyana	Hungary	New Zealand
Haiti	Indonesia	Norway
Honduras	Iran, Islamic Republic of	Portugal
India	Jamaica	Singapore
Kenya	Jordan	Slovenia
Kyrgyz Republic	Kazakhstan	Spain
Lesotho	Latvia	Sweden
Madagascar	Lebanon	Switzerland
Malawi	Lithuania	United Kingdom
Mali	Macedonia	United States
Mauritania	Malaysia	
Moldova	Mauritius	
Mongolia	Mexico	
Morocco	Namibia	
Mozambique	Panama	
Nepal	Paraguay	
Nicaragua	Peru	
Niger	Poland	
Nigeria	Russia	
Pakistan	Slovakia	
Papua New Guinea	South Africa	
Philippines	Sri Lanka	
Rwanda	St. Lucia	
Senegal	Suriname	
Sierra Leone	Swaziland	
Tajikistan	Thailand	
Tanzania	Trinidad and Tobago	
Uganda	Tunisia	
Ukraine	Turkey	
Uzbekistan	Turkmenistan	
Vietnam	Uruguay	
Zambia	Venezuela	
Zimbabwe		

Table 18: Country list: 2010

Low Income	Middle Income	High Income
Afghanistan	Armenia	Australia
Bangladesh	Barbados	Austria
Ethiopia	Belarus	Belgium
Honduras	Bhutan	Canada
India	Bolivia	Cyprus
Kyrgyz Republic	Brazil	Czech Republic
Madagascar	Bulgaria	Denmark
Malawi	Chile	Estonia
Mali	China	Finland
Moldova	Colombia	France
Nepal	Costa Rica	Germany
Pakistan	Croatia	Greece
Rwanda	Dominican Republic	Hong Kong
Senegal	Ecuador	Hungary
Sierra Leone	El Salvador	Iceland
Tanzania	Georgia	Ireland
Togo	Guatemala	Israel
Uganda	Indonesia	Italy
Vietnam	Iran, Islamic Republic of	Japan
Zambia	Jordan	Lithuania
Zimbabwe	Kazakhstan	Malaysia
	Latvia	Malta
	Macedonia	Netherlands
	Maldives	New Zealand
	Mexico	Norway
	Mongolia	Poland
	Namibia	Portugal
	Nigeria	Russia
	Panama	Singapore
	Paraguay	Slovakia
	Peru	Slovenia
	Philippines	Spain
	South Africa	Sweden
	Sri Lanka	Switzerland
	Thailand	United Kingdom
	Tunisia	United States
	Turkey	
	Ukraine	
	Uruguay	
	Venezuela	