Are Multinationals' Retained Earnings a Capital Inflow?

A Macroprudential view of FDI and *Local* Saving [*]

Erwin Hansen [†]   and   Rodrigo Wagner [‡]

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Abstract

From a macroprudential standpoint Foreign Direct Investment (FDI) is usually identified as a safer capital inflow. This paper qualifies this conventional wisdom remarking that there are meaningful differences depending on the type of FDI. We pay special attention to the saving made by foreign multinationals in the country, called Retained Earnings FDI (RE-FDI). If invested in fixed assets this saving arithmetically creates a current account deficit, despite no cash is crossing borders. Moreover, we argue that standard measures of Gross National and Domestic Saving are insensitive to foreign multinationals' saving, so we propose a new indicator that treats RE-FDI in a way that is indistinguishable from national corporate saving. We call it Gross *Local* Saving (GLS).

Empirically we show that, first, FDI is under some circumstances more procyclical than other flows, but mostly because of the locally generated RE-FDI. In many dimensions the cyclical behavior of RE-FDI is closest to the one of National Savings rather than to other types of capital inflows. While RE-FDI comoves positively with national savings, nonRE-FDI comoves against savings. Second we find that as countries become more financially open they increase their RE-FDI. The commodity boom is also a factor behind RE-FDI in commodity countries. Finally we explore the relation between capital flows and crises. While non-RE-FDI associates to a lower probability of sudden stops, RE-FDI is not statistically associated with these events. A large stock of RE-FDI, if hoard in liquid instruments, could increase the risk of bunching capital outflows, for example when commodity prices drop. Overall, our results suggest it is worthwhile for macro-prudential monitoring to unpack FDI and consider gross *local* saving.

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1   Introduction.

Modern international macroeconomics worries about excessive capital inflows and their sudden stop, many times using current account deficits as a potential headline indicator for current or future problems. In that context, though, there is some consensus that foreign direct investment flows (FDI) are less prone to building up these vulnerabilities (e.g. Calvo, 1998; Galati and Moessner, 2013; Jeanne and Korinek, 2013).[1] We explore further qualifications to this consensus, suggesting that in the era of global corporations the macroprudential metrics should not be that sensitive to the nationality of long term investors. One applied question is whether, from a macroprudential standpoint, a country like Mexico should care whether 1$ was saved by the national corporation Telmex instead of 1$ being saved by the foreign owned Walmart-Mexico. Our central point is that, up to a point, we should not make these two types of saving that different.

In particular, in this paper we argue that one portion of Foreign Direct Investment (FDI), namely the Retained Earnings of Multinationals located in the country, is in some dimensions a "quasi-domestic" saving. We show that accounting separately for it in the analysis, instead of bunching it with the rest of FDI, could provide interesting insights when analyzing saving behavior in the *local* economy and their relation to potential macro vulnerabilities. Moreover, we empirically show that many of the cyclical properties of these retained earnings of multinationals seem closer to that of national savings rather than to other capital flows. We cannot call them national savings, because they are not, but in some ways they behave similarly.

We also argue that retained earnings of multinationals could in part rationalize why some countries with

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[1]We borrow Levi-Yeyati (2014)'s review, where he argues most studies suggest that FDI flows tend to be relatively less dangerous that other types of flows. In particular, Cardarelli, Elekdag, and Kose (2010) show that end of the inflow episodes typically entailed a sharp reversal of non-FDI flows while FDI proved much more resilient. Regarding the recent global crisis of 2008-2009 Ostry, Qureshi, Habermeier, Reinhardt, Chamon, and Ghosh (2010) show that countries with more non financial FDI had better performance during the crisis., while berglof et al (2009) suggest FDI had no effect. Catão and Milesi-Ferretti (2013) find that across countries the stock of FDI liabilities is related to lower crisis propensity, particulraly in banking crises (Joyce, 2010); while debt flows imply more risk (Powell and Tavella, 2012). Net portfolio inflow and net other inflows are positively related to output volatility. Aizenman, Chinn, and Ito (2010) show that portfolio inflow and other inflows are more related to output volatility than FDI inflows are. We get similar results with respect to FDI and non-FDI but using as dependent variable Sudden Stops indicators. Combes et al (2011) find that FDI leads to less appreciation than portfolio flows. We argue that part of it could be due to the fact that part of FDI is internally generated as retained earnings. Having said that, some studies reviewed by Levi-Yeyati (2014) are less conclusive about FDI's relative benevolence as a type of capital flow. Julian Caballero (2011) argues that surges in any type of capital flows are equally likely to increase the risk of a anking crisis when in a lending boom. Gourinchas and Obstfeld (2012) find that the share of external debt over the total stock of external liabilities is *not* correlated the probability of banking crises en emerging markets, although it is for high income countries.

Levchenko and Mauro (2007) find that FDI is the least volatile form of financial flow when taking into account the average size of the net flow (i.e. coefficient of variation not standard deviation). FDI is more procyclical than portfolio flows, but swings during SS episodes are due to swings in other flows

high FDI may show up as having lower national savings rate. Indeed, we find that countries with a larger stock of FDI tend to have a larger share of the "*Local* Saving" made by multinationals through retained earnings. Nonetheless this type of saving enter neither Gross National Savings nor Gross Domestic Savings (GDS). GDS includes all profits of multinationals, no matter whether they are repatriated or retained. If one believes that, for example, the corporate savings behavior of Yanacocha mine in Peru or the Escondida mine in Chile would not be different if they were owned by a local capitalist, then one would like to have a measure that includes these. We call that "Gross *Local* Savings" and it is the sum of national saving plus retained earnings. Its main property is that this saving measure is invariant to the nationality of the long term investor. We believe that this is a useful and complementary measure to other standard saving indicators used in macro, especially in a globalized world in which it is very difficult to define, for economic purposes, what constitutes a national firm (Desai, 2013 discuss the potential impossibility to distinguish what is a "national corporation" in economic terms).

More generally, this paper explores Foreign Direct Investment (FDI) from macroprudential perspective in two related ways. First is to distill which portions of FDI could be more correlated to macro vulnerabilities, distinguishing whether Retained Earnings and Non retained Earnings of FDI behave differently. We do so by controlling and benchmarking against other types of capital flows and against internal funding from national savings. Second is to understand whether the determinants of FDI from retained earnings are different, as well as their cyclical properties in the business cycle. We believe making this distinctions is particularly important for small open economies that are open to multinationals.

First, we show that while FDI inflows appear more procyclical to the domestic business cycle than other capital flows, this is likely due to the Retained Earnings component of FDI. Non-RE FDI, in contrast, seems not that different than other capital flows. This means that the new direct investment that is truly coming from abroad (new equity and new related party debt) does not seem to have, on average, a significantly different cyclical behavior than portfolio flows. We do not mean to interpret this coefficient causally but only as a policy-relevant correlation. In fact there is an obvious endogeneity issue in these estimates, precisely because the retained earnings FDI (RE-FDI) were in fact part of domestic production and are considered in GDP. RE-FDI is very likely to decrease as GDP growth slows down.

Second is that we attempt to unpack the determinants of FDI flows beyond its relationship with the business cycle. We found that as countries get more financially open, they also tend to get more Retained Earnings FDI. Commodity booms in commodity countries display a disproportionate increase in RE-FDI.

Third and most important from a macro-prudential view, reductions in retained earnings FDI do not seem systematically associated to sudden stops of overall inflows. This is different from non-retained earnings FDI, because falls in the latter part of FDI are systematically associated with sudden stops. We believe the latter provide some evidence that multinationals' corporate savings behave similar to national savings, being less sensitive to sudden stops.

Our work is naturally related both to the FDI literature and to the literature on macro-vulnerabilities and volatility. Recently, for example, Federico, Vegh, and Vuletin (2013) explore how the composition of capital flows and its volatility impacts the volatility of output. In particular, they question the commonly held belief that the higher the share of FDI as capital inflows, the lower the volatility of output. They argue that the effect depends on the covariance between capital flows and GDP, as in a standard portfolio problem. In our paper we argue that at least a portion of the empirical correlation found in the literature between changes in FDI and GDP is mechanical in nature, due to a fraction of FDI being retained earnings (RE-FDI). These earnings were generated in the country and are part of GDP, and if retained they are FDI. Some other literature has focused on longer term horizons rather than short term covariation. For example Borensztein, De Gregorio, and Lee (1998) use changes in FDI by decades to explore the relation between FDI and growth. Although we are relatively less worried of a mechanical effect due to the lags, part of the long term correlations could stem from the fact RE-FDI were part of GDP.

Regading vulnerabilities Jeanne and Korinek (2010) present a model where individual agents do not fully internalize how their individual capital inflow decisions impact overall volatility in the economy. In particular, this creates a decentralized market equilibrium that has too much leverage. Consequently, the authors propose a Pigouvian tax to align social and private incentives. Jeanne and Korinek (2013) offer some estimations of the size of these taxes. Unsurprisingly, since the problem is too much leverage, for FDI that Pigouvian tax is close to zero; while for other capital inflows this tax could be as high as 1.5%. In this current paper we provide a few caveats to the general idea that FDI tend to be less harmful as a capital inflow. One is because empirically there is a correlation between GDP and RE-FDI which might in part be driving a portion of the covariations between FDI and good news in the literature. Second because part of REFDI (like other FDI) is not Investment, despite its name. If FDI remains as cash or other liquid assets, it is not obvious that they are less volatile. In fact, Hansen and Wagner (2015) explore the commodity boom in copper mining, finding that during this period multinationals tripled their holdings of cash as share of assets. Moreover, when instrumenting MNC's cash flows, they find

that around 20-50 cents on the dollar end up as cash.

Fernández-Arias and Hausmann (2001) show how the probability of sudden stops among emerging and less developed economies is positively associated with non-FDI capital inflows but no significant correlation shows up for FDI. They argue that part of the safety of FDI for aggregate vulnerabilities come from the fact that it is a residual claim that does not suffer from neither a maturity nor a currency mismatch[2]. Here we exted their work in various ways, specifically by splitting FDI into two disjoint groups: RE-FDI and nonRE-FDI. For some indicators of crises these two types of foreign direct investment have marginal effects of different magnitudes and even signs.

We are naturally related to papers analyzing gross versus net capital inflows (Cavallo, Powell, Pedemonte, and Tavella, 2015; Forbes and Warnock, 2012; Broner, Didier, Erce, and L.Schmukler, 2013); to which we provide a different angle, even suggesting new way that looks at capital flows on a cash rather than accrual basis, as suggested by Levi-Yeyati (2014). [3]

Regarding macroprudential regulation, Galati and Moessner (2013) provide a survey of recent findings. Interestingly, this review centers the debate mostly on macroprudential mesures for banking and less on capital flows with non-finacial corporations. Our article points out that regulations impacting retained earnings of multinationals (e.g. repatriation taxes), can have meaningful impacts over standard measures of capital flows. More specifically in the potential externalities of capital inflows, various recent papers explore their impact and potential policies to mitigate their problems. Benigno, Chen, Otrok, Rebucci, and Young (2013); Jeanne and Korinek (2010); Jeanne (2014).

Finally we have to acknowledge that not all Foreign Direct Investment, despite being named as *investment*, constitutes Gross Fixed Capital Formation. On the one hand when there is M&A FDI from a foreign firm there is no new investment. For example Aguiar and Gopinath (2005) show that FDI was remarkably stable during the late 1990s crisis in East Asia, because the lack of liquidity of domestic firms paved the road for foreign investment to acquire these companies. On the other hand, when there are delays in investment due to long planning horizons, or when there are tax barriers that segment the cash pool of multinationals, then multinationals may stockpile a sizeable amounts of cash, as shown by Hansen and

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[2]They find that for developed economies there is no clear differene between FDI and NON-FDI when explaining probability of sudden stops. They argue this is because they are able to borrow in their own currency and therefore not victim of "original sin", so external debt is less of a problem. Foreign investors may not be sharing the idiosincratic business risk buying a bond from a company, but if they borrow in local currency the foreign investor is

[3]Cowan and Raddatz (2013) look at the relation between financial frictions and sudden stops. We also explore how a very specific type of financial friction, namely the difference between funds internal and external to the firm, and its relative impact on macroeconomic vulnerability.

Wagner (2015) for the case of copper multinationals. A large stock of RE-FDI, if not invested but hoard in liquid instruments, could risk an increase in bunching of capital outflows and could be an additional source of vulnerability.

The rest of the paper is structured as follows. Section 2 explains local savings and the reasons we may care about it, as well as discussing some sources of macro vulnerability that may come from FDI. Section 3 describes our data and basic stylized facts. Section 4 explores the cyclicality of different types of flows and section 5 the determinants of retained earnings FDI. Section 6 explores the relationship of different types of FDI with macroeconomic crises and finally Section 7 concludes with some remarks.

2 Types of FDI in the domestic economy: a basic framework and application

2.1 Standard savings measures are not sensitive to the corporate saving of multinationals.

Before jumping into the data we want to remark that standard savings measures are not sensitive to the corporate saving of multinationals. As well known, there are two aggregate measures of savings used in macroeconomics, one at the national level and the other at the geographic level. As part of the national accounts, Gross *National* Savings equals GNI minus overall consumption ($C_t + G_t$). Meaning it is Investment (I) plus the Current Account balance (CA). In contrast, Gross *Domestic* Savings aims to be a geographic concept, so it equals GDP minus overall consumption. This means GDS_t is Investment plus only the Trade Balance ($TB \equiv X - M$), not the whole Current Account Balance. Therefore, all net income coming from other sources different from net exports of goods and services, like the net payments to investments abroad, is not part of domestic savings but part of national savings.[4] Formally,

$$GNS_t = I_t + CA_t \tag{1}$$

$$GDS_t = I_t + TB_t \tag{2}$$

To simplify the problem greatly let's assume a few things that are innoquous for our main point. There

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[4]National saving comes from the non consumed part of GNI, namely $GNS = GNI - C - G = I + CA$; while domestic savings are the non consumed part of GDP, meaning $GDS = GDP - C - G = I - TB$

are no taxes and no saving by either government or households, only corporatons save. Additionally, let's assume there are no other current transfers in the Balance of Payments besides income from FDI and the trade balance (no migrant, no remitances). Furthermore, we assume all FDI is a liability, meaning that residents do not invest abroad; only foreign multinationals own firms in the domestic economy. That means after tax profits of multinationals in the country, π_t^{MNC} are the only difference between the trade balance and the current account, meaning:

$$CA_t = TB_t - \pi_t^{MNC}$$

Pluging this simple result into Eq 1 and 2 yields that the diffence betwen national an domestic saving is simply the profits of multinationals, it does not matter whether these profits are retained in the corporation or not.

$$GDS_t - GNS_t = \pi^{MNC}$$

Remark 1. Neither the domestic (GDS) nor the national savings (GNS) consider the decision of multinationals to retain earnings as part of savings. While GDS_t includes all profits of foreign owned corporations as part of savings, GNS does not include any profits. None of these measures are sensitive to the decision of foreign corporations to keep savings in the country.[5]

In the context of a globalized world it is not completely clear why we should have such extreme treatment of profits accrued to foreign investors. In particular, we think that for non-financial corporations with substantial and long term interest in the country it is useful to have a third savings indicator, that is truly geographic in nature and that takes into account that under some circumpstances the reinvestment of domestic capitalists is no different in the welfare function than the retained earnings of foreign capitalists with long term interest in the country [6].

Definition 1. We propose a new savings indicator that we could name *Gross Local Savings*, GLS_t, that

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[5]Assume for simplicity that they simply hold cash as retained earnings so it is not on any investment.
[6]Think for example a case in which the mdin voter o a cunry is a wage worker, maybe with some saving that are fuly diversified around the world.
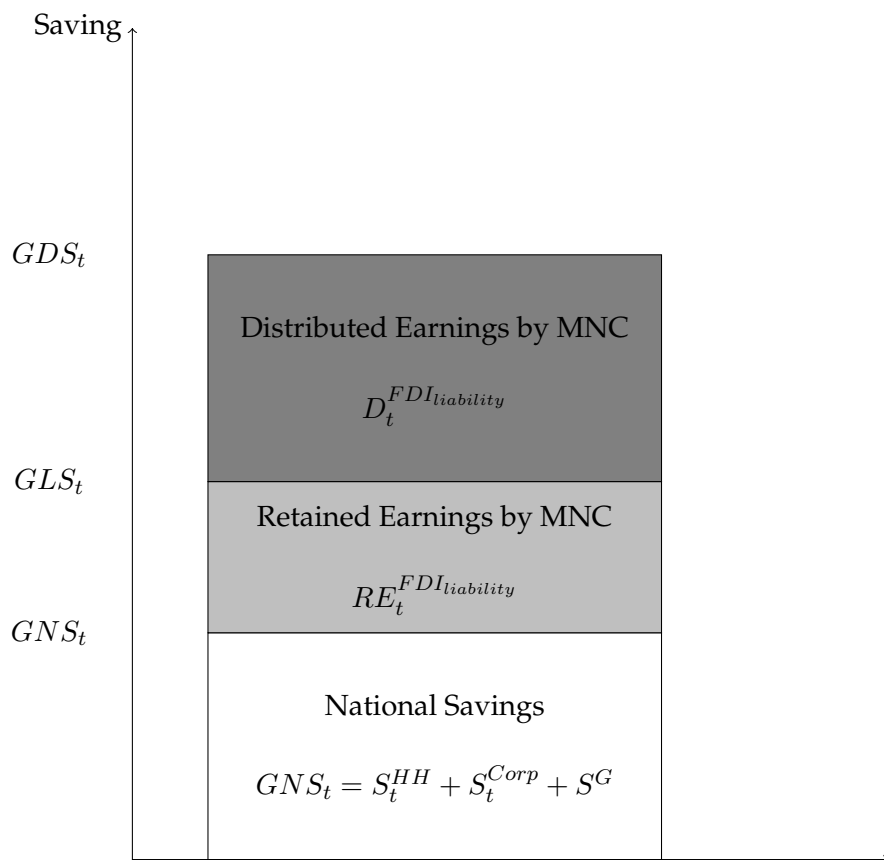
Figure 1. Diagram comparing the definition of Gross Domestic (GDS), Local (GLS) and National Savings (GNS)

includes the retained earnings of multinationals in the national territory[7]

$$GLS_t = GNS + RE_t^{FDI_{liability}}$$

In this simplified context GLS_t is also gross domestic savings minus the dividend payout of multinationals located in the country.

$$GLS_t = GDS_t - D^{NFI_{liability}}$$

; with the profits of multinationals splitted between payout and retained earnings: $\pi^{NFI_{liability}} = D^{NFI_{liability}} + RE_t^{FDI_{liability}}$, with the last term considered in local savings. The diagram in Figure 1 shows the three definitions of saving: national, domestic and local.

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Of course the definition above is very restrictive since we do not consider any other type of capital

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[7]Here we are using losely the term multinationals in order to keep the wording simple and avoiding excessive BOPs 6 and SNA 2008 jargon. When we say multinationals we mean proportionaly all the shares of non financial corporations that have at least 10% foreign ownership, weighted by their share of foreign ownership.

flow different from inward FDI from Retained Earnings. Still, for countries where inward FDI is very important, it could provide a first order approximation.

2.2 Examples and applications of the Gross Local Saving approach.

As a preview we want to show a few cases of how Gross Local Saving (GLS) could be a meaningful magnitude to watch. To be clear, we do not want to change the nature of the Balance of Payments in the same way an accountant or financial economist does not want to change the nature of the GAAP or IFRS accounting practices; but to change the risk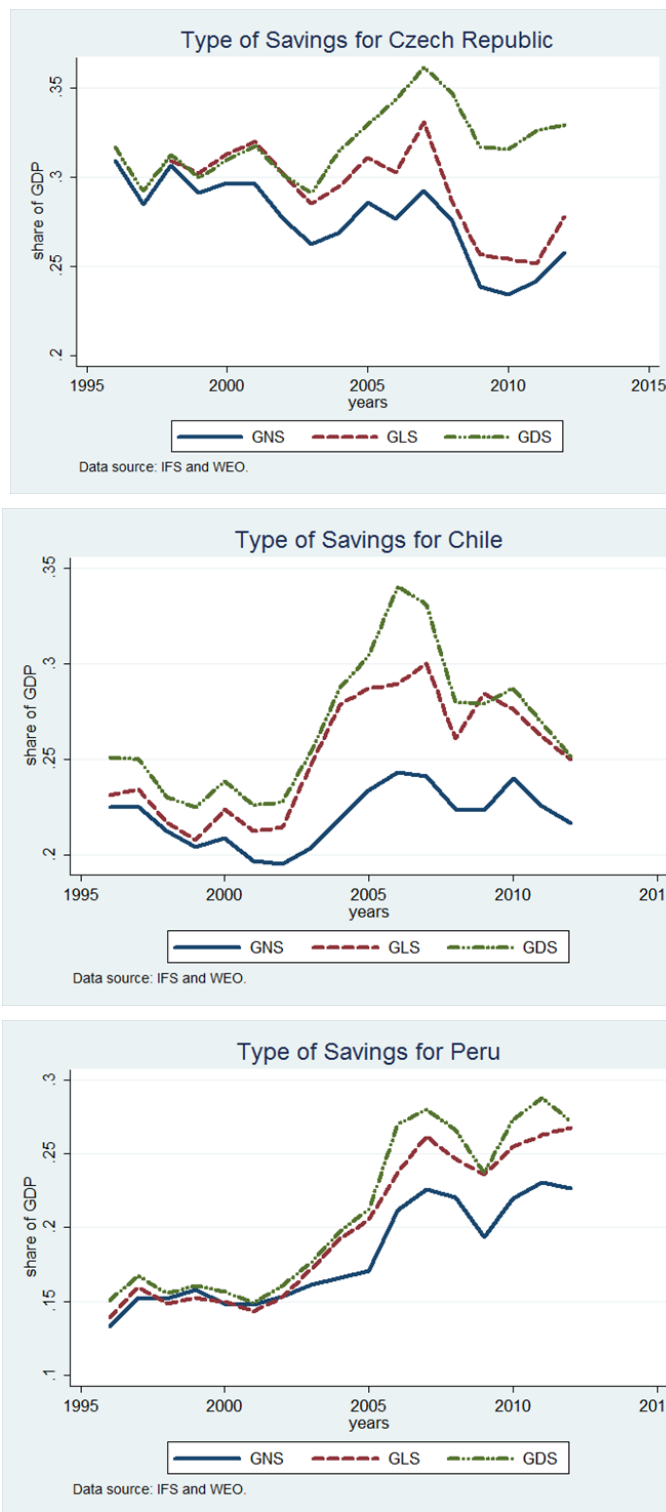 ratios calculated from those accounts. In that sense it is useful to put together national saving and multinationals' retained earnings as Gross Local Saving.

Figure 2 compares GLS to the standard National and Domestic savings over GDP for three selected countries. For the Czech Republic National Saving started to decrease since the 30% in 1996. In the next decade and until before the Great Recession the National Saving decreased by 2-3 points. But that was not because of lower savings in the local economy. In fact the Gross Local Saving measure did not decrease and even increase a bit above 30%. Part of the puzzle of the (slightly) lower national saving in the Czech Republic was because of multinationals locating there. This goes to our main point: the more multinationals with long term committemnt to the country, the more of your *local* non-financial corporate savings will be classified as retained earnings FDI. Alternatively, when one looks at Domestic Savings (GDS) they have not decreased since 1996. But part of these savings leave the country as dividend payments to the multinationals' headquarter. Note again that in Figure 2 the vertical difference between GDS and GNS are the profits of multinationals in the country, which are growing for Czech inward FDI recipients, a portion of these earnings are reinvested locally (vertical distance between GLS and GNS).

The difference for the case of Chile and Perú is much stronger. Before the commodity boom circa 2002 the three measures of saving, National, Local and Domestic, were not that different from each other. After that boom, multinationals made large earnings, represented up to a first approximation by the vertical distance between $GDS_t - GNS_t$; but also retained massive amounts of these earnings proxied by the vertical distance $GDS_t - GNS_t$. For these countries there is a 2 to 4% of GDP extra when considering local saving. Importantly, a much larger share of the earnings of these multinationals are kept as local saving, unlike in the Czech Republic. This could be related to the opportunities to invest in the mining boom since 2002.

One can argue that the retained profits of multinationals do not need to be invested directly, as remarked

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Type of Savings for Czech Republic

Data source: IFS and WEO.

Type of Savings for Chile

Data source: IFS and WEO.

Type of Savings for Peru

Data source: IFS and WEO.

GNS is national savings; GDS is gross domestic saving and GLS is our measure of gross local saving that includes the retained earnings of multinationals but but their repatriated profits. In general, the vertical distance between GNS and GDS represents the overall profits of multinationals, while the distance between GLS and GDS represents a proxy for retained earnings FDI. The Distance between GLS and GDS is the complement, meaning the repatriated profits of multinationals. All of this assumes that the first order RE-FDI are the inflows, as a first pass.

Figure 2. Gross Local Saving, compared to standard measures of Gross National and Domestic Saving, for three selected countries 1996-2013.

in Hansen and Wagner (2015), but could be kept as cash. If they enter the local banking system then there are chances that it gets reinvested in the economy by other agents. Also, these reinvested profits of multinationals could exit the country as liquid portfolio outflows to other countries. That, though, is something that domestic non-financial corporations can also do. Therefore our suggestion to use GLS as an additional indicator of saving, because it treats multinationals equally as domestic companies, at least for the money they keep in the country. We do not want to argue local savings represents always a better indicator of the existing measures, GNS and GDS. But is able to complement them. Unfortunately GDS, by including all profits of multinationals is too high of an upperbound for saving in the economy; while in countries with significant FDI stocks the GNS measure seems too low of a lowerbound for the actual saving in the local economy. Our GLS is somewhere in the middle of both definitions, but not by any means it is perfect.

A second application of the principle of considering multinationals' retained earnings as saving, at least in some countries, is depicted on Figure 3. For most countries in our sample of Latin American countries RE-FDI account for a bit less than half of the current account deficit. And for countries with much more FDI stocks, like Chile, Peru or Colombia; this is above 100% of the Current Account. The order of magnitude of multinationals retained earnings is not far off from average current account deficits during 2011-2013.

As a third application we can attempt is to compute Sudden Stops on a cash basis, meaning isolating the effect of the Retained earnings FDI; or what is equivalent, which is to consider capital flows only those financial flows that do not belong to gross Local Savings. We perform the sudden stops calculations using standard IFS data (explained in section 3); compute both the "standard" sudden stop measure as in Guidotti, Sturzenegger, Villar, de Gregorio, and Goldfajn (2004) and then recalculated excluding Retained Earnings FDI from the capital flows, since it does not cross border. Figure 4 shows the results, indicating that the number of Sudden Stops is always lower. The list of events under standard and cash-crossing-the-border cases is available in the Appendix. For the years preceding the Russian crisis around half of the SS events in usual calculations disarppear if one corrects by RE-FDI. A similar phenomenon happens in 2003.
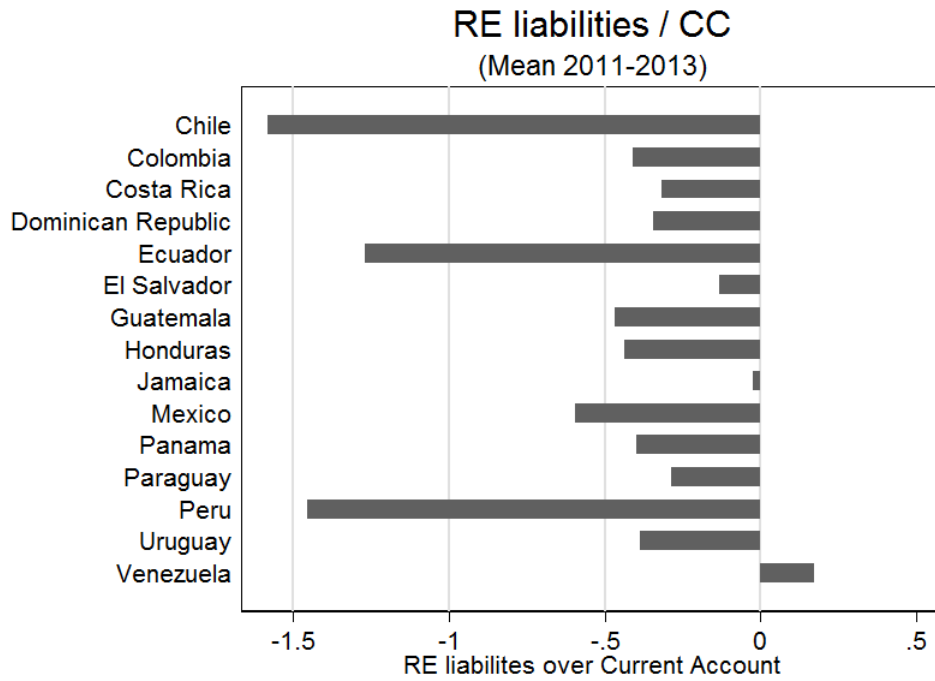
Figure 3. Ratio between Retained Earnings of FDI inflows and the current account balance for selected countries (Lat Am)
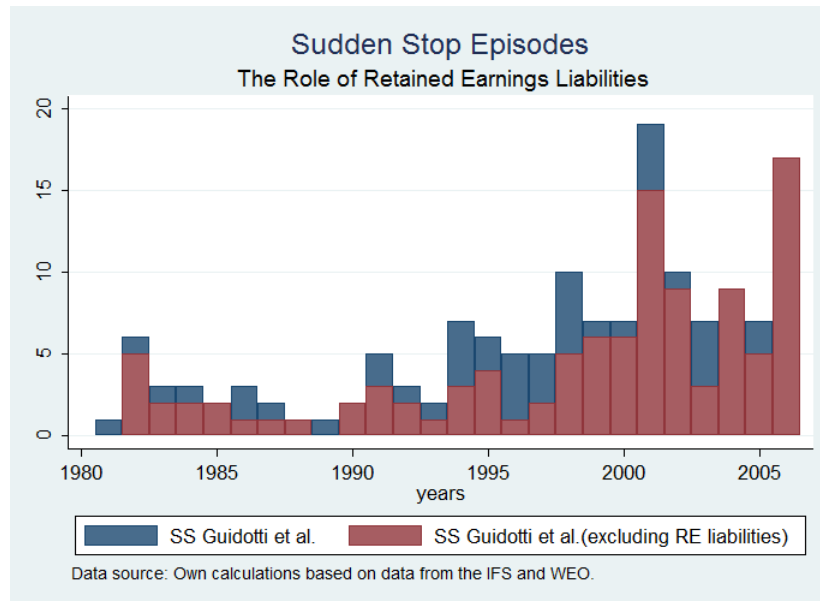

Figure 4. Number of events of Sudden Stop measured a la Guidotti, Sturzenegger, Villar, de Gregorio, and Goldfajn (2004) and recalculated excluding Retained Earnings FDI from the measures of capital flows, since it does not crosses the border.

2.3 Factors and policies impacting how direct investment flows relate to macro-prudential concerns

This section provides a brief discussion of the factors and policies that impact the subcomponents of FDI and its macro-prudential implications.

For that it is instructive to start with the Jeanne and Korinek (2010) framework, who explore policies to mitigate the deleveraging externality. Since foreign debt accumulation and asset prices magnify credit booms, the optimal Pigouvian tax in their model restricts capital inflows during booms, with a mirror of reducing the potential outflows during busts. That smooths the cycle.

Since the model was about debt, maybe amplified by a balance sheet channel, when Korinek (2010) uses Indonesian data to calibrate the optimal tax he finds a 1.54% levy for foreign currency-denominated debt, but almost a zero tax for FDI inflows. Clearly in that logic of over borrowing the FDI flows should not be a problem, since on the one hand it is a residual claim rather than a fixed payment, and on the other hand it is a long term liability.[8]

Our concern is that in countries with large retained earnings FDI in cash, you have a liability that is is usually long term, but if the fundamentals for future investment suddenly drop, then multinationals may take that cash out of the country amplifying the "bunching of capital outflows". For example, in usual times a copper mine in Chile may not repatriate all its profits to avoid current additional taxation, because in the future there might be investment opportunities. If that money is parked at least partially in the local financial system it can have asset price effects over and above the commodity boom. But if the perceptions of long term copper prices suddenly drops, multinational may amplify the downturn also taking cash out of the country. This can also impact multinationals operating in the non-tradable sector, but instead of commodity price drops as a fundamental, they could overreact if multinationals perceive a massive drop in the expectations for future growth, and therefore return over investments.

One type of "capital control" that can potentially create these piles of reinvested cash by multinationals is the corporate taxation of multinationals. When firms have to pay *additional* taxes when repatriating cash, either in the origin or destination countries, then there is an incentive not to repatriate immediately (see (Desai, Foley, and Hines Jr, 2004; Desai, Foley, and Hines, 2006; Desai, Foley, and Hines Jr, 2007; Desai, Fritz Foley, and Hines Jr, 2008). Multinationals' CFOs avoid repatriating because that implies paying

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[8]For example the Chang and Velasco (2001) model purposefully does not allow for FDI in their Diamond-Dybvig setting, because otherwise they cannot get a bank run.

these taxes, while next year they may need to bring the money back for the second round of investment. This creates an investment inaction zone that induces cash stockpiling.[9]

It could seem paradoxical that a policy that seems "friendly" to a foreign investor, like pushing corporate taxation forward until it exists the country, could create similar incentives than a capital control for short term flows.

The macroprudential concerns discussed above could also depend on the characteristics of FDI projects. In some of them there are more inter-temporal considerations than in others. For example mining companies can be viewed as a sequence of projects with longer J-curves in their cash flows, overlapping with each other and therefore with important incentives to move cash from cash producing projects into cash demanding projects within the multinational's branch. In contrast soybean or wheat production is annual and, while there is room for investment, there is much less room for intertemporal considerations hoarding cash for future investments. Also, if there are not future investment possibilities there is little value for waiting. For example a company that only can build a single dam for hydroelectricity will be very intensive in external funds, with little reinvestment of earnings over time. In Rajan and Zingales' terminology that project would have high *external finance* needs In financial terms their flows may look like a buying a perpetual bond.

Overall, the concerns about a bunching of outflows in case of bad expectations on fundamentals depends on where the money is. Either in the local economy or overseas. As mentioned, if accumulated cash is in the local financial system it could be like borrowing from abroad, despite being recorded as FDI in the BoP, and therefore could create the standard macroprudential risks of debt. This cases challenge the Korinek (2010) prescription of a different capital control for FDI and foreign debt. But the money may be exiting though other source. In some cases it could be a loan to related mines elsewhere, in which case shows up as outward FDI, in the sub account of other-FDI, meaning related party debt. Which is debt but, as discussed before, in economic terms is like equity. But it does not need to exit that way. It can also be invested in other global assets, in which case appears on as a capital outflows, but not on FDI. It could be as portfolio or other assets.

Part of the role of macroprudential monitoring in economies with large FDI stocks is to figure out where is that money parked, to see whether it poses a risk to the economy in case of a sudden drop in funda-

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[9]See Almeida, Campello, and Weisbach (2004) for a theoretical discussion and Hansen and Wagner (2015) for an application to Copper mines.

mentals.[10] This is not trivial information to get for at least two reasons. First is that, as mentioned before, the outflow coming from retained earnings FDI inflows usually does not show up as retained earnings FDI outflows or not even FDI, if any. Second is that the Balance of payments only records the nationality of the last investor, not the ultimate investor. So for example if a Mexican buys shares of a company in Cayman Islands that owns shares of a firm traded in London that invests in Mexican Real Estate, then it is considered FDI, despite the fact that the ultimate owner is a Mexican investing in Mexico.

Overall, Central Banks in countries with high FDI stocks may want to check where retained earnings are and how susceptible are they to a bunching of outflows.

Having clarified the reasons why we may care about the behavior of different types of FDI for macropru- dential purposes, we turn into the rest of our empirical paper, where we show the differential behavior of different types of FDI and its relationship to macroeconomic circumstances.

3   Data and some stylized facts about direct invesment flows

3.1   Data sources and summary

Our main database is the IMF's Balance of Payments Statistics (BOPS), yearly flows. In particular we focus on the group of countries for which we have more detailed reporting of FDI and, when possi- ble, its components. For general macroeconomic data we use World Economic Outlook and the World Bank's World Development Indicators. Specific variables such as those about crises come from Reinhart and Rogoff's dataset; while sudden stops on gross flows by Forbes and Warnock (2012). The detailed description and source of variables is Appendix 9.1. We restrict our main sample to countries that have a population above 5 million inhabitants and that have at least 20 years of observations in the IFS-BOPS data, starting in 1980. We worked on the adjustment of variables from BOP Manual 5 to BOP Manual 6, which allowed us to get data post 2009, but most of the crisis definitions were made with pre 2009 data (with reporting in BOPS 5th Manual).

A crucial set of variables are the components of FDI. In the BOP data FDI is composed of (1) Equity inflows , (2) Retained Earnings and (3) Related Party Debt. The latter is often equity in economic terms, since multinationals use debt and thin captalization structures to reduce their corporate tax payments.

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[10]Fire-sales of FDI recipient firms and the potential of capital outflows could in principle be balanced by the foreign inflows as in Aguiar and Gopinath (2005)

Our grouping of FDI would be between, on the one hand (2), meaning retained earnings FDI or *RE-FDI*, and on the other hand the sum of (1) and (3), which we will call *nonRE-FDI*.

3.2 Summary statistics

Table 1 reports descriptive statistics for the main variables in the analysis. The statistics cover the full sample of countries (around 100 depending on data availability) for the period 1980-2014. The variables are organized in three blocks: in the first block, we report capital flows variables, our main variables of interest; in the second block, we report variables capturing country's macroeconomic vulnerability such as sudden stop episodes and crisis episodes of several kinds; and finally, in a third block, we report variables that we used as control variables in our regression analysis below such as GDP growth rate, FDI stock, financial openness, exchange rate regime classification, terms of trade, natural resources dependency, etc. Because our main interest is characterizing the dynamics of RE-FDI and its effects, we will explain the first two blocks. In the first block, we observe that the median FDI flow, as a percentage of GDP, is 1.31% in our sample of approximately 100 countries , while Portfolio flows and Other flows have median values of 0.50% and 2.32%, respectively. RE-FDI has a median value of 0.36% of GDP and nonRE-FDI has a median value of 1.14%. Regarding second moments, we observe that the standard deviation of FDI is 3.9%, slightly above the standard deviation of Portfolio flows (3.3%) and well below the standard deviation of "Other flows" that report a standard deviation of 7.1%. The figures on variance are aligned with those reported by Levchenko and Mauro (2007). The table shows RE-FDI is less volatile than nonRE-FDI; the standard deviations are 1.3% and 3.6%, respectively. Note that overall FDI is reported by 101 countries while the disaggregated RE-FDI and nonRE-FDI is available for only 83 countries, losing 17.

The unconditional probability of sudden stop is 24% according to the Sudden stop (SS) measure of Forbes and Warnock (2012). According to Guidotti, Sturzenegger, Villar, de Gregorio, and Goldfajn (2004)'s SS variable, this probability is only 5%. This difference is explained by the number of countries in their samples. We build and compare both measures of SS both consitioning on the same sample of countries we use for extimation and we find than the number of identified episodes is similar. Regarding the crises episodes defined by Reinhart and Rogoff (2011), the probability of the different types of crises is around 20%. In particular, we find that the probability of observing a banking crises is 20.4% a currency crises is 22.8%, an inflation crises is 19.64%, and a stock market crises a 28.6%.

Table 1. Descriptive Statistics

Variable	Mean	Median	Std. Dev.	Min	Max	n	$\bar{T}$
Financial Account Flows	0.067	0.063	0.089	-0.857	0.733	90	21
FDI	0.024	0.013	0.039	-0.164	0.521	101	28
FDI - Retained Earnings	0.007	0.004	0.013	-0.102	0.140	83	22
FDI - Non Retained Earnings	0.019	0.011	0.036	-0.214	0.470	83	22
Portfolio Investments	0.015	0.005	0.033	-0.218	0.370	90	21
Other Investments	0.029	0.023	0.072	-0.890	0.861	101	30
Sudden Stop (Forbes)	0.242	0.000	0.428	0.000	1.000	42	30
Sudden Stop (Guidotti)	0.055	0.000	0.228	0.000	1.000	110	30
Banking Crises	0.204	0.000	0.403	0.000	1.000	58	30
Currency Crises	0.228	0.000	0.436	0.000	2.000	58	30
Inflation Crises	0.196	0.000	0.397	0.000	1.000	58	30
Stock Market Crash	0.286	0.000	0.452	0.000	1.000	41	30
Crises Tally	0.758	0.000	0.428	0.000	1.000	93	31
$\triangle Ln(Y)$	0.059	0.067	0.177	-2.323	1.958	101	30
$Ln(FDISTOCK)$	8.262	8.241	2.733	-4.605	15.183	102	29
Financial Oopenness (Chin-Ito)	0.423	0.305	0.353	0.000	1.000	102	30
FX Regime (Float)	0.269	0.000	0.443	0.000	1.000	98	27
FX Regime (Crawl)	0.417	0.000	0.493	0.000	1.000	98	27
FX Regime (Peg)	0.314	0.000	0.464	0.000	1.000	98	27
Net Barter Terms of Trade	1.145	1.232	0.446	0.212	7.210	101	24
Natural Res. Rent x Price	9.724	3.673	15.734	0.000	116.244	102	20
Rule of Law	-0.167	-0.465	1.005	-1.926	2.002	102	12
Natural Disasters	0.638	1.000	0.481	0.000	1.000	110	31

The table reports summary statistics. Financial account flows are the sum of all IFS's financial account liabilities but international reserves; portfolio investments are the portfolio investments liabilities from the financial account; FDI is the Foreign Direct Investment liabilities from the financial Account; Other investments are the liabilities in Other investments from the financial account; FDI - Retained Earnings and FDI - Non Retained Earnings are the FDI liabilities separated according Retained Earnings and Non Retained Earnings [All these flows are measure as share of the current GDP];" $\triangle Ln(Y)$" indicates the growth of the GDP in logarithm; "Ln(FDI STOCK)" is the logarithm of the stock of FDI from the IFS (International position database); "Chin Ito F.openness" is the Chin Ito financial openness variable normalized (higher value = highly opened financially speaking is the economy); FX Regime are 3 dicotomic variables builded using the Ilzetzki, Reinhart and Rogoff (2008) Fine classification (from 1 to 4 = Peg; 5 to 10 = Crawl & 11 to 14: Floating.); Net Barter Term of Trades index (2000=100%) comes from the WB web page, NR_Rents_x_Prices is the product between the Natural resourses rent of a country times the commodity prices index from the IMF primary commodty prices; Rule of Law comes from the Quality of Government Database and Natural Dissaster is a dicotomic build using the data from the web page "http://www.emdat.be/database" (1 if the country i in the year t have a natural dissaster).

3.3 Statistics by Decade and Income Group

Table 2 splits the sample by income group and decade. A first interesting observation is that the level and volatility of gross financial account inflows grew across decades and across income groups. For example, for the high-income group the median average of financial account flows was 5.68% of GDP in the 80s and 10.80% in the 2000's, with median standard deviation of 2.58% and 8.47% respectively. A similar pattern is observed for upper-middle countries. We will later analyze the determinants of this volatility as well as their covariance, following for example Federico, Vegh, and Vuletin (2013).

For the case of lower-middle/low countries, the level of capital flows increased but the volatility slightly decreased. When we look at FDI flows, in the second panel of the table, we also observe that for each income category, the level and volatility of the FDI gross inflows increase across decades. For example, for upper-middle income countries in the 80s, the median average inflow FDI was 0.78%, as percentage of GDP, and their median standard deviation was 0.42%. In the 2000´s, these two values increases to 3.32% and 1.39%, respectively. RE-FDI and nonRE-FDI more or less resemble the aggregate behavior of FDI flows: the level and the volatility of gross inflows increase between the 80's and the 2000's. More or less, a similar pattern is observed in the other capital flows categories with the exception of Other flows.

Comparing across income groups, a second empirical fact emerges: in general, upper-middle income countries receive more FDI than high-income countries and low-middle countries. The median average inflow FDI is 3.13%, 3.32% and 2.17% of GDP for the three income categories considered in the 2000's. The volatility for high-income, upper middle and middle-low countries were 2.31%, 1.39% and 1.40% during the 2000's. When we look at the FDI components, we observe that RE-FDI is more important for upper-middle countries, whereas nonRE-FDI is more relevant for high-income countries. During the 2000´s, RE-FDI was 0.66% for high-income countries, 0.96% for upper-middle income countries and 0.48% for lower-middle. In the same period, the nonRE-FDI was 2.17%, 1.86% and 1.91% for the same country groups. Interestingly, RE-FDI appears less volatile than nonRE-FDI across decades and income groups.

In sum, when the gross inflow capital flows are compared across decades and income level, several interesting empirical facts emerge, especially with respect to RE-FDI and nonRE-FDI. First, we find that the amount of capital flows, as a percentage of GDP, and its volatility level have increased significantly since 1980's to the present time. In particular, FDI flows and its two components, RE-FDI and nonRE-FDI, show the same general pattern. Second, comparing across income groups, we find that upper-middle

income countries are more intensive in RE-FDI than the other two income groups. On the other, high-income countries are more intensive in nonRE-FDI than the other two groups. As RE-FDI, total FDI is larger in upper-middle countries. Third, RE-FDI represents around a third of total FDI. Finally, RE-FDI is less volatile than nonRE-FDI.

3.4 The more FDI in your investment, the higher retained earnings vis-a-vis national savings.

Figure 5 shows a basic plot *across-countries* that relates how important is FDI on Investment with how important is Retained Earnings in relation to Saving ($GNS_{i,t}$), using data between 1990-2012. The plots show a positive and highly statistically significant relationship both for the average gross inflows in panel (a), as well as for the net flows in panel (b).

To get an initial sense of the average relationship in the last two decades, according to the regression line in (a), per each 10% that FDI inflows represent of aggregate investment, then the capital inflow due to retained earnings represents around twice that percentage of national savings, meaning 20%. The number is very large, but one has to take into account that not all FDI constitute new investment. For example, acquisitions are not new investment for the economy, but simply a change in ownership. In aggregate terms, it can be completely undone if the seller takes the money out of the country either in the form of deposits or new FDI abroad.

Overall, the data shows that prima facie there is a strong and first order relationship between multinationals being important in a country and their corporate savings being quantitatively relevant for local savings in the country, although -as we have mentioned many times - RE-FDI are not national savings. This result is not totally surprising, but seems a relevant qualification to make when using current account deficits as a key variable for policy monitoring.

3.5 Commodity countries increased their retained earnings FDI

As an overview that commodity countries could be more intense in retained earnings FDI we present Figure 6, which depicts de evolution of retained earnings as share of GDP for both commodity and non commodity countries[11]. To avoid the results being driven by outliers, the figure reports the median for each group of countries during each year.

[11]For the definition of commodity country see 4.2

Table 2. Summary Statistics by Income group and decade

	All Sample		High Income		Upper Middle		Lower-Middle and Low	
	Median Average	Median Sd.Dev.	Median Average	Median Sd.Dev.	Median Average	Median Sd.Dev.	Median Average	Median Sd.Dev.
Financial Account Flows								
Total	5.55%	3.31%	7.68%	4.68%	4.67%	2.91%	4.40%	2.98%
1980	3.96%	2.64%	5.68%	2.58%	2.82%	2.10%	3.98%	3.82%
1990	5.61%	2.93%	7.68%	4.61%	4.45%	3.36%	4.40%	1.90%
2000	5.67%	4.39%	10.80%	8.47%	5.53%	3.07%	4.65%	3.74%
FDI								
Total	1.61%	1.07%	1.63%	0.87%	2.24%	1.09%	1.25%	1.03%
1980	0.52%	0.32%	0.53%	0.29%	0.78%	0.42%	0.48%	0.31%
1990	1.63%	1.16%	1.71%	0.91%	2.22%	1.64%	1.17%	1.03%
2000	3.09%	1.56%	3.13%	2.31%	3.32%	1.39%	2.17%	1.40%
FDI Retained Ernings								
Total	0.35%	0.28%	0.36%	0.34%	0.54%	0.39%	0.27%	0.23%
1980	0.18%	0.10%	0.17%	0.10%	0.31%	0.11%	0.16%	0.09%
1990	0.24%	0.26%	0.32%	0.29%	0.23%	0.27%	0.22%	0.18%
2000	0.64%	0.50%	0.66%	0.62%	0.96%	0.54%	0.48%	0.41%
FDI Non Retained Earnings								
Total	1.45%	1.02%	1.47%	0.96%	1.79%	1.20%	1.12%	1.02%
1980	0.34%	0.31%	0.53%	0.34%	0.55%	0.32%	0.23%	0.23%
1990	1.45%	0.96%	1.57%	0.81%	2.35%	1.47%	0.92%	0.95%
2000	1.99%	1.50%	2.17%	1.94%	1.86%	1.20%	1.91%	1.45%
Portfolio Investments								
Total	0.66%	1.24%	2.67%	2.48%	0.65%	1.22%	0.10%	0.52%
1980	0.47%	0.66%	1.21%	1.03%	0.19%	0.54%	0.03%	0.12%
1990	0.91%	1.31%	3.09%	2.73%	1.48%	1.56%	0.17%	0.53%
2000	0.80%	1.56%	3.36%	3.14%	0.66%	1.37%	0.11%	0.62%
Other Liabilities								
Total	2.38%	2.61%	2.61%	2.54%	1.33%	2.45%	2.74%	2.75%
1980	3.21%	2.45%	3.02%	2.32%	1.79%	2.41%	4.28%	2.59%
1990	2.45%	2.49%	2.16%	2.44%	0.87%	3.15%	3.44%	2.35%
2000	1.48%	3.09%	2.54%	6.02%	1.33%	2.06%	0.96%	3.08%
Number of Countries	92		26		22		44	

This table shows summary statistics of the relevant capital flows liabilities by income group and decade. Financial Account Flows are the sum of the liabilities under the Financial account of the IFS, without the International Reserves; Portfolio investments are the portfolio investments liabilities from the capital account; FDI are the Foreign Direct Investment liabilities from the Capital Account; Oher Ivestments are the liabilities in Other investments from the capilat account; FDI - Retained Earnings and FDI - Non Retained Earnings are the FDI liabilities separated according Retained earnings and Non Retained Earnings [All flows are measure as share of the current GDP].
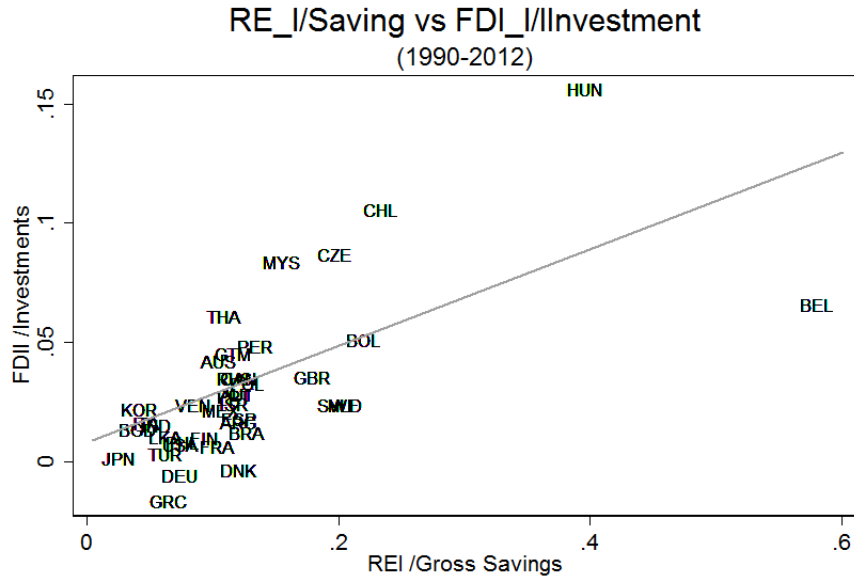
(a) Gross Inflows (liabilities) of FDI and RE, scaled by investment and savings respectively
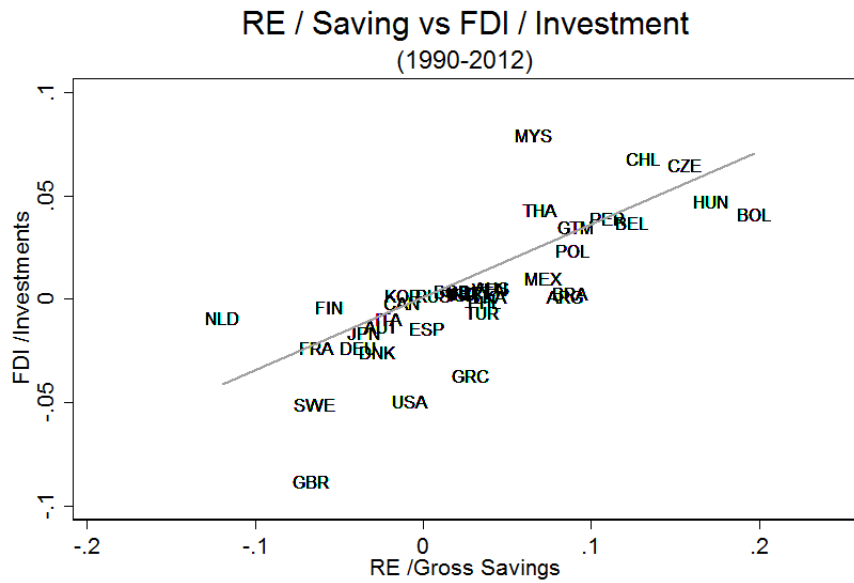
(b) Net flows (assets - liabilities) of FDI and RE, scaled by investment and savings respectively.

Figure 5. Relation between the importance of FDI on Investment and the importance of Multinational's Retained Earnings over Savings

Both the gross and net inflows of RE-FDI show a clear pattern, with a massive jump of commodity countries after 2000, likely coinciding with the commodity price boom. While non commodity countries show a softer upward trend in gross RE inflows, their net flows of RE show no difference. In short, there is some evidence that RE-FDI is getting increasingly relevant for commodity countries. We will later test this more formally.

4 The cyclicality of inflows and saving.

In this section we show that FDI is more procyclical, but especially due to Retained Earnings FDI. This phenomenon looks stronger in middle income countries and commodity-dependent economies. Compared with both the growth of GDP and the change in trade balance, retained earnings FDI seems closer to National Saving than to othe types of capital inflows. This is consistent with the view of Gross Local Saving described above, in which the nature of the corporation saving is not that important, as soon as it has a long term committment in the country.

4.1 Basic Fixed Effects estimations for Financial Account components

To get a sense of the relationship between different capital flows over the business cycle of a country, we estimate equation (3), which shows how the different types of capital flows ($Flow_{i,t}$) change with changes in either GDP or the Trade Balance

$$\triangle \log Flow_{i,t} \quad = \quad \gamma_i + \theta_t + \beta \triangle \log Z_{i,t} + \epsilon_{i,t} \tag{3}$$

where $Z_{i,t}$ could be either GDP ($Y_{i,t}$) or Trade Balance. The latter (TB_{it}) is used as a sanity check because we expect a negative relationship since capital flows many times are "used" in financing a trade deficit, but with relevant exceptions. Broner, Didier, Erce, and L.Schmukler (2013) also use the these two variables as business cycle indicators.Table 3's column (1) shows that Foreign investment is clearly procyclical, with an estimated elasticity $\hat{\beta}$ close to one. This is larger than the point estimates for portfolio and other gross capital inflows which are around 0.7 in columns (4) and (5); although very imprecisely estimated so they are neither significantly different from zero nor from one. Interestingly, the additional procyclicality coefficient of FDI gross inflows comes from Retained Earnings FDI. Column (2) shows

Figure 6. Evolution of Retained Earnings FDI as a share of GDP depending on the commodity dependence of the economy.

Gross RE as share of the GDP (1990-2013)
(the median of the flows measure as share of the current GDP)

(a) Gross RE-FDI Inflows

Net RE as share of the GDP (1990-2013)
(the median of the flows measure as share of the current GDP)
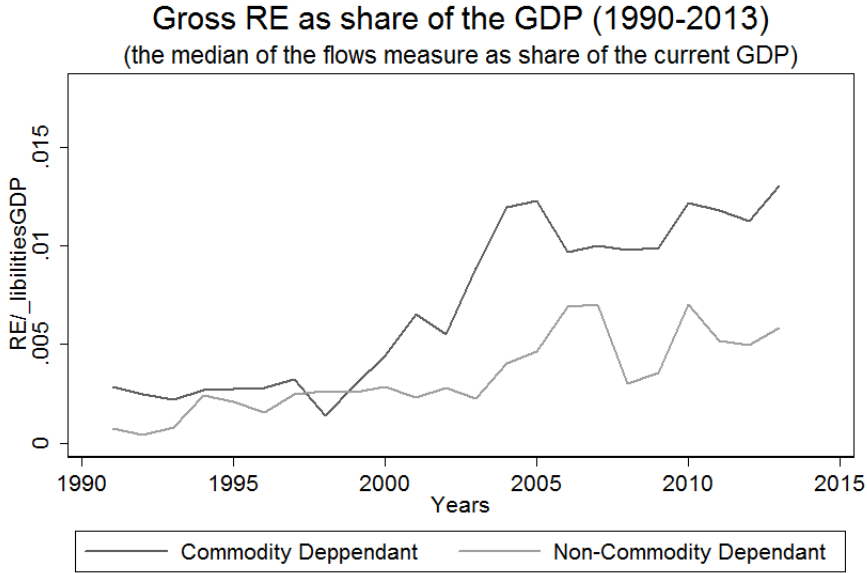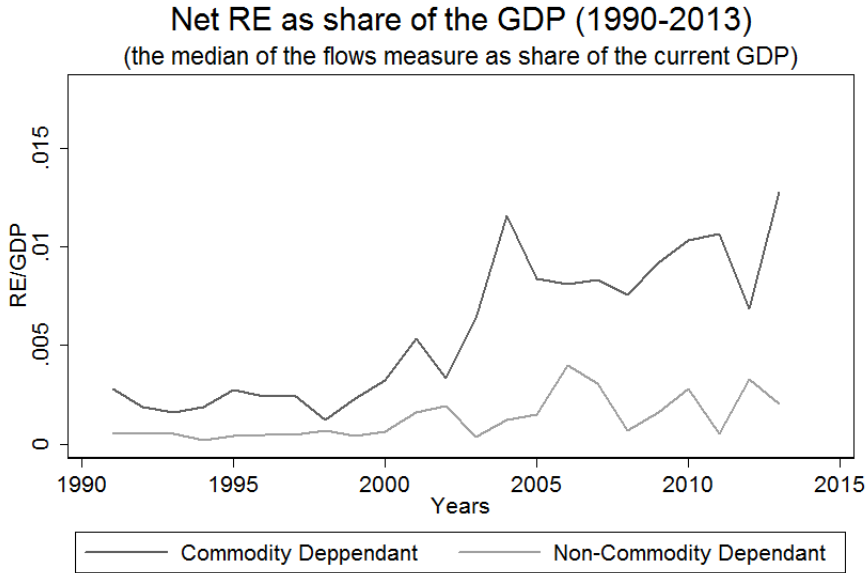
(b) Net RE-FDI flows

that Retained Earnings FDI has a procyclicality coefficient of 1.8; significantly different from all the other flows' point estimates. In contrast, nonRE FDI has a procyclicality coefficient of 0.7, very close to other types of capital inflows (column 3). As we will later see in tables (8) this finding is robust to the inclusion of various controls.

In table 3 we also estimate the procyclicality of national savings. In column (6), the estimated $\hat{\beta}$ is close to one (0.93) and highly significant, whereas for the case of Trade Balance, the estimated coefficient is -0.266 and significant as well. *A pattern to remark is that the procyclicality behavior of retained earnings FDI is closer to that of National Savings rather than the one of other capital flows.* Figure 7, highlights this point graphically. Both when looking at procyclicality vis-a-vis GDP and vis-a-vis the trade balance we observe that the national saving's coefficients are quite similar, both in magnitude and sign, to the estimated cyclicality coefficients of FDI-RE. Regarding cyclical relation with the trade balance, the point estimates on Table 3 and Figure 7 suggest that the retained earnings FDI and National Saving are much less related to surges in trade deficits that other types of flows. If any the coefficient is related to trade surpluses.

Summarizing, on the average country in our sample we find that the business cycle properties of FDI are heterogeneous. While the Retained Earnings component is much more procyclical, nonRE-FDI looks more or less like other capital flows. Importantly, we find that FDI-RE cyclicality is similar to the one of savings.

4.2   Heterogeneity by income group and commodity dependence.

Now we perform further decompositions by both income group and commodity dependence of the country, which allows us to unveil differences in procyclicality.

Table 4 shows the same estimates of Eq (3), finding that our previously described pattern of FDI being procyclical due to RE-FDI comes especially from middle income countries. In fact for high income countries we do not find a statistically significant relationship of FDI with the business cycle (columns 1 to 3). For middle income countries the effect is stronger than for the full sample, with retained earnings being even more procyclical, with an estimated $\beta = 2.4$. The subsample of low income countries does not show a stiatistically significant procyclicality of FDI.

Regarding the Trade Balance results, we also find that the stronger effects are observed for middle income countries, however, high income countries also have statistically significant coefficients. Finally,

Table 3. Procyclicality Panel Regressions of Different types of Capital Flows, controlling for Country and Year Fixed Effects

Variables	(1) FDI	(2) FDI-RE	(3) FDI-nonRE	(4) Portfolio	(5) Others	(6) GNS	(7) FDI	(8) FDI-RE	(9) FDI-nonRE	(10) Portfolio	(11) Others	(12) GNS
$\triangle log(GDP)$	1.078***	1.803***	0.751*	0.708	0.594	0.933***						
	(0.311)	(0.547)	(0.455)	(0.730)	(0.516)	(0.152)						
Trade Balance							-1.133	0.748	-2.580	-3.150	-5.666***	1.402*
							(1.603)	(2.046)	(2.014)	(2.766)	(1.612)	(0.730)
Observations	649	649	649	649	649	630	662	662	662	662	662	643
$R2$	0.718	0.544	0.549	0.353	0.341	0.788	0.721	0.537	0.566	0.373	0.360	0.779
Number of Countries	69	69	69	69	69	68	70	70	70	70	70	69
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Years FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

The table shows panel regresion estimates of $Ln(F_{i,t}) = \alpha + \gamma_i + \theta_t + \beta \triangle Ln(Z)_{i,t} + \epsilon_{i,t}$; where F_{it} corresponds to the different flows and Z the ciclical factor for the period 1980-2012. Columns (1) to (6) show procyclicality with respect to GDP and columns (7) to (12) with respect to trade balance. The sample is restricted to those countries having population above 5 millions and at least 20 years of capital flows data. FDI is foreign direct investment liabilities; FDI - RE and FDI - nonRE are retained earnings FDI and non-retained earnings FDI, respectively; Portfolio is portfolio investments liabilities; Other is other investments liabilities and GNS is the gross national saving. Trade balance is the current account deficit measure as share of the GDP. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Figure 7. Procyclicality: estimated coefficients
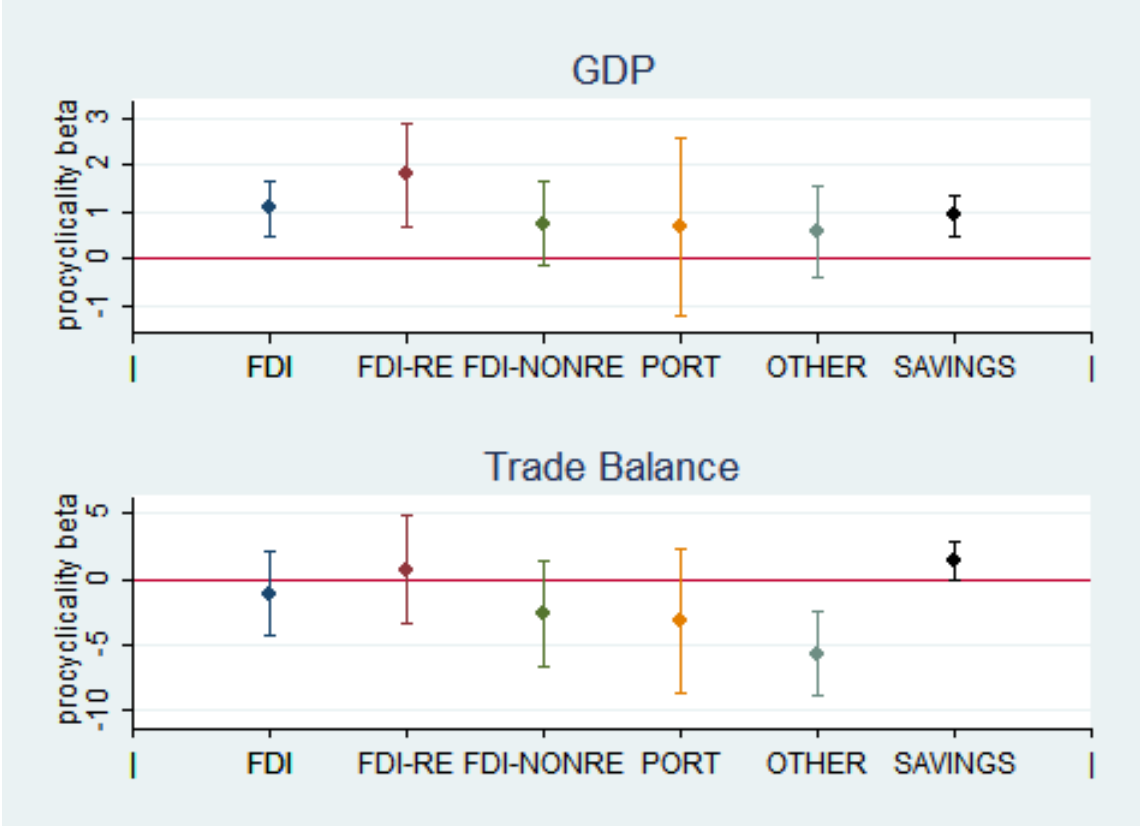
This figure shows procyclical beta estimates (the same reported in table 3) for different types of capital flows and saving. In the upper panel the business cycle indicator is the GDP growth rate and in the lower panel is the change in the Trade Balance. Full sample of countries for the period 1980-2013. FDI is overall FDI; FDI-RE and nonREFDI are defines in the text. PORT stands for portfolio and OTHER as other capital flows. Savings is the national savings rate. The Estimates are the graphical representation of those in Table Table 3

the similarity between the procyclicality coefficients for RE-FDI and Saving remains across income categories when the GDP is used as cyclical indicator. In the Appendix, we report a figure built with the estimated coefficients by income category, similar to figure (7) for the full sample.

Instead of splitting by income, Table 5 separates the sample by commodity dependence[12]. While column (1) shows that the overall procyclicality of FDI is similar no matter the commodity dependence of the country, the subcomponents in columns (2) and (3) show an important difference. For commodity dependent countries retained earnings has a significant procyclicality of $\beta = 2.7$; while non-RE FDI displays a low and statistically insignificant $\beta = 0.3$. In contrast, for non commodity-dependant countries the two types of FDI, RE and nonRE, display a similar procyclicality around 0.75, although statistically insignificant for FDI-RE.[13] Interestingly, we observe again, in the sample of commodity dependent countries, that both the magnitude and the sign of the procyclical coefficients are quite similar for RE and Savings. As in the case of income decomposition, in the appendix we report a figure with the estimated coefficients by commodity dependence.

5   Determinants of FDI composition within countries.

In this section we explore determinants of each type of FDI inflows, beyond the business cycle, which we also use as control. We run these regressions in a seemgly unrelated regression framework (SUR), jointly estimating the two equations, one for RE FDI and the other for nonRE-FDI. The advantage of that is that we can fomally test for significance of the difference between RE-FDI and nonRE-FDI, $\hat{\beta}_{RE} - \hat{\beta}_{non-RE} = 0$, because of the joint estimation. To begin exploring correlates Table 7 shows bivariate regressions after correcting only for country and year fixed effects meaning that, like in most of the paper, we will be concentrating on within country variation. First, we look at the stock of FDI in the country (lagged), for which we do find important differences between both types of FDI flows.

Regarding financial openess (measured with the the Chin-Ito index,), we find that RE-FDI is more precisely associated with improvements in openess, while the association with financial openess is much less clear for "fresh" FDI coming from abroad (meaning nonRE-FDI). This result is not trivial and in fact

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[12]We classify as commodity dependent a country that has natural resource rents, as defined in the World Development Indicators, above 10% of GDP. This corresponds to the top third of countries with respect to this variable, so the sample is splitted in 23 commodity dependant countries and 46 non commodity dependent.

[13]With respect to Trade Balance, we also observe a difference between RE and nonRE coefficients, for RE the coefficient is positive although insignificant, and for non-RE the estimated coefficient is negative and significant. For non commodity dependent countries the coefficients reverse, now RE is negative and nonRE is positive.

Table 4. Procyclicality by income group

	GDP						Trade Balance					
	(1) FDI	(2) FDI-RE	(3) FDI-nonRE	(4) Portfolio	(5) Others	(6) Savings	(7) FDI	(8) FDI-RE	(9) FDI-nonRE	(10) Portfolio	(11) Others	(12) Savings
High Income												
	0.844	1.621	0.461	0.130	-1.246	0.943***	4.603***	-0.0783	5.871***	-11.88***	-4.615*	1.201*
	(0.550)	(1.095)	(0.782)	(0.990)	(0.963)	(0.125)	(1.187)	(3.901)	(2.031)	(3.453)	(2.564)	(0.585)
Middle Income												
	1.415**	2.362**	1.592	-2.630	2.278**	0.708*	-7.111**	-4.450	-9.913**	-1.611	-10.23**	2.690*
	(0.627)	(0.858)	(1.080)	(1.553)	(0.861)	(0.386)	(2.823)	(3.119)	(4.168)	(4.355)	(4.506)	(1.385)
Low Income												
	0.412	1.656	-0.0198	5.241**	0.553	1.458***	-3.898	2.647	-5.852**	4.684	-3.200	0.977
	(0.625)	(1.159)	(0.855)	(2.286)	(1.426)	(0.406)	(2.422)	(2.405)	(2.224)	(3.451)	(2.074)	(1.073)

The table shows estimates of the panel regresions $ln(F_{i,t}) = \alpha + \gamma_i + \theta_t + \beta \triangle Ln(X)_{i,t} + \epsilon_{i,t}$; where F_{it} corresponds to the different flows and X the ciclical factor for the period 1980-2012. Columns (1) to (6) show procyclicality with respect to GDP and columns (7) to (12) with respect to trade balance. The sample is restricted to those countries having population above 5 millions and at least 20 years of capital flows data. FDI is foreign direct investment liabilities; FDI - RE and FDI - nonRE are retained earnings FDI and non-retained earnings FDI, respectively; Portfolio is portfolio investments liabilities; Other is other investments liabilities and GNS is the gross national saving. Trade balance is the current account deficit measure as share of the GDP. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table 5. Procyclicality in Commodity Dependant Countries

	GDP						Trade Balance					
(1) FDI	(2) FDI-RE	(3) FDI-nonRE	(4) Portfolio	(5) Others	(6) Savings	(7) FDI	(8) FDI-RE	(9) FDI-nonRE	(10) Portfolio	(11) Others	(12) Savings
						Commodity Dependant					
1.110	2.673***	0.348	0.530	1.574	1.201***	-3.558	2.833	-5.951**	5.343*	-5.689*	1.443
(0.683)	(0.800)	(1.445)	(1.435)	(1.064)	(0.207)	(2.225)	(2.012)	(2.565)	(2.986)	(2.967)	(1.152)
						Non-Commodity Dependant					
0.937**	0.733	0.870*	0.517	0.621	0.555**	0.252	-1.786	0.0509	-10.29***	-5.403***	0.663
(0.359)	(0.525)	(0.472)	(1.477)	(0.543)	(0.228)	(1.810)	(2.940)	(2.499)	(2.908)	(1.953)	(0.673)

The table shows estimates of the panel regresions $ln(F_{i,t}) = \alpha + \gamma_i + \theta_t + \beta \triangle Ln(X)_{i,t} + \epsilon_{i,t}$; where F_{it} corresponds to the different flows and X the ciclical factor for the period 1980-2012. Columns (1) to (6) show procyclicality with respect to GDP and columns (7) to (12) with respect to trade balance. The sample is restricted to those countries having population above 5 millions and at least 20 years of capital flows data. FDI is foreign direct investment liabilities; FDI - RE and FDI - nonRE are retained earnings FDI and non-retained earnings FDI, respectively; Portfolio is portfolio investments liabilities; Other is other investments liabilities and GNS is the gross national saving. Trade balance is the current account deficit measure as share of the GDP. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

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one could have expected the opposite sign. One could have thought that when a country has relevant barriers to capital outflows, like Argentina today, then multinationals operatig in the country would be more likely to respond by investing their retained earnings. But as mentioned, the relationship is more strongly associated with financially open rather than closed economies. Our findings with retained earnings and openess are consistent with the view that multinationals operating in a country can partially undo the capital controls. For example Desai, Foley, and Hines (2006) use multinational's financial microdata showing that firms cope with capital controls "*reducing reported local profitability and increasing the frequency of dividend repatriations*".

Within-country changes in the exchange rate regime do not appear significantly associated with variations in neither type of FDI. As previewed in Figure 6, commodity countries seem to have jumped in RE-FDI during the recent commodity boom. The bivariate correlation reported in the row labeled "Natural Resource Dependency" statistically supports this view with a positive coefficient of RE-FDI. In contrast, part of non-RE-FDI may have decreased with the commodity price boom. Terms of trade also appears to affect differently RE and nonRE. An improvement in the terms of trade tends to reduce the nonRE-FDI while the effect of on RE does not appear significant.

Finally, the univariate results for national saving reinforce the procyclicality results of the previous section, with savings and RE-FDI being similar in their sensitivity. While RE are positive correlated with national savings, nonRE has a negative correlation, as shown in the elasticities of Table 6. Using different types of savings rate (national, corporate and non financial) we find a remarkable fact: the closer we get to measure saving by national non-financial corporations, then the higher the estimated elasticity with RE-FDI, suggesting that retained earnings by foreign and national corporations are highly related in the time series of each country. RE-FDI has an elasticity of 0.1 with national saving, and elasticity of 0.25 against national corporate saving and an estimated elasticity of 0.32 with non financial corporate saving. This goes again to our point that the nationality of the corporation investing long term in the country may not be that important as stanted in National Savings. Foreign multinationals's savings tend to comove with national corporations.

Table 8 presents multivarite regression estimates for the same group of variables. We observe that the reported relationships with respect to procyclicality, the stock of FDI, openess and commodity price booms remain robust to the inclusion of various controls. These results point out that the FDI components, RE and nonRE, are qualitatively different in terms of their procycality and their determinants.

Table 6. Savings Elasticities to FDI Flows by Type of Savings

	FDI-RE	FDI-nonRE
National Gross Savings	0.1030	-0.2579
Corporate Savings	0.2566	-0.0839
Non-financial Corporate Savings	0.3247	-0.1253

The table reports saving elasticities to FDI flows for our full sample of countries from 2000 onwards. National saving come from WEO dataset, while corporate and non-financial corporations savings come from Beckzuk and Cavallo (2014).

Their comovement with national savings also differ substantially between them.

6 Direct Investment Inflows and the Probability of Macroeconomic Crises.

In this section, we study whether the composition of capital flows is related to crises at the macro level during the period 1980-2014. The basic result in the literature so far is that FDI inflows are safer than non-FDI inflows for domestic economies. For example, evidence reported by Fernández-Arias and Hausmann (2001) conclude that non-FDI flows are crisis prone but FDI flows are neutral, especially for developing countries. In other words, FDI can be seen "as good cholesterol" while non-FDI flows can be seen as "bad cholesterol". In this paper we study whether this conventional wisdom remains for the both subcomponents of FDI: RE and non-RE. In particular we estimate

$$\Pr[event_{it} = 1] \quad = \quad \gamma_i + \theta_t + \beta F_{i,t} + \delta X_{i,t} + \epsilon_{i,t} \tag{4}$$

where $event_{it}$ is a variable accounting for episodes of either financial distress or economic crisis; γ_i is a country fixed effect, θ_t is a year fixed effect, F_{it} is a vector of different capital flows types, X_{it} is set of additional control variables, and $\epsilon_{i,t}$ is an error term. In particular, we use three proxies of episodes of financial distress: a sudden stop variable as defined by Forbes and Warnock (2012), a currency crisis dummy and a banking crisis dummy both of them obtained from Carmen Reinhart's website. The types of capital inflows included in the regression are FDI inflows that can be decomposed in RE-FDI inflows and nonRE-FDI inflows, Portfolio flows and Other flows. We exclude international reserves from other flows. We include as control variables the level of exports as a percentage of GDP, the nominal GDP growth rate, the (log of the) stock of total FDI, Chin's measure of financial openness, a fixed exchange

Table 7. Univariate SUR Regressions: FDI-RE vs FDI-nonRE (1980-2012)

Lefht Hand Side (univariate)	Right hand side (univariate SUR)		
	FDI-RE	FDI-nonRE	P-value for difference
			$H_0 : \hat{\beta}_{RE} - \hat{\beta}_{non-RE} = 0$
$\triangle log(GDP)$	0.00620***	-0.00259	0.2444
	(0.00172)	(0.00740)	
$Ln(FDISTOCK)$	0.00245**	0.0116**	0.0616
	(0.00112)	(0.00483)	
Openness (Chin and Ito)	0.00533***	0.00616	0.8537
	(0.00101)	(0.00442)	
FX Regime	-0.00108	-0.00140	0.9240
	(0.000789)	(0.00328)	
Natural Resource Dependence$\times$ Price	0.00257***	-0.00593**	0.0019
	(0.000582)	(0.00270)	
Terms of Trade	0.000289	-0.00361**	0.0142
	(0.000359)	(0.00155)	
National Savings	0.0185***	-0.0479**	0.0010
	(0.00446)	(0.0198)	

The table reports univariate SUR regresions $(\frac{RE}{GDP}; \frac{noRE}{GDP})_{i,t} = \alpha + \gamma_i + \theta_t + \beta X_{i,t-1} + \epsilon_{i,t}$.
Covariates are lagged one period except but $\triangle log(GDP)$. The sample is restricted to
those countries having population above 5 millions and at least 20 years of capital
flows data. FDI - RE and FDI - nonRE are retained earnings FDI and non-retained
earnings FDI, respectively; "$\triangle Ln(Y)$" is the GDP growth rate, $Ln(FDISTOCK)$" is the
logarithm of the stock of FDI from the IFS (International position database); Openness is the
normalized Chin-Ito financial openness variable (highe values indicate more open economies);
FX Regime is a categorical variable builts upon Ilzetzki, Reinhart and Rogoff (2008) Fine
classification (from 1 to 4 = Peg; 5 to 10 = Crawl & 11 to 14: Floating.); Natural resources
depenedcy is the product of natural resourses' rent times the commodity index price from the
IMF primary commodty prices dataset; Terms of Trade is net barter term of trades index
(2000=100%) from the WB web page; and National savings is gross national savings from WEO
database. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table 8. Multivariate SUR Regressions: FDI-RE vs FDI-nonRE

Variables	(1) RE	(1) noRE	(2) RE	(2) noRE	(3) RE	(3) noRE	(4) RE	(4) noRE	(5) RE	(5) noRE	(6) RE	(6) noRE
$\triangle log(GDP)$	0.00620***	-0.00259	0.00625***	-0.00147	0.00569***	0.000975	0.00469**	0.00241	0.00789***	0.00341	0.00793***	0.00473
	(0.00172)	(0.00740)	(0.00178)	(0.00771)	(0.00180)	(0.00801)	(0.00191)	(0.00819)	(0.00297)	(0.0138)	(0.00291)	(0.0141)
$Ln(FDISTOCK)$			0.00273**	0.0116**	0.000928	0.0108**	-0.000136	0.0119**	-0.00237	0.0195*	-0.00264	0.0198*
			(0.00112)	(0.00484)	(0.00117)	(0.00519)	(0.00129)	(0.00554)	(0.00215)	(0.00998)	(0.00208)	(0.0101)
Openness (Chin and Ito)					0.00608***	0.000646	0.00720***	4.89e-05	0.00995***	-0.00178	0.0101***	-0.00239
					(0.00111)	(0.00494)	(0.00122)	(0.00522)	(0.00190)	(0.00879)	(0.00184)	(0.00893)
FX Regime							-0.00231***	-0.00193	-0.000454	-0.00477	-0.000345	-0.00449
							(0.000828)	(0.00356)	(0.00127)	(0.00588)	(0.00122)	(0.00595)
Natural Resources Dep.									0.00320***	-0.00369	0.00370***	-0.00285
									(0.000842)	(0.00390)	(0.000874)	(0.00424)
National Savings											-0.00509	-0.0207
											(0.00814)	(0.0396)
Constant	0.0263***	-0.0341**	0.0243***	0.00531	0.0258***	0.00410	-0.00319	-0.0468	-0.00836	-0.0466	-0.00812	0.0284
	(0.00763)	(0.0156)	(0.00767)	(0.0216)	(0.00763)	(0.0223)	(0.00810)	(0.0335)	(0.00911)	(0.0402)	(0.00884)	(0.0429)
Observations	1,585	1,585	1,502	1,502	1,442	1,442	1,295	1,295	973	973	958	958
R-squared	0.559	0.318	0.568	0.325	0.592	0.328	0.582	0.382	0.620	0.357	0.637	0.359
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Years FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

The table reports multivariate SUR regressions $(\frac{RE}{GDP}; \frac{noRE}{GDP})_{i,t} = \alpha + \gamma_i + \theta_t + \beta X_{i,t-1} + \epsilon_{i,t}$. Covariates are lagged one period except but $\triangle log(GDP)$. The sample is restricted to those countries having population above 5 millions and at least 20 years of capital flows data. FDI - RE and FDI - nonRE are retained earnings FDI and non-retained earnings FDI, respectively;" $\triangle Ln(Y)$" is the GDP growth rate, $Ln(FDISTOCK)$" is the logarithm of the stock of FDI from the IFS (International position database); Openness is the normalized Chin-Ito financial openness variable (highe values indicate more open economies); FX Regime is a categorical variable builts upon Ilzetzki, Reinhart and Rogoff (2008) Fine classification (from 1 to 4 = Peg; 5 to 10 = Crawl & 11 to 14: Floating;); Natural resources depenedcy is the product of natural resourses' rent times the commodity index price from the IMF primary commodity prices dataset; and National savings is gross national savings from WEO database. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

rate regime and a proxy of natural resources dependency and national savings. We only reports the estimated coefficients for portfolio flows. For each episode, we report estimates for the full sample, for different income categories and for commodity/non-commodity dependent countries.

6.1   Sudden stops of inflows (a la Forbes and Warnock 2012)

Table 9 shows our results for the case in which the financial distress variable is the sudden stop defined by Forbes and Warnock (2012). In column (1), total FDI is included as regressor, and in column (2), we split the total in FDI-RE and FDI-nonRE.

Total FDI estimated coefficient is negative (-1.01) and significant, indicating that total FDI reduces the probability of a sudden stop episode in the average country in the sample. This result is consistent with the idea the total FDI "protects" domestic economies of negative shocks or, alternatively, that when FDI drops, countries are more likely to get a sudden stop. Nonetheless a relevant heterogeneity appears when we split total FDI in its components. We fnd that only the nonRE-FDI coefficient is negative and statistically significant, while RE-FDI appears insignificant. Therefore, the arguably "protective" coefficient of FDI on SS is mainly due to nonRE-FDI.

A mild interpretation of the lack of statistically significance of the RE-FDI coefficient is that this type of FDI neither hurt nor helps the domestic economy, or that the drops in RE-FDI are less related to a systematic sudden stop. A similar interpretation is given by Fernández-Arias and Hausmann (2001), who conclude that FDI is safer than non-FDI flows at least in developing and emerging economies. A second interpretation is that the good properties commonly associated to FDI are mainly explained by the dynamic of non-RE FDI instead of any feature of RE-FDI. At least, one thing is clear out of these results: RE-FDI behaves differently than both nonRE-FDI and total FDI, and as a consequence, it makes sense to study them separately.

When we split the sample in commodity dependant and non-commodity dependant countries, the results are weaker but they show some similarities with those results obtained using the full sample. For the case of commodity dependent countries, reported in columns (3) to (4), we find that the estimated coefficient of FDI is negative but not significant (-4.5). But again, when we split FDi in its components, we observe that only non-RE FDI estimated coefficient is negative and significant while the RE-FDI estimated coefficient is insignificant. These results, however, should be taken with caution as the number of commodity dependent countries in our sample is low as compared with the overall sample.

In columns (7) to (12), we report the estimation results by income categories. The most interesting results is observed in the sample of high income countries, where total FDI, RE and nonRe ahave negative and significant coefficients. Despite the coefficients for RE and non-RE have the same sign, the magnitude of them is quantitatively different. For middle and low income countries the results are similar although they must be taken with caution due to the low number of countries in the estimation.

6.2   Banking Crises

Following Fernández-Arias and Hausmann (2001), we also explore the potential effect of different types of capital flows on banking crises and currency crises. The banking crises results are reported in table (10). Our results show that the total FDI is not related to the occurance of banking crisis in our sample. The estimated coefficient appear insignificant accros especifications. Regarding the FDI components, we do not detect a clear pattern across samples as well. For example, for the case of commodity dependent countries, RE is positive and significant whereas for the case of non-commodity dependent countries the coefficient is negative and significant. Among income categories, netiher RE nor nonRE appear statistically significant. Most of the action regarding banking crises is on the other types of capital flows. Portfolio flows and other flows (mainly bank transactions) are strongly associated with the probability of observe a banking crisis.

6.3   Currency Crises

In table (11) we report the estimated effects of different types of capital flows on currency crises. The results are similar to those reported for banking crises. The total FDI coefficient is unsignificant across especifications but in middle-income sample, where the coefficient is negative and significant. Looking at the FDI components, most of the estimates appear not significant, only nonRE in the middle income sample is negative and significant. Regarding the other capital flows, portfolio flows appear more important than others flow in explaining currency crises in the full sample. Unreported coefficients show that the main factors affecting the probability of currency crises are the GDP growth rate and level of financial openness.

Table 9. FDI Capital Flows and the Probability of Crises (Sudden Stop Forbes)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All countries		Comm. Dependent		Non-Comm. Dependent		High-Income		Middle-Income		Low-Income	
FDI	-1.078***		-4.461		-0.903***		-1.087***		0.446		-10.83*	
	(0.338)		(4.109)		(0.290)		(0.383)		(1.676)		(4.491)	
FDI - RE		-3.599		5.785		-9.142**		-9.648**		0.617		-20.00
		(3.480)		(6.946)		(3.551)		(3.678)		(4.713)		(11.01)
FDI - nonRE		-1.030***		-5.227		-0.751**		-0.939***		0.420		-10.09*
		(0.331)		(3.575)		(0.273)		(0.329)		(1.634)		(4.317)
Portfolio	-0.894	-0.870	-7.104	-7.243	-0.638	-0.555	-0.634	-0.603	-5.903***	-5.912***	-3.101	-3.089
	(0.550)	(0.566)	(3.700)	(3.618)	(0.503)	(0.512)	(0.408)	(0.418)	(1.658)	(1.679)	(4.704)	(4.619)
Others	-0.774***	-0.774***	-2.034	-2.247	-0.667***	-0.653***	-0.831***	-0.826***	-2.393	-2.386	-3.818	-4.434
	(0.225)	(0.226)	(2.577)	(2.810)	(0.192)	(0.188)	(0.223)	(0.212)	(1.950)	(1.971)	(4.363)	(4.869)
Observations	507	507	84	84	423	423	334	334	115	115	58	58
R-squared	0.392	0.392	0.515	0.533	0.446	0.452	0.450	0.458	0.597	0.597	0.806	0.808
Number of countrycode	36	36	6	6	30	30	22	22	9	9	5	5
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Years FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

The table reports multivariate SUR regressions $(\frac{RE}{GDP}; \frac{noRE}{GDP})_{i,t} = \alpha + \gamma_i + \theta_t + \gamma Flow_{i,t} + \beta X_{i,t-1} + \epsilon_{i,t}$. $Flow_{i,t}$ are FDI, retained earnings (FDI-RE), non retained earnings FDI (FDI-nonRE), portfolio and other flows. Included as control variables but not reported in the table due to space constraints are: exports, the GDP growth rate, the stock of FDI, Chin-Ito's financial openness, the Ilzetzki, Reinhart and Rogoff (2008)'s FX Regime classification (from 1 to 4 = Peg; 5 to 10 = Crawl & 11 to 14: Floating,), natural resources depenedcy (product of natural resources' rent times the commodity index price from the IMF primary commodty prices dataset), and gross national. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table 10. FDI Capital Flows and the Probability of Crises (Banking Crises)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All countries		Comm. Dependent		Non-Comm. Dependent		High-Income		Middle-Income		Low-Income	
FDI	-0.384		0.668		-0.472		-0.309		-2.605		0.135	
	(0.325)		(1.508)		(0.344)		(0.237)		(3.073)		(1.511)	
FDI - RE		-2.554		11.09*		-7.104*		0.0739		0.904		-0.491
		(2.834)		(5.808)		(3.816)		(3.833)		(7.197)		(2.255)
FDI - nonRE		-0.340		-0.313		-0.352		-0.315		-3.033		0.198
		(0.304)		(1.236)		(0.287)		(0.242)		(2.881)		(1.656)
Portfolio	-1.135**	-1.104**	-1.073	-1.488	-0.871*	-0.800*	-0.700	-0.702	-1.390	-1.578	1.837	1.888
	(0.460)	(0.468)	(0.972)	(0.885)	(0.471)	(0.449)	(0.488)	(0.482)	(1.480)	(1.543)	(1.886)	(1.972)
Others	-0.865***	-0.865***	-0.523	-0.779	-0.772***	-0.771***	-0.690*	-0.690*	0.146	0.0929	-1.066***	-1.066***
	(0.219)	(0.223)	(0.492)	(0.540)	(0.234)	(0.249)	(0.368)	(0.367)	(1.496)	(1.463)	(0.318)	(0.320)
Observations	577	577	147	147	430	430	303	303	164	164	110	110
R-squared	0.247	0.248	0.344	0.415	0.344	0.351	0.506	0.506	0.313	0.317	0.361	0.361
Number of countrycode	45	45	13	13	32	32	20	20	13	13	12	12
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Years FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

The table reports multivariate SUR regresions ($\frac{RE}{GDP}$; $\frac{noRE}{GDP}$)$_{i,t} = \alpha + \gamma_i + \theta_t + \gamma Flow_{i,t} + \beta X_{i,t-1} + \epsilon_{i,t}$. $Flow_{i,t}$ are FDI, retained earnings (FDI-RE), non retained earnings FDI (FDI-nonRE), portfolio and other flows. Included as control variables but not reported in the table due space constraints are: exports, the GDP growth rate, the stock of FDI, Chin-Ito's financial openness, the Ilzetzki, Reinhart and Rogoff (2008)'s FX Regime classification (from 1 to 4 = Peg; 5 to 10 = Crawl & 11 to 14: Floating.), natural resources depenedcy (product of natural resources' rent times the commodity index price from the IMF primary commodty prices dataset), and gross national. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

Table 11. FDI Capital Flows and the Probability of Crises (Currency Crises)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All countries		Comm. Dependent		Non-Comm. Dependent		High-Income		Middle-Income		Low-Income	
FDI	-0.178		-0.0686		0.0848		0.191		-3.626*		1.576	
	(0.416)		(1.255)		(0.371)		(0.341)		(1.882)		(2.073)	
FDI - RE		0.275		6.456		-2.573		-1.963		3.249		0.726
		(2.257)		(4.095)		(2.655)		(2.720)		(4.298)		(1.760)
FDI - nonRE		-0.188		-0.686		0.133		0.226		-4.473*		1.663
		(0.428)		(1.320)		(0.371)		(0.343)		(2.092)		(2.192)
Portfolio	0.572**	0.566**	-0.508	-0.780	0.520*	0.548*	0.291	0.302	0.0216	-0.372	0.726	0.795
	(0.268)	(0.266)	(0.825)	(0.801)	(0.283)	(0.289)	(0.287)	(0.295)	(1.350)	(1.478)	(1.352)	(1.388)
Others	0.0705	0.0703	-1.015*	-1.196**	0.0444	0.0448	0.00600	0.00610	-0.268	-0.406	-0.108	-0.107
	(0.169)	(0.170)	(0.477)	(0.513)	(0.188)	(0.183)	(0.252)	(0.247)	(1.100)	(1.183)	(0.112)	(0.113)
Observations	575	575	145	145	430	430	303	303	162	162	110	110
R-squared	0.236	0.236	0.518	0.536	0.268	0.270	0.312	0.313	0.505	0.520	0.429	0.430
Number of countrycode	45	45	13	13	32	32	20	20	13	13	12	12
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Years FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

The table reports multivariate SUR regresions ($\frac{RE}{GDP}$; $\frac{noRE}{GDP}$)$_{i,t} = \alpha + \gamma_i + \theta_t + \gamma Flow_{i,t} + \beta X_{i,t-1} + \epsilon_{i,t}$. $Flow_{i,t}$ are FDI, retained earnings FDI (FDI-RE), non retained earnings FDI (FDI-nonRE), portfolio and other flows. Included as control variables but not reported in the table due to space constraints are: exports, the GDP growth rate, the stock of FDI, Chin-Ito's financial openness, the Ilzetzki, Reinhart and Rogoff (2008)'s FX Regime classification (from 1 to 4 = Peg; 5 to 10 = Crawl & 11 to 14: Floating,), natural resources depenedcy (product of natural resources' rent times the commodity index price from the IMF primary commodty prices dataset), and gross national. Standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1).

7 Concluding Remarks.

Foreign Direct Investment (FDI) is sometimes identified as a relatively safe kind of capital flow. While we agree with that statement we outline some qualifications to this consensus and remark the relevance of looking at the types of FDI. More specifically we split between "fresh" FDI coming from abroad and the locally generated FDI from retained earnings of multinationals in the country, which are resources that do not cross the border and constitute only a capital flow on accrual rather than on a cash basis.

In particular, for many countries retained earnings FDI corresponds to a sizable portion of local corporate savings, although these savings are neither captured by gross national savings nor by domestic savings. So we propose yet another measure of savings that take multinationals' saving into account but not the repatriated profits of multinationals. We call it Gross Local Saving.

Empirically we show that FDI is under some circumstances more procyclical than other flows, but a relevant portion of this comes from retained earnings being more sensitive to the country's business cycle. This is a pattern that seems closer to the cyclical behavior of National Savings than to the behavior of other capital flows. This pattern with retained earnings is stronger among middle income countries and in commodity-dependent economies. Among other determinants, we find that as countries get more financially open, they also tend to get more Retained Earnings FDI. Commodity booms in commodity countries display a disproportionate increase in RE-FDI.

Finally we explored the covariation of FDI flows with macroeconomic crises. For banking and currency crises we do not find a clear pattern. Nonetheless we find relevant differences in the way retained and non retained earnings FDI impact the probability of Sudden Stops of gross inflows a la Forbes and Warnock (2012). Sudden reductions in retained earnings FDI do not seem systematically associated to the Sudden Stops of overall inflows. This is different from the behavior of "fresh" nonRE-FDI, because its contractions are systematically associated with sudden stops.

A challenge for macroprudential monitoring is whether retained earnings flows are invested or, in contrast, remain in liquid assets and are more subject to a bunching of capital outflows in case of bad news.

References

AGUIAR, M., AND G. GOPINATH (2005): "Fire-sale foreign direct investment and liquidity crises," *Review of Economics and Statistics*, 87(3), 439–452.

AIZENMAN, J., M. D. CHINN, AND H. ITO (2010): "The emerging global financial architecture: Tracing and evaluating new patterns of the trilemma configuration," *Journal of International Money and Finance*, 29(4), 615–641.

ALMEIDA, H., M. CAMPELLO, AND M. S. WEISBACH (2004): "The cash flow sensitivity of cash," *The Journal of Finance*, 59(4), 1777–1804.

BENIGNO, G., H. CHEN, C. OTROK, A. REBUCCI, AND E. R. YOUNG (2013): "Financial crises and macro-prudential policies," *Journal of International Economics*, 89(2), 453–470.

BORENSZTEIN, E., J. DE GREGORIO, AND J.-W. LEE (1998): "How does foreign direct investment affect economic growth?," *Journal of International Economics*, 45(1), 115 – 135.

BRONER, F., T. DIDIER, A. ERCE, AND S. L.SCHMUKLER (2013): "Gross capitalflows:Dynamics and Crises," *Journal of Monetary Economics*, 60.

CABALLERO, J. (2011): "Do Surges in international capital inflows influence the likelihood of banking crises? Cross-country evidence on bonanzas in capital inflows and bonanza-boom-bust cycles," *Cross-Country Evidence on Bonanzas in Capital Inflows and Bonanza-Boom-Bust Cycles (July 10, 2011)*.

CALVO, G. A. (1998): "Capital Flows and Capital-Market Crises The Simple Economics of Sudden Stops," *Journal of Applied Economics*, 1(1), 35–54.

CARDARELLI, R., S. ELEKDAG, AND M. A. KOSE (2010): "Capital inflows: Macroeconomic implications and policy responses," *Economic Systems*, 34(4), 333–356.

CATÃO, L. A., AND G. M. MILESI-FERRETTI (2013): "External liabilities and crisis risk," *IMF Working Paper No. 13/113*, 28.

CAVALLO, E., A. POWELL, M. PEDEMONTE, AND P. TAVELLA (2015): "A New Taxonomy of Sudden Stops: Which Sudden Stops should countries be most concerned about?," *Journal of International Money and Finance*, 51, 47–70.

CHANG, R., AND A. VELASCO (2001): "A Model of Financial Crises in Emerging Markets," *The Quarterly Journal of Economics*, 116(2), pp. 489–517.

CONTESSI, S., P. DE PACE, AND J. L. FRANCIS (2013): "The cyclical properties of disaggregated capital flows," *Journal of International Money and Finance*, 32, 528–555.

COWAN, K., AND C. RADDATZ (2013): "Sudden stops and financial frictions: Evidence from industry-level data," *Journal of International Money and Finance*, 32, 99–128.

DESAI, M. (2013): "Who Competes and for Whom?," .

DESAI, M. A., C. F. FOLEY, AND J. R. HINES (2006): "Capital controls, liberalizations, and foreign direct investment," *Review of Financial Studies*, 19(4), 1433–1464.

DESAI, M. A., C. F. FOLEY, AND J. R. HINES JR (2004): "Foreign direct investment in a world of multiple taxes," *Journal of Public Economics*, 88(12), 2727–2744.

——— (2007): "Dividend policy inside the multinational firm," *Financial management*, pp. 5–26.

DESAI, M. A., C. FRITZ FOLEY, AND J. R. HINES JR (2008): "Capital structure with risky foreign investment," *Journal of Financial Economics*, 88(3), 534–553.

FEDERICO, P., C. A. VEGH, AND G. VULETIN (2013): "The effect of capital flows composition on output volatility," .

FERNÁNDEZ-ARIAS, E., AND R. HAUSMANN (2001): "Is foreign direct investment a safer form of financing?," *Emerging Markets Review*, 2(1), 34–49.

FORBES, K. J., AND F. E. WARNOCK (2012): "Capital flow waves: Surges, stops, flight, and retrenchment," *Journal of International Economics*, 88(2), 235–251.

GALATI, G., AND R. MOESSNER (2013): "Macroprudential policy–a literature review," *Journal of Economic Surveys*, 27(5), 846–878.

GUIDOTTI, P. E., F. STURZENEGGER, A. VILLAR, J. DE GREGORIO, AND I. GOLDFAJN (2004): "On the Consequences of Sudden Stops [with Comments]," *Economia*, pp. 171–214.

HANSEN, E., AND R. WAGNER (2015): "Multinationals stockpstock cash: exploring a commodity boom," *Inter American Development Bank working paper - forthcoming*.

JEANNE, O. (2014): "Macroprudential policies in a global perspective," Discussion paper, National Bureau of Economic Research.

JEANNE, O., AND A. KORINEK (2010): "Excessive volatility in capital flows: A pigouvian taxation approach," Discussion paper, National Bureau of Economic Research.

——— (2013): "Macroprudential regulation versus mopping up after the crash," Discussion paper, National Bureau of Economic Research.

KAMINSKY, G. L., C. M. REINHART, AND C. A. VEGH (2004): "When it Rains, it Pours: Procyclical Capital Flows and Macroeconomic Policies," Working Paper 10780, National Bureau of Economic Research.

KORINEK, A. (2010): "Regulating capital flows to emerging markets: An externality view," *Available at SSRN 1330897*.

LEVCHENKO, A. A., AND P. MAURO (2007): *Do some forms of financial flows help protect from sudden stops?*, no. 2006-2202. International Monetary Fund.

LEVI-YEYATI, E. (2014): "Varieties of capital flows: what do we know," *mimeo presented at Financial Stability and Development Group Seminar - Central Bank of Peru (October 2014)*.

LEVY YEYATI, E., U. PANIZZA, AND E. STEIN (2007): "The cyclical nature of North–South FDI flows," *Journal of International Money and Finance*, 26(1), 104–130.

OSTRY, M. J. D., M. S. QURESHI, M. K. F. HABERMEIER, D. B. REINHARDT, M. M. CHAMON, AND M. A. R. GHOSH (2010): *Capital inflows: The role of controls*. International Monetary Fund.

REINHART, C. M., AND K. S. ROGOFF (2011): "From Financial Crash to Debt Crisis," *American Economic Review*, 101, 1676–1706.

RIGOBON, R., AND F. A. BRONER (2005): "Why are Capital Flows So Much More Volatile in Emerging Than in Developed Countries," *Central bank of Chile Working Paper*, pp. 29–36.

SMITH, K. A., AND D. VALDERRAMA (2009): "The composition of capital inflows when emerging market firms face financing constraints," *Journal of Development Economics*, 89(2), 223–234.

8 Appendix - Literature

9 Appendix - Data and sample

Table 12. Summary of findings in existing literature about procyclicality, volatility and covariation with crises for different types a of capital flows

Paper	Frequency / Aggregation	Countries	Years	Methodology	Findings	Relation / Differences with our paper
Contessi, De Pace, and Francis (2013)	Quarterly / Gross Disaggregated	22; G7	1975-2005 for G7 and 1992-2005 for the rest		Net outward flows are countercyclical in developed and industrial. InwardFDI is the only non-procyclical inward flow in developing (i.e emerging). They run tests country by country.	They explore volatility and procyclicality of various disaggregated capital flows. We split FDI even further.
Broner, Didier, Erce, and L.Schmukler (2013)	Annual / Gross aggregated by inflows and outflows	103	1970-2009		Trade balance is strongly associated with capital inflows across income levels, but only associatiated with capital outflows in high-income countries. Regarding, GDP growth rate, they find that both inflows and outflow capital flows are highly procyclical.	They only look at aggregated gross inflows and gross outflows. They do not decompose flows by their components (FDI, Porfolio, etc.)
Forbes and Warnock (2012)	Quarterly / Gross Aggregated	58	1980-2009		Capital flows waves are mainly correlated with global factors (global risk due to changes in either risk aversion or economic uncetainty).	
Cardarelli, Elekdag, and Kose (2010)	100+ episodes of net capital flows				end of the inflow episodes typically entailed a sharp reversal of non-FDI flows while FDI proved much more resilient.	
Catão and Milesi-Ferretti (2013)	Stocks of FDI liabilities.				Stock of FDI liabilities related to lower crisis propensity	
Aizenman, Chinn, and Ito (2010)	annual / Net capital inflows (FDI, portfolio and others)	+170	1970-2006		Net portfolio inflow and net other inflows are positively related to output volatility. Net inflow FDI does affect output volatility and it seems to reduce marginally the inflation level.	We get similar results with respect to FDI and non-FDI but using as dependent variable Sudden Stops indicators.

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Table 13. Continuation of Table 12

Paper	Frequency / Aggregation	Countries	Years	Methodology	Findings	Relation
Fernández-Arias and Hausmann (2001)	annual / net flows (FDI and Non-FDI)	+100	1970-1997		Non-FDI is crisis (currency and banking) prone but FDI is neutral.	
Kaminsky, Reinhart, and Vegh (2004)	annual / Aggregated net capital flow.	104	1960-2003	Standard correlations / HP Filter	Net capital inflows are procyclical in most OECD and developing countries. The cyclical effect is slightly higher in good times than in bad times.	
Rigobon and Broner (2005)	yearly / BOP capital flow data.	22 developed / 34 emerging countries	1965-2003	unconditional volatility measures / panel regression	Capital flows (as %GDP) in emerging markets are 80% more volatile than those in developed markets. Capital flows unconditional is low in countries high financial development, good institutions, and high income per capita	
Levy Yeyati, Panizza, and Stein (2007)	gross bilateral FDI flows / annual (OECD's International Investment Statistics)	bilateral flows (22 source countries to 56 host countries)	1980-1999	modified gravity model / linear trend and GDP cycles included apart	FDI flows from the US and Europe move countercyclically wrt the business cycle of the host country. The opposite is true for Japan.	
Levchenko and Mauro (2007)	net BOP flows (FDI, Portfolio, Debt, Others)	153 countries (reliable data for half of them)	1970-2003	median of countries' statistics	FDI is the least volatile form of financial flow when taking into account the average size of the net flow (coefficient of variation not standard deviation). FDI is more procyclical than portfolio flows. Swings during SS episodes are due to swings in other flows	
Smith and Valderrama (2009)				Small open economy model with firm's financial frictions	Total inflows to emerging markets are procyclical (average correlation with investment is 0.20), with debt and portfolio equity flowing first, followed later by FDI	

9.1 Datasets sources and definitions

Our main sample corresponds to countries that have a population above 5 million and that have at least 20 years of observations in the IFS BOPS data; starting in 1980. Our main database is the IMF's Balance of Payments Statistics (BOPS). Also, for general macroeconomics data we took data from the World Economic Outlook and the World Bank web page. More specific variables are (in parenthesis the name of the database ofr replication).

- Suden Stops: This variable was copied from the appendix of Forbes & Warnock 2012 ("Forbes SS.dta")

- SS1: This Sudden Stop variable was built based on according Guidotti 2014 definition ("SS1.dta")

- Banking Crises, Currency Crises and Inflation Crises are taken from Carmen Reihart's webpage. There is also an aggregate measure of any crisis within this group. (http://www.carmenreinhart.com/data) ("RR crises.dta", "rr_crises.dta" xDDD)

- GDP and GDP per capit : World bank [current dollars]("weo.dta")

- Population: use only for sample Built as GDP/GDP per capital

- Stock of FDI: IFS II anual database [current dollars]("ifs.dta")

- Retained Earnings: IFS BOP anual database [current dollars]("ifs.dta")

- Financial account components: IFS BOP anual database [current dollars]("ifs.dta")

- Chin Ito 2008 Capital Openness: IFS BOP anual database [Index from 0 to 1]("Chin Ito Financial Opennes.dta")

- Reinhart & Roggof Exchange rate fine classification: Dataset for Ilzetzki, Reinhart and Rogoff (2008) downloades from their personal webpage [values from 1 to 14, Dummies build as follows: 1-4 PEG, 5-9 Branch, 10-14 Floating]("rrexchange.dta")

- $RRNN \times Price$: Build as the multiplication of the NNRR rents (from the WB) and the Commodity index prices (from WB Commodity Index dataset). ("weo.dta" plus "cpriceindex")

- Net barter term of trade: World Bank [index year 2000=100%] ("weo".dta)

- Rule of Law: downloaded the full qog dataset from their web page ("qog".dta)

- Natural dissasters: Dicotomic buildt using the data from the international disaster database (http://www.emda considering 1 if the country in that year has any episode define as a Natural Disaster.

- Legal origin: took from "Klerman et al" 2012 apendix ("legal".dta)

- Original Sin: took from "The Pain of Original Sin" of Hausmann et all 2005 ("sin.dta")

9.2 Country List14

Table 14 details the list of countries and the number of years used in our main sample.

9.3 IFS Variables Constructions (mixing BP5 with BP6 data)

- To get a longer time series we look up the BOP 6th Manual from the IMF in order to match it with the relevant concepts of the BOP 5th Manual (e.g. FD, FD Liabilities, RE & RE Liabilities). As a double check we run regressions for the years in which both BOP5 and BPO6 standards are reported, finding that we are indeed finding that we are essentially working with the same or very similar data. All our estimations have year fixed effects as a way to further mitigate concerns with the use of BOP6 standard. In any case, most of our LHS variables are available only until 2009, so in practice we are not using the BOPS6 in most of our estimations. Finally we compute the new variable simply appending the 2 codifications in the time series.

10 Appendix: Additional Figures and Tables

Figure 8. Procyclicality estimated coefficients (High-Income Countries)

Figure 9. Procyclicality estimated coefficients (Commodity Dependant Countries)

High Income		Middle Income		Low Income	
Country	Obs	Country	Obs	Country	Obs
Aruba	27	Algeria	20	Bangladesh	34
Australia	34	Angola	30	Benin	32
Austria	34	Argentina	34	Bolivia	33
Belgium	34	Azerbaijan	21	Burkina Faso	31
Canada	34	Belarus	22	Burundi	33
Czech Republic	21	Brazil	34	Cambodia	34
Denmark	34	Bulgaria	34	Cameroon	33
Finland	34	Chile	34	Cote d'Ivoire	31
France	34	China	34	Egypt	34
Germany	34	Colombia	34	El Salvador	34
Greece	34	Dominican Republic	34	Ethiopia	33
Hungary	32	Ecuador	33	Ghana	33
Israel	34	Iran	21	Guatemala	34
Italy	34	Kazakhstan	22	Guinea	33
Japan	34	Malaysia	34	Haiti	34
Netherlands	34	Mexico	34	Honduras	34
Poland	34	Peru	33	India	34
Portugal	34	Russia	22	Indonesia	33
Saudi Arabia	34	South Africa	34	Iraq	20
Slovak Republic	21	Thailand	34	Kenya	33
South Korea	34	Tunisia	34	Kyrgyz Republic	22
Spain	34	Turkey	34	Laos	29
Sweden	34	Venezuela	33	Madagascar	26
Switzerland	34			Malawi	33
United Kingdom	34			Mali	34
United States	34			Morocco	34
				Mozambique	34
				Myanmar	32
				Nepal	34
				Nicaragua	34
				Niger	31
				Nigeria	33
				Pakistan	34
				Philippines	34
				Rwanda	34
				Senegal	33
				Sri Lanka	34
				Sudan	34
				Syria	31
				Tanzania	33
				Uganda	34
				Ukraine	22
				Yemen Arab Republic	24
				Zambia	33
List of the countries that according the information en the IFS and the WB have more than 5 millions					

Table 14. Country list