Bonanzas, Booms and Banking Crises

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Abstract

The paper analyses the risks posed by sudden increase in international capital inflows, termed as "bonanzas", to the financial system. We test to see if gross and net inflow bonanzas increase the probability of banking crises. We also test which of the three components of capital inflows: foreign direct investment, portfolio equity and debt contribute more to this probability. Our main findings are: First, gross and net inflow bonanzas increase the occurrence of banking crises, with gross inflow bonanzas indicating an independent effect. Second, we find gross inflows are more risky than net inflows. Third, we find that debt is the most risky inflow component for both gross and net inflow bonanzas.

1. Introduction

Sudden surges in large capital inflows have been shown to increase the occurrence of financial crises.[1] They were found to be one of the main causes of financial imbalances ahead of the recent global financial crisis with push factors driving the capital inflows.[2] While international capital flows have many long-term benefits, they also make macroeconomic management more difficult. Several studies have focused on the implications of sudden stops in capital inflows or episodes of capital flight, but few have paid attention to the problems of surges in capital inflows.[3] Therefore, it is imperative that the channels through which capital inflows travel to affect the occurrence of financial crises are identified. This study aims to do that.

Capital inflows have many positive economic effects for countries. Firstly, they provide a country with additional ways to finance investments.[4] This is crucial for countries where levels of domestic savings are low, as it means projects that have positive externalities can be undertaken. Secondly, they give a country greater access to foreign technology and expertise, which can lead to an increase in productivity, standard of living and higher long run economic growth.[5]

For all the benefits capital inflows bring, developing countries around the world are still extremely cautious to fully liberalise their economies in part due to the extreme negative effects large capital inflows termed "bonanzas" can have on a country.[6] Along with increasing the occurrence of a financial crisis, large capital inflows as documented by Magud, Reinhart and Rogoff (2011) cause dislocations in the financial system, fuel asset price bubbles and encourage excessive risk taking.

[1] For example, see Reinhart and Reinhart (2009).
[2] The drivers of capital inflow bonanzas are broken into two types; push and pull factors. Push factors are external to a country; these are factors like contagion and macroeconomic factors. Pull factors are domestic factors, which drive capital inflows. For example, see Merrouche and Habermeier (2010) and Fratzscher (2012).
[3] For example, see Calvo (1998), Mendoza (2010) and Janus and Riera-Crichton (2013).
[4] See Sidaoui, Ramos-Francia and Cuadra (2011).
[5] See Kim and Yang (2011).
[6] Countries that are not fully liberalized are ones, which have capital controls or prudential measures in place. Another reason capital controls could be in place is to try to limit the impact of large exchange rate movements. See Binici, Hutchison and Schindler (2010).

Therefore, for countries to harness the positive effects of capital inflows while protecting against capital inflow bonanzas, it is imperative that they identify and understand the risks associated with sudden surges or bonanzas. This identification will mean that both developing and developed countries can initiate policies that lower the likelihood of financial crises being caused by capital inflow bonanzas. Therefore, they will be more likely to liberalise and harness the positive effects of capital inflows, as they will be able to lower their fragility to financial crises.

When studying the effects of capital inflow bonanzas it is important to make the distinction between gross and net inflow bonanzas. The effect net inflow bonanzas have on the occurrence of financial crises has been studied far more than the effect gross inflow bonanzas have on the occurrence of financial crises.[7] This is surprising given gross inflows distinguish between foreign and domestic investors, giving extra insights into what is driving the capital inflow bonanza. This extra insight gives crucial information to policy makers trying to protect against capital inflow bonanzas, as domestic and foreign investors behave differently over the course of a business cycle and during a crisis.[8]

In this study we test to see if gross and net inflow bonanzas increase the occurrence of banking crises at both an aggregate level and when broken into their three main components: foreign direct investment (from now on FDI), portfolio equity and debt. This will indicate whether future studies should focus on gross or net inflow bonanzas. We then test to see which component contributes to increasing the occurrence of a banking crisis the most. We then test whether if capital inflow bonanzas affect the occurrence of a banking crisis after controlling for a credit and asset price boom. This will give both developed and developing countries a better understanding of how to lower their fragility to capital inflow bonanzas. Moreover, they will then potentially be able to put capital controls and prudential measures in place to actually lower their fragility to capital inflow bonanzas, which could in turn lead to an increase in liberalisation.

[7] For example, see Caballero (2014) and Reinhart and Reinhart (2009).
[8] For example, see Forbes and Warnock (2012), Broner, Didier, Erce and Schmukler (2013) and Janus and Riera-Crichton (2013).

We contribute to the literature in two main ways. First, we look at both net and gross inflows bonanzas broken into their components.[9] To our knowledge only net inflow bonanzas have been investigated when broken into their components. Second, we investigate whether capital inflow bonanzas affect the occurrence of a banking crisis after controlling for a credit and asset price boom. To our knowledge only a credit boom channel has been investigated.

Our main results can be summarised as follows. First, gross and net inflow bonanzas increase the occurrence of banking crises. For example, a previous year gross inflow bonanza is shown to increase the occurrence of a banking crisis by 6.5 times.[10] We find that after controlling for both a credit and asset price boom channel, gross inflow bonanzas still increase the occurrence of banking crises, indicating an independent effect. Second, we find gross inflows matter more than net inflows, as they increase the occurrence of banking crises more than net inflow bonanzas.[11] This substantiates why we need to care about gross inflows, which is often overlooked in the literature. Third, we find that debt is the most risky inflow component for both gross and net inflow bonanzas. We find a previous year gross debt inflow bonanza increases the occurrence of a banking crisis by 4.2 times.[12] These results are indicating that more research is needed to find the other channels that capital inflow bonanzas travel through. A possible channel may be through a stock market channel, which combined with the house price channel would make a comprehensive asset price boom channel.

The rest of the paper is organised as follows. In section 2, we review the relevant literature. In section 3, we detail the data used in the paper. In section 4, we detail the methodology used in the paper. In section 5, we present our results with section 6 being a discussion of the results.

2. Literature Review

The positive effects of capital inflows to countries are well documented throughout the relevant literature. Kim and Yang (2011) document that capital inflows can help domestic economies in various ways, such as helping finance domestic investment and contributing to long-run economic growth. Luca and Spatafora (2012) find net capital inflows and domestic

[9] See section 2 for why it is important to look at both net and gross inflow bonanzas.
[10] These figures are calculated from Table 1 using the Mendoza and Terrones (2008) threshold method and controls 1 and 2. See footnote 38 for how the figures were calculated.
[11] For all measures gross inflow bonanzas have equal or higher significance than net inflow bonanzas.
[12] This was calculated using Table 2 and footnote 38.

credit exert a positive effect on investment. However, numerous studies have also documented the negative effects capital inflow bonanzas cause to an economy. Reinhart and Reinhart (2009) investigate net capital inflows using a country's current account deficit to gross domestic product (from here on GDP) as a proxy for net capital inflows. They find capital inflow bonanza periods are associated with a higher incidence of banking, currency, and inflation crises in all but the high-income countries.

The two channels capital inflow bonanzas are theorised to travel through to affect banking crises are credit and asset price booms. Claessens and Kose (2013) document that credit and asset price booms that eventually turn into busts often precede financial crises.

The credit boom channel theoretically works as follows: capital inflow bonanzas increase the amount of credit banks have available to lend. This results in banks lowering their lending standards, which increases the fragility of the banking system through excessive risk taking.[13] This continues until the risk becomes too large and there is a sudden stop of capital inflows, which results in a credit crunch.[14] The credit crunch causes banks and other businesses, which rely on short-term loans for liquidity, to become distressed. This can then result in a banking crisis. A credit boom can also result in bank runs as investors panic. Fontenla and Gonzalez (2007) find that self-fulfilling banking crises are positively associated with domestic credit growth.

The asset boom channel theoretically works as follows: capital inflow bonanzas increase the demand for assets, such as houses, causing their price to increase, which then causes an asset bubble. Jara and Olaberría (2013) find large net capital inflows can potentially be linked to booms in real property prices. It is worth pointing out that for an asset price bubble to occur, we do not necessarily need irrational investors. Blanchard and Watson (1982) find that speculative bubbles are not ruled out by rational behaviour in financial markets. For a bubble to burst all that needs to change is a fall in asset prices. This can occur if investors' preferences, macroeconomic conditions or a country's risk change, as any they can result in a decrease in capital inflows. The decrease in capital inflows will then cause the demand for assets to fall and the asset bubble to burst. This can then lead to a banking crisis if banks have

[13] Banks may assume the credit will continue forever not identifying it as a surge.
[14] This was one of the main contributing factors to the global financial crisis in 2007.

loaned to investors using such assets as collateral. This is because when the asset bubble bursts, the value of this collateral falls directly impacting the bank's balance sheet.

Caballero (2014) investigated whether capital inflow bonanzas travel through a credit boom channel. He investigated aggregate net inflow bonanzas, as well as net inflows broken into FDI, portfolio equity and debt components. He finds that net capital inflow bonanzas are only partially explained by a credit boom channel. This indicates that there are also other channels, such as the asset price boom channel. The rationale behind breaking net inflows into its three components is that not all inflows are equal. In terms of risk, debt is perceived to be the riskiest inflow, due to it having no risk-sharing qualities and normally being short-term. FDI is the most preferred inflow as it not only has risk sharing-qualities, but the investor also brings expertise and technology with them. On Table A7 in the appendix, we break net inflow bonanzas into FDI, portfolio equity and debt to give an idea of how different the inflow bonanzas are. The graph shows that portfolio equity has the smallest number of bonanzas, while debt accounts for most of the large bonanza episodes, apart from 2007 when FDI had the most inflow bonanzas.

To investigate capital inflow bonanzas, Forbes and Warnock (2012) have recently illustrated the importance of looking at not only net inflows, but also gross inflows. They give two main reasons. First, recently the size and volatility of gross inflows have increased while net capital inflows have been more stable. This is shown on Graph A4 in the appendix, where we calculate the average difference between gross and net inflows into a country and show that the difference is increasing. This indicates that investigating both inflows is needed, as it cannot be assumed they are equivalent. Second, using only net inflows we cannot differentiate between inflows from foreign investors and inflows from domestic investors, as they are combined.[15] As noted earlier such a distinction is important, because domestic and foreign investors do not necessarily react to policies the same way.

In this paper we aim to fill two gaps in literature. First, testing to see if gross and net inflow bonanzas increase the occurrence of banking crises at both an aggregate level and when broken into their three main components. This will include examining which components increase the occurrence of a banking crisis the most. Second, testing to see if capital inflow

[15] Also see Broner, Didier, Erce and Schmukler (2013).

bonanzas increase the occurrence of banking crises in the absence of a credit and asset price boom, indicating an independent effect.

3. Data and Measurement of Variables

To investigate how net and gross inflow bonanzas affect the occurrence of a banking crisis in the absence of a credit and asset price boom we need comprehensive data on banking crises, capital inflow bonanzas, credit booms and asset price booms. We use data for 87 countries for the period of 1985-2012.

3.1 Measurement of Banking Crises

To identify banking crises, we use the data set constructed by Laeven and Valencia (2013). This data set identifies the annual start date for banking crises over the period 1970-2011. In total they identify 147 banking crises, of which thirteen are borderline events. They define a banking crisis as systemic the first year two conditions are met:

A) Significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations), and

B) Significant banking policy intervention measures in response to significant losses in the banking system.

We convert this data into a dummy variable form with 1 representing a banking crisis starting in that year and 0 otherwise.

3.2 Measurement of Capital Inflow Bonanzas

To construct annual net and gross capital inflow bonanzas and their components we use the updated and extended data set constructed by Lane and Milesi-Ferretti (2007). They construct estimates of foreign asset and liability positions broken into FDI, portfolio equity, financial

derivatives and debt for 188 countries plus the Euro area, for the period of 1970-2011.[16] To convert this data back into flow data we use the methodology devised by Binici, Hutchison and Schindler (2010).[17] To measure portfolio equity inflows we would ideally use both portfolio equity and financial derivative inflows. However, due to data limitations for financial derivatives we excluded them from our calculation.[18] Then, to create capital inflow bonanzas we use two different threshold methods to check the robustness of the bonanza measures.[19]

The first method uses the methodology of Mendoza and Terrones (2008) to create credit booms. We define a capital inflow bonanza as follows. Denote the deviation from the long-run trend in the real inflows in country i at date t as l_{it}, and the corresponding standard deviation of this cyclical component as $\sigma\ (l_i)$. The long-run trend is calculated using the HodrickPrescott (HP) filter with the smoothing parameter set at 100, as is typical for annual data.[20] Country i is defined to have experienced an inflow bonanza when we identify one or more contiguous dates for which the inflow bonanza condition $l_{it} \geq \phi\sigma\ (l_i)$ holds, where ϕ is the bonanza threshold factor. We use a baseline value of $\phi = 1$, and conduct robustness tests using $\phi = 2$ for intense bonanzas. A demonstration of this method using New Zealand's net and gross inflows is shown on Tables A5 and A6. The tables show the contrast between the two flows and why it is important to study both. We see that both have bonanzas in similar time periods, but the severities of the bonanzas are starkly different. Gross inflow bonanzas are far more severe; for example, the bonanza that started in 2007 peaked at over two standard deviations of the cyclical component of gross inflows.[21]

The second method uses the methodology devised by Reinhart and Reinhart (2009) to create capital inflow bonanzas. We define a capital inflow bonanza as when capital inflows into a county as a percentage of GDP are above the 80th percentile of all capital inflows for that

[16] For most countries, they use as a benchmark the official IIP estimates for recent years. They then work backward with data on capital flows and calculations for capital gains and losses to generate estimates for stock positions for earlier years, back to 1970 in most cases.
[17] See Table A3 in the appendix for more details.
[18] Adding financial derivatives for some years but not others would have meant years with financial derivatives would be biased upwards. Therefore, we decided it would be more consistent to exclude them.
[19] The Reinhart and Reinhart (2008) threshold method cannot be used for net and gross flows broken into their components.
[20] To use the HP filter there can be no gaps in the data. Therefore, we interpolate the data to remove all gaps. Then once we have the cyclical component we remove all data points, which had been interpolated.
[21] The bonanza is over 2 standard deviations in 2009 but we identify a bonanza, as the first time the cyclical component of gross inflows is larger than their standard deviation.

country. Using this method, we identified 329 gross inflow bonanzas over the sample period of 1985-2012.

3.3 Measurement of Credit Booms

To construct credit booms we also follow the threshold method of Mendoza and Terrones (2008). We use private credit by deposit money banks and other financial institutions to GDP from the Global Financial Development Database (GFDD) as our measure of credit.[22] Using this method we identified 351 credit booms over the sample period.

3.4 Measurement of Asset Price Booms

To construct asset price booms we use the quarterly Residential Property Price database from the Bank for International Settlements.[23] We selected countries that had at least ten years of house price data.[24] This meant we had a quarterly data set of house prices for thirty-one developed countries.[25] This data set has limitations due to both its size and the type of countries. Therefore, the results involving house price booms need to be interpreted carefully.[26] However, this is the best data that is currently available to test an asset price boom channel. Since we are testing annual asset price booms, we convert the quarterly data to yearly data by getting the average house price of the four quarters. To then create the asset price booms we again use the threshold method used by Mendoza and Terrones (2008) to create credit booms. Using this method, we identified 116 asset price booms over the sample period.

[22] This calculation does not use per capita and also uses a baseline value of $\phi = 1$. For more details on private credit by deposit money banks and other financial institutions to GDP see Table A3 in the appendix.
[23] This data set was used as it had the best available house price data.
[24] The excluded countries only had data for the period after 2006, which was heavily influenced by the 2007 global financial crisis. Therefore, they were dropped, as they could have bias.
[25] The countries are Australia, Austria, Belgium, Canada, Chile, Colombia, Czech Republic, Denmark, Finland, France, Germany, Greece, Indonesia, Ireland, Italy, Japan, Lithuania, Malaysia, Netherlands, New Zealand, Norway, Peru, Russian Federation, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, United Kingdom and United States.
[26] We have had to drop two control variables for some of the house price regressions, as they either mean the model was not concave or the variable was simply dropped. The variables were currency crisis and real lending rate.

3.5 Control Variables

We split the control variables used for our regressions into two types. Variables that control for factors that cause banking crises to occur are denoted controls 1. Variables that control for factors that increase the fragility of the banking sector are denoted controls 2. Control 1 includes variables that control for competition risk, financial liberalisation, banking supervision, currency crises, deposit insurance and moral hazard. Control 2 includes variables polity2, trade openness, fixed exchange rate regime, GDP growth and de facto current account openness.[27] For robustness, in some specifications, we also add real lending rate, depreciation (Nominal exchange rate), de jure capital account openness and the federal effective funds rate.[28] Table A1 in the appendix shows summary statistics of all variables used in the regressions while Table A2 gives a list of all countries.

4. Empirical Methodology

To measure how inflow bonanzas affect the likelihood of banking crises, we use a binary outcome model, where banking crises is a dummy variable that equals 1 if a banking crisis started in that year and 0 otherwise.
Our regression specification is the following:

$$y_{it} = \alpha + \beta_1 \delta_{i,t-1} + \beta_2 \mathrm{Z}_{i,t-1} + \beta_3 \mathrm{K}_{\mathrm{i,t-1}} + \varepsilon_{it} \qquad (1)$$

where y_{it} is the binary outcome variable for country i at time t, $\delta_{i,t-1}$ represents a one period lagged capital inflow bonanza dummy variable for country i at time t, $\mathrm{Z}_{i,t-1}$ represents a vector of control variables 1 where all apart from currency crisis are lagged one period and $\mathrm{K}_{\mathrm{i,t-1}}$ represents a vector of control variables 2, all of which are lagged one period.[29]

To model this relationship, we first need to use the concept of a link function, as we need a function to link the actual probability of a banking crisis occurring with the estimated one

[27] For a detailed explanation of how these variables were created see Table A3 in the appendix.
[28] These variables are not added to the original regressions, as the model cannot handle all the variables. We acknowledge it means we are missing some controls for some of the random effects models.
[29] All independent variables apart from currency crisis are lagged one year to try to lower any correlation between the between the independent variables and the error term. There is a contemporaneous correlation between currency and bank crises. See Glick and Hutchison (1999).

using the binary outcome in our economic model.[30] To decide which link function to use, we need to acknowledge that the chance of a banking crisis occurring is an extreme event. The average value of our banking crisis dummy variable is 0.028.[31] Three link functions are logit, probit and complementary log-log. The most appropriate link to use is a log-log regression, as the probability of a banking crisis is extremely rare.[32]

The next decision that needs to be made is whether to use a fixed or random effects model. Random effects are preferred to fixed effects due to being able to include time-invariant variables.[33] These variables are differenced out if we use fixed effects, meaning the between-group variation is lost. In terms of our model, using fixed effects would mean that we exclude all countries that do not experience a banking crisis. This is undesirable, thus we prefer to use random effects. The only issue with random effects is that we must assume that the independent variables are not correlated with the error term.[34] This is not the most realistic assumption given there could be an omitted factor that influences both the likelihood of a banking crisis and a capital inflow bonanza occurring.

Therefore, to get the benefits of using random effects while controlling for endogeneity, we follow Caballero (2014) and use the methodology devised by Mundlak (1978) to include country-cluster means of all covariates that we suspect are endogenous in the random effects model. This allows for different within and between country effects. We add cluster means for all of our independent variables, as we cannot be sure which are endogenous. We also use a Gumbel distribution, which is a complementary log-log link. The baseline regression model we use is shown below.

$$y_{it} = \alpha + \beta_1 \delta_{i,t-1} + \beta_2 \mathrm{Z}_{i,t-1} + \beta_3 \mathrm{K}_{\mathrm{i,t-1}} + \beta_4 \mathrm{M}_{\mathrm{i}} + \varepsilon_{it} \qquad (2)$$

The difference between this equation and equation (1) is the addition of M_{i}, which is a vector of all the independent variables' cluster means. When we add a credit or asset price boom variable and the corresponding interaction term, the regression model looks like this:

[30] A link function is used if a binary outcome variable is treated as if it was continuous or the relationship is non-linear.
[31] This is shown in Table A1 in the appendix.
[32] See Vicari (2014).
[33] This means they can play a role as explanatory variables.
[34] Random effects assume that variation across entities is random and uncorrelated with the error term.

$$y_{it} = \alpha + \beta_1 \delta_{i,t-1} + \beta_2 \mathrm{Z}_{i,t-1} + \beta_3 \mathrm{K}_{\mathrm{i,t-1}} + \beta_4 M_{\mathrm{i}} + \beta_4 \mathrm{C}_{\mathrm{i,t-1}} + \beta_5 \left(\mathrm{C}_{\mathrm{i,t-1}} * \delta_{i,t-1}\right) + \varepsilon_{it} \quad (3)$$

The credit boom variable is represented by $\mathrm{C}_{\mathrm{i,t-1}}$ and the interaction variable by $C_{\mathrm{i,t-1}} * \delta_{i,t-1}$. It is worth noting that this method is not completely bias free. This method assumes that the individual specific effect is equally correlated with all time periods. Therefore, as a robustness test we use a fixed effects regression using equation (1-3) to see if the results are robust to using the RE-Mundlak model.

5. Results

5.1 Baseline Results

To investigate how net and gross inflow bonanzas affect the occurrence of banking crises in the absence of a credit and asset price boom we first need to establish a baseline result of how capital inflow bonanzas affect the occurrence of banking crises. To do this we regress one-period lagged gross and net capital inflow bonanzas on the occurrence of banking crises using the RE-Mundlak model.[35] We use two different threshold methods to identify both types of inflow bonanzas.[36]

The results from our baseline regression are reported in Table 1 below, with columns 1-4 showing net capital inflows and columns 5-8 showing gross capital inflows.[37] There are a few important results. First, we find that for all specifications both gross and net capital inflow bonanzas are positive and significant at a 1% level. This means that, on average, holding all other factors constant, gross and net capital inflow bonanzas increase the occurrence of banking crises. The results reported in column 2 show that if a capital inflow bonanza took place in the previous year, on average, the occurrence of a banking crisis increases by 3.6

[35] This model uses equation 2 from section 4 and regresses control variables 1 or control variables 1 and 2 with inflow bonanzas. We use banking crisis start dates as this dummy variable shows the realization of a banking crisis. Therefore, it directly shows the occurrence of a banking crisis.
[36] We use the threshold method defined by Mendoza & Terrones (2008) and the threshold method defined by Reinhart and Reinhart (2009).
[37] Columns 1-2 and 5-6 use the threshold method defined by Mendoza and Terrones (2008) and columns 3-4 and 7-8 use the threshold method defined by Reinhart and Reinhart (2009).

Table 1

Baseline: Net and Gross Capital Inflow Bonanzas (1 SD) affect on Banking Crises. RE-Mundlak Model

VARIABLES	(1) Net MT method	(2) Net MT method	(3) Net RR method	(4) Net RR method	(5) Gross MT method	(6) Gross MT method	(7) Gross RR method	(8) Gross RR method
Bonanza	1.574***	1.278***	1.146***	1.308***	2.481***	1.878***	1.888***	1.436***
	(0.352)	(0.426)	(0.316)	(0.396)	(0.348)	(0.423)	(0.336)	(0.420)
Currency Crisis	1.070	1.877**	1.387**	2.213***	0.979	1.828**	1.680**	2.325***
	(0.664)	(0.789)	(0.668)	(0.778)	(0.683)	(0.817)	(0.680)	(0.763)
Competition Risk	0.179	0.382	0.232	0.388	0.224	0.449	0.266	0.477
	(0.258)	(0.312)	(0.256)	(0.306)	(0.266)	(0.314)	(0.250)	(0.307)
Financial Liberalization	-0.496	0.322	-0.566	0.208	-0.452	0.306	-0.499	0.239
	(0.392)	(0.498)	(0.386)	(0.491)	(0.410)	(0.508)	(0.402)	(0.499)
Banking Supervision	-0.080	-0.399	0.061	-0.237	-0.356	-0.536	-0.251	-0.381
	(0.268)	(0.393)	(0.249)	(0.368)	(0.272)	(0.393)	(0.264)	(0.377)
Deposit Insurance	-0.791	-1.186	-0.746	-1.083	-0.832	-1.261	-0.568	-1.134
	(0.601)	(0.806)	(0.599)	(0.787)	(0.573)	(0.806)	(0.601)	(0.811)
Moral Hazard	-0.005	0.029	-0.023	0.015	-0.0223	0.009	-0.032	0.001
	(0.074)	(0.094)	(0.074)	(0.093)	(0.0770)	(0.095)	(0.072)	(0.091)
Polity2		-0.015		-0.040		0.002		-0.014
		(0.079)		(0.084)		(0.081)		(0.082)
Trade Openness		0.002		-0.005		0.001		-0.006
		(0.018)		(0.018)		(0.019)		(0.018)
Exchange Rate Regime		1.208**		1.064*		1.054*		1.257**
		(0.579)		(0.568)		(0.580)		(0.569)
Real Lending Rate		0.010		0.009		0.009		0.014
		(0.024)		(0.023)		(0.024)		(0.023)
GDP Growth		0.086		0.063		0.065		0.061
		(0.059)		(0.061)		(0.061)		(0.059)
De Facto CA Openness		0.589***		0.604***		0.533**		0.558**
		(0.199)		(0.200)		(0.228)		(0.219)
Observations	1390	1120	1390	1120	1390	1120	1390	1120
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	No	Yes	No	Yes	No	Yes	No	Yes
Wald test	34.74	45.49	27.65	48.03	67.10	53.92	44.81	46.02
Wald p-value	0.002	0.010	0.016	0.006	0.001	0.001	0.001	0.001
Countries	73	68	73	68	73	68	73	68

Notes: This table uses a multivariate binary outcome model to estimate the probability of banking crises. All standard errors are in parentheses. *** indicates significance at a 1% level ** indicates significance at a 5% level and * indicates significance at a 10% level. The MT method uses the threshold method defined by Mendoza and Terrones (2008) to define capital inflow bonanzas. The RR method uses the threshold method defined by Reinhart and Reinhart (2009) to define capital inflow bonanzas. Both methods are explained in more detail in section 3. All independent variables apart from Currency Crises are lagged one period. The definitions of all independent variables are listed in Table A3 in the appendix.

inflow bonanzas.[37] A possible reason for this could be due to net capital inflows being smaller in volume than gross capital inflows.[38]

The threshold method proposed by Reinhart and Reinhart (2009) defines bonanzas as inflows above the 80th percentile. The threshold method defined by Mendoza and Terrones (2008) is an improved measure upon the one suggested by Reinhart and Reinhart (2009). Mendoza and Terrones (2008) calculate bonanzas as deviations from the trend by using an HP filter. This ensures that an inflow bonanza is a situation where the surges in inflows are unusually large. Therefore, for the remainder of the paper we use the threshold method defined by Mendoza and Terrones (2008).

We also find that when all controls are used, currency crises in the same year are positive and significant to a 5% level in all specifications, indicating currency crises increase the likelihood of a banking crisis. This is hardly surprising given the extensive literature on how currency crises negatively affect banking crises. Kaminsky and Reinhart (1999) find that currency crises deepen banking crisis, causing a vicious spiral.

In the bottom panel of the table we report the Wald test value and its corresponding p-value. The Wald test is used to see if at least one of the independent variables regression coefficients is statistically not equal to zero in the model. Therefore, ideally we would want p-values below 1%.[39]

5.2 Which type of Capital Inflows Affect the Probability of a Banking Crisis?

To further investigate the channels capital inflow bonanzas travel through to affect the occurrence of banking crises we need to look at the different components that make up gross and net capital inflows.[40] Table 2 shows the results of breaking gross capital inflows into its three main components (FDI, portfolio equity and debt) along with the baseline gross inflows measure from Table 1.

[37] The gross inflow bonanza coefficients are larger than the net inflow bonanza coefficients.
[38] Net inflows are gross inflows minus gross outflows.
[39] This would indicate significance at a 1% level.
[40] See literature review section 2 for details.

5.2 Which type of Capital Inflows affects the Probability of a Banking Crisis?

To further investigate the channels capital inflow bonanzas travel through to affect the occurrence of banking crises, we need to look at the different components that make up gross and net capital inflows.[43] Table 2 shows the results of breaking gross capital inflows into its three main components (FDI, portfolio equity and debt) along with the baseline gross inflows measure from Table 1.

Table 2
Capital Inflow Bonanzas (1 SD) Gross and decomposed into Gross FDI, Gross Portfolio Equity and Gross Debt Inflows. RE-Mundlak Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Gross Inflow		Gross FDI		Gross Portfolio Equity		Gross Debt	
Bonanza	2.481***	1.878***	1.914***	1.391***	0.880**	0.404	1.710***	1.442***
	(0.348)	(0.423)	(0.323)	(0.418)	(0.411)	(0.574)	(0.271)	(0.338)
Observations	1390	1120	1817	1454	1411	1137	2075	1608
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	No	Yes	No	Yes	No	Yes	No	Yes
Wald test	67.10	53.92	44.82	42.28	20.08	37.70	59.59	52.38
Wald p-value	0.001	0.001	0.001	0.023	0.128	0.064	0.001	0.002
Countries	73	68	84	78	73	68	87	81

Notes: Control 1 variables are financial liberalization, banking supervision, currency crises, deposit insurance and moral hazard. Control 2 variables are polity2, trade openness, fixed exchange rate regime, GDP growth and de facto current account openness. To conserve space the coefficients are not reported in the table. See Table 1 for all other details.

The results show that both gross FDI and debt inflow bonanzas increase the occurrence of banking crises. This result is statistically significant at the 1% level. The coefficient for gross portfolio equity inflow bonanzas is insignificant, indicating these bonanzas do not increase the occurrence of banking crises.[44] The finding that FDI inflow bonanzas increase the occurrence of banking crises is in contrast to some previous studies that find that FDI inflow bonanzas do not increase the occurrence of banking crises.[45] There is however some theoretical support in the literature for our finding. Hausmann and Fernández-Arias (2000) find the share of FDI in total flows tends to be larger in riskier countries. Therefore, FDI inflow bonanzas may be a proxy for a risk measure, which increases the occurrence of a

[43] See literature review section 2 for details.
[44] Portfolio equity inflow data is missing financial derivatives, which may be one of the reasons why the bonanza variable is insignificant.
[45] See Caballero (2014).

banking crisis.[46] Upon inspecting the results further, we see that gross debt inflow bonanzas affect the occurrence of banking crises to a greater extent than gross FDI inflow bonanzas.[47] This result could be due to debt having no risk sharing qualities.[48]

Table 3 shows the results of breaking net capital inflows into its three main components (FDI, portfolio equity and debt) along with the baseline net inflows measure from Table 1.

Table 3
Capital Inflow Bonanzas (1 SD) Net and decomposed into Net FDI, Net Portfolio Equity and Net Debt Inflows. RE-Mundlak Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Net Inflow		Net FDI		Net Portfolio Equity		Net Debt	
Bonanza	1.574***	1.278***	1.253***	1.068**	0.878**	0.355	1.117***	1.075***
	(0.352)	(0.426)	(0.348)	(0.444)	(0.406)	(0.568)	(0.307)	(0.373)
Observations	1390	1120	1817	1454	1411	1137	2075	1608
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	No	Yes	No	Yes	No	Yes	No	Yes
Wald test	34.74	45.49	25.08	40.94	19.81	38.12	30.33	44.14
Wald p-value	0.002	0.010	0.034	0.032	0.136	0.059	0.007	0.015
Countries	73	68	84	78	73	68	87	81

Notes: See Table 2.

The results from decomposing net inflows are relatively similar to the results from decomposing gross inflows: both net FDI and net debt are positive and significant, while net portfolio equity is insignificant. We see that gross debt inflow bonanzas affect the occurrence of banking crises more than gross FDI inflow bonanzas. It is worth noting that all the net inflow coefficients are smaller than the equivalent gross inflow bonanza coefficients. As noted earlier, a possible reason for this is that gross inflows are larger in volume than net inflows, which could mean gross inflows have a greater impact on the occurrence of banking crises.

[46] Both gross and net FDI inflow bonanzas are insignificant using the fixed effects regression, which has four extra control variables.
[47] Debt has a larger positive coefficient and smaller standard error.
[48] See section 2 for more details.

5.3 Do Capital Inflow Bonanzas travel through a Credit Boom Channel?

Having established a baseline result that all capital inflow bonanzas tested apart from portfolio equity inflow bonanzas increase the occurrence of banking crises, we now test to see if this is through a credit boom channel.[49] To do this we re-estimate the specifications of Table 2 while adding a credit boom dummy variable as well as an inflow bonanza credit boom interaction term.[50] The results are shown on Table 4 below. The first thing that is noticeable about the results is that the credit boom variable is positive and significant for all specifications, indicating that a credit boom in the previous year increases the occurrence of a banking crisis. Column 8 in Table 4 shows that if a credit boom occurs in the previous year a banking crisis is 4.6 times more likely to occur.[51] A common explanation for this correlation between credit booms and banking crises is that credit booms cause banks to lower their lending standards when they have too much credit.

Table 4

Credit Booms and Capital Inflows Bonanza (1 SD) Gross and decomposed into Gross FDI, Gross Portfolio Equity and Gross Debt Inflows. RE-Mundlak Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Gross Inflow		Gross FDI		Gross Portfolio Equity		Gross Debt	
Bonanza	1.881***	1.807***	1.201***	1.594***	0.210	0.429	1.310***	1.636***
	(0.442)	(0.463)	(0.416)	(0.505)	(0.604)	(0.791)	(0.340)	(0.404)
Credit Boom	1.611***	1.607***	1.406***	1.790***	1.739***	1.801***	1.147***	1.536***
	(0.414)	(0.454)	(0.379)	(0.460)	(0.422)	(0.448)	(0.361)	(0.458)
Bonanza*Boom		0.00426		-1.416		-0.477		-1.196
		(0.846)		(0.863)		(1.194)		(0.766)
Observations	1074	1025	1399	1399	1091	1091	1547	1547
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	No	Yes	No	Yes	No	Yes	No	Yes
Wald test	63.14	63.35	56.35	57.19	50.94	50.69	62.03	63.89
Wald p-value	0.001	0.001	0.001	0.002	0.005	0.011	0.001	0.001
Countries	66	65	77	77	66	66	80	80

Notes: Credit Booms are created using the threshold method defined by Mendoza and Terrones (2008) this method is explained in more detail in section 3. All independent variables apart from Currency Crises are lagged one period. The Interactive Term is takes a value of 1 if a Credit Boom and Capital Inflow Bonanza took place in the previous year. This term is explained in more detail in section 3. For all other details see Table 2.

[49] See literature review section 2 for details.

[50] The interaction term is added as it shows if the affect capital inflow bonanzas have on the occurrence of banking crises changes depending on if a credit boom occurred in the previous year.

[51] This was calculated by converting the coefficient to an odds ratio see footnote 33.

This in turn causes the banks to take on too much risk, which ultimately leads to a banking crisis. This has been well documented in the literature with Schularick and Taylor (2012) reporting that a credit boom over the previous five years is indicative of a heightened risk of a financial crisis. They find a one standard deviation change in real loan growth increases the probability of a crisis by 2.8%.

Another important result shown in Table 4 is that for columns 2, 4 and 8 gross inflows, gross FDI and gross debt remain significant and positive at a 1% level while the interaction term remains insignificant. This shows that in the absence of a credit boom, gross and net inflows increase the occurrence of banking crises. This is evidence that these inflows travel through more than just a credit boom channel to influence the occurrence of banking crises. This is significant, as it means other channels, like an asset price boom channel need to be investigated to fully understand how inflow bonanzas affect the occurrence of banking crises. However, before we test to see if other channels are important we must first test to see if net inflows also travel through more than just the credit boom channel. To do this we re-estimate Table 3 while adding a credit boom dummy variable and an inflow bonanza credit boom interaction term.

Table 5

Credit Booms and Capital Inflow Bonanzas (1 SD) Net and decomposed into Net FDI, Net Portfolio Equity and Net Debt. RE-Mundlak Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Net Inflow		Net FDI		Net Portfolio Equity		Net Debt	
Bonanza	1.338***	1.238**	0.890**	0.929	0.320	0.308	0.927**	0.915*
	(0.443)	(0.495)	(0.443)	(0.591)	(0.581)	(0.788)	(0.381)	(0.480)
Credit Boom	1.693***	1.518***	1.466***	1.487***	1.739***	1.721***	1.228***	1.216***
	(0.421)	(0.537)	(0.375)	(0.447)	(0.423)	(0.450)	(0.370)	(0.442)
Bonanza*Boom		0.443		-0.509		0.117		0.100
		(0.737)		(0.947)		(1.205)		(0.793)
Observations	1074	1074	1399	1399	1091	1091	1547	1547
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	No	Yes	No	Yes	No	Yes	No	Yes
Wald test	57.41	59.35	54.68	57.85	51.45	51.68	53.83	53.99
Wald p-value	0.001	0.001	0.002	0.002	0.004	0.008	0.002	0.004
Countries	66	66	77	77	66	66	80	80

Notes: For details on the Credit Boom or Interaction Term see Table 4. For all other details see Table 2.

The results are shown on Table 5 below. We see that the credit boom variable is positive and significant for all specifications, indicating that a previous year credit boom increases the occurrence of a banking crisis. A major difference between Table 4 and 5 is that when the interaction term is added, the significance of all four bonanza coefficients drop with the net FDI bonanza coefficient becoming just insignificant.[52] Overall, this indicates that the credit boom channel is somewhat stronger for net inflows than gross inflows. However, bonanzas still have a significant independent effect on the occurrence of banking crises. This result is similar to Caballero (2014) who finds that after adding a credit boom and interaction variable FDI, portfolio equity and debt inflow bonanzas all become insignificant while net inflow bonanzas remain significant.

We still find that net inflows and net debt inflows remain significant, which gives evidence to them affecting the occurrence of banking crises through more than just a credit boom channel. For net inflow bonanzas, even when a credit boom is not present the occurrence of a banking crisis increases by 3.4 times.[53] In terms of comparing the gross versus net results there are two reasons why net inflows might lose significance where as gross inflows remain highly significant. First, the sheer volume of gross inflows compared to net inflows might increase the significance of gross inflows. Second, net inflows do not always report a surge in capital inflows at the same time as gross inflows if gross outflows are also large. This will inherently lower the number of bonanzas reported using net flows compared to gross, which may be why there is a loss of significance.

Overall, the results so far have indicated that net and gross inflows affect the occurrence of a banking crisis through more than just a credit boom channel. Therefore, we now investigate whether this is through an asset price boom channel.[54]

5.4 Do Capital Inflow Bonanzas travel through an Asset Price Boom Channel?

As stated earlier, the data for testing the asset price boom channel is limited due to only developed countries having sufficient data on house prices.
Therefore, these results may have some bias and we acknowledge this.

[52] Net FDI inflow bonanzas are significant at a 12% level.
[53] See footnote 38.
[54] See literature review section 2 for an in depth discussion of why capital inflow bonanzas may travel through an asset price boom channel.

Therefore, these results may have some bias and we acknowledge this.

To test to see if gross inflow bonanzas travel through an asset price boom channel, we re-estimate the specifications in Table 2 while adding an asset price boom dummy variable and an asset price boom inflow bonanza interaction variable.

The results are shown on Table 6 below. There are a few important results from this table. First, the asset price boom coefficient is positive and significant for all columns apart from 8. This indicates that a previous year asset price boom increases the occurrence of a banking crisis. Second, even though gross inflows bonanzas remain positive and significant at a 5% level, gross FDI, portfolio equity and debt all lose significance when the interaction term is added, indicating that these three inflow bonanzas do not have a significant independent effect on the occurrence of banking crises.

Table 6

Asset Price Booms and Capital Inflow Bonanzas (1 SD) Gross and decomposed into Gross FDI, Gross Portfolio Equity and Gross Debt Inflows. RE-Mundlak Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Gross Inflow		Gross FDI		Gross Portfolio Equity		Gross Debt	
Bonanza	2.005***	1.900**	1.649**	0.777	-0.441	0.855	2.059***	1.388
	(0.749)	(0.785)	(0.805)	(1.275)	(0.861)	(1.187)	(0.719)	(1.015)
Asset Price Boom	2.122***	1.510	2.115***	1.577*	2.608***	2.703***	1.925***	1.258
	(0.767)	(0.935)	(0.672)	(0.870)	(0.684)	(0.710)	(0.710)	(1.022)
Bonanza*Boom		-0.655		1.696		0.141		1.538
		(0.997)		(1.503)		(1.528)		(1.539)
Observations	576	556	579	579	576	576	579	579
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	No	Yes	No	Yes	No	Yes	No	Yes
Wald test	32.83	35.51	28.63	31.50	29.23	29.72	34.78	36.90
Wald p-value	0.203	0.188	0.379	0.342	0.350	0.428	0.145	0.149
Countries	31	31	31	31	31	31	31	31

Notes: Asset Price Booms are created using the threshold method defined by Mendoza and Terrones (2008) this method is explained in more detail in section 3. All independent variables apart from Currency Crises are lagged one period. The Interactive Term is takes a value of 1 if an Asset Price Boom and Capital Inflow Bonanza took place in the previous year. This term is explained in more detail in section 3. For all other details see Table 2.

Third, the interaction terms are all insignificant, indicating that gross inflow bonanzas may

affect the occurrence of banking crises through a channel independent of a credit or asset price boom channel.[55]

We now test to see if net inflows travel through an asset price boom channel by re-estimating the specifications of Table 3 while adding an asset price boom dummy variable and an asset price boom inflow bonanza interaction variable. The results are shown on Table 7 below. The asset price boom coefficient is positive and significant for all specifications, showing that a previous year asset price boom increases the occurrence of banking crises. We also find net debt is the only inflow, which remains significantly positive after adding the interaction term. This indicates that there is evidence that net debt inflow bonanzas have a significant independent effect on the occurrence of a banking crisis.[56] Another interesting result shown on Table 7 is that the interaction term for net debt is significant and negative. This shows that individually net debt inflow bonanzas and asset price booms in the previous period increase the occurrence of banking crises.

Table 7

Asset Price Booms and Capital Inflow Bonanzas (1 SD) Net and decomposed into Net FDI, Net Portfolio Equity and Net Debt. RE-Mundlak Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Net Inflow		Net FDI		Net Portfolio Equity		Net Debt	
Bonanza	1.412**	0.889	1.717**	0.855	0.184	0.652	1.434**	2.695***
	(0.640)	(0.804)	(0.699)	(1.247)	(0.888)	(1.163)	(0.612)	(0.931)
Asset Price Boom	2.341***	1.868**	2.328***	1.844**	2.523***	2.600***	2.013***	2.924***
	(0.700)	(0.809)	(0.672)	(0.809)	(0.684)	(0.716)	(0.690)	(0.895)
Bonanza*Boom		1.753		1.390		-0.835		-2.174*
		(1.145)		(1.510)		(1.819)		(1.264)
Observations	576	576	579	579	576	576	579	579
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	No	Yes	No	Yes	No	Yes	No	Yes
Wald test	30.46	29.12	30.89	33.02	28.77	28.68	35.53	29.81
Wald p-value	0.294	0.459	0.276	0.277	0.372	0.482	0.126	0.424
Countries	31	31	31	31	31	31	31	31

Notes: For details on the Asset Price Boom or Interaction Term see Table 6. For all other details see Table 2.

However, when both happen at once the occurrence of a banking crisis decreases. This

[55] Gross inflows remained significant and positive in Tables 4 and 6.
[56] Net debt inflows remained significant and positive in Tables 5 and 7.

suggests that net debt inflow bonanzas travel through an asset price boom channel but there is also an independent effect. However, we need to be careful since there could be a bias in the data set due to it only containing developed countries.

5.5 Do Capital Inflow Bonanzas have an Independent Effect?

To further test the result that capital inflow bonanzas have a significant independent effect, we use both credit and asset price booms in the same regression, as we want to test whether bonanzas are still significant when we control for both these channels together. We start by re-estimating the specifications in Table 2 with the addition of a credit boom dummy, an asset price boom dummy and their interaction terms. The results are shown on Table 8 below. Inspecting the table we see gross inflows, gross FDI and gross debt inflows bonanzas remain positive and significant.[57] The results confirm our earlier finding that the credit boom and asset price boom channels are not the only channels the different components of gross inflow bonanzas travel through to affect the occurrence of banking crises.

Table 8

Asset Price Booms, Credit Booms and Capital Inflow Bonanzas (1 SD) Gross and decomposed into Gross FDI, Gross Portfolio Equity and Gross Debt Inflows. RE-Mundlak Model

VARIABLES	(1) Gross Inflow	(2) Gross FDI	(3) Gross Portfolio Equity	(4) Gross Debt
Bonanza	2.737***	2.065**	1.032	2.227**
	(0.743)	(1.022)	(1.034)	(0.968)
Credit Boom	2.846***	1.978**	1.818***	2.291**
	(0.804)	(0.848)	(0.599)	(0.935)
Bonanza*Credit Boom	-2.407**	-1.019	-1.417	-1.274
	(1.172)	(1.144)	(1.160)	(1.092)
Asset Price Boom	0.641	1.593**	2.647***	0.729
	(0.800)	(0.753)	(0.582)	(0.993)
Bonanza*Asset Price Boom	1.728*	0.771	-1.398	1.680
	(0.968)	(1.111)	(1.245)	(1.359)
Observations	621	653	646	653
Controls 1	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes
Interaction Term	No	Yes	Yes	Yes
Wald test	50.38	56.03	48.17	57.36
Wald p-value	0.020	0.005	0.033	0.004
Countries	31	31	31	31

Notes: For details on the Asset Price Boom or Interaction Term see Table 6. For details on the Credit Boom or Interaction Term see Table 4. For all other details see Table 2.

[57] Gross debt inflows was significant at all 17% level in Table 6 indicating that it is not a strange result for this variable to be significant when both boom channels are regressed together.

Table 8 gives two other interesting results. First, for both columns 1 and 4 the asset price boom coefficients are insignificant. This indicates that part of the reason asset price boom coefficients are significant in previous tables is due to asset price booms being correlated with credit booms.[58] Second, the interaction term between credit booms and gross debt inflow bonanzas is negative and significant. This result is similar to the result in Table 7 where we found that the interaction term between net debt inflow bonanzas and credit booms was negative and significant. As with that result we cannot find any reason why this would happen.

We now look to see if any of our net inflow bonanzas are still significant when we control for both a credit and asset price boom channel together. To do this we re-estimate Table 3 specifications while adding both a credit and asset price boom dummy, as well as their interaction terms. The results are shown on Table 9 below.

Table 9

Asset Price Booms, Credit Booms and Capital Inflow Bonanzas (1 SD) Net and decomposed into Net FDI, Net Portfolio Equity and Net Debt Inflows. RE-Mundlak Model

	(1)	(2)	(3)	(4)
VARIABLES	Net Inflow	Net FDI	Net portfolio equity	Net debt
Bonanza	1.574	1.276	0.803	1.535*
	(0.970)	(1.346)	(1.008)	(0.908)
Credit Boom	2.200**	2.588**	1.628***	0.920
	(1.069)	(1.122)	(0.612)	(0.695)
Bonanza*Credit Boom	0.465	-1.232	-0.496	1.241
	(1.404)	(1.745)	(1.273)	(1.064)
Asset Price Boom	1.538	1.198	2.288***	2.462***
	(1.028)	(0.935)	(0.591)	(0.665)
Bonanza*Asset Price Boom	2.138	2.654	-0.116	-1.258
	(1.465)	(1.631)	(1.197)	(1.107)
Observations	548	551	646	653
Controls 1	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes
Wald test	29.40	29.67	47.76	47.80
Wald p-value	0.647	0.634	0.036	0.036
Countries	30	30	31	31

Notes: For details on the Asset Price Boom or Interaction Term see Table 6. For details on the Credit Boom or Interaction Term see Table 4. For all other details see Table 2.

[58] As credit booms and asset price booms are correlated if credit booms are not present in a regression asset price booms suffer from omitted variable bias.

The most important result is that the net debt inflow bonanza coefficient is positive and significant at a 10% level. This indicates that net debt inflow bonanzas affect the occurrence of banking crises through an independent effect. This result along side the gross inflow bonanza result indicates debt is the main inflow bonanza, which may have an independent effect.

5.6 Robustness

5.6.1 Fixed Effects

One of the main issues with the regression technique used to get the results is that we are assuming that the individual specific effect is equally correlated with all time periods, which in turn causes bias in the results. Therefore, the first robustness test we perform is to re-estimate the specifications in Tables 4-7 using a fixed effects estimator controlling for country and year fixed effects.[59] As noted earlier, this regression technique only incorporates countries that experienced a crisis, which in turn lowers the number of observations.

The results of re-estimating the specifications in Tables 4 and 5 are shown on Table A8 in the appendix. Inspecting the results, we see that only gross inflow and gross debt inflow bonanza coefficients remain significant and positive when we have both the credit boom dummy and interaction term. This confirms our earlier findings that these two inflow bonanzas have an independent effect on the occurrence of banking crises after controlling for a credit boom. The results of re-estimating the specifications in Table 6 and 7 specifications are shown on Table A9 in the appendix. These results show that after incorporating an asset boom channel only net debt and gross inflow bonanza coefficients remain positive and significant.

Since this result is different to using random effect regression we then perform an extra robustness test of re-estimating the specifications in Tables 8 and 9 using a fixed effect regression technique.[60] The results are shown on Table A10 in the appendix. The results show that the only bonanza coefficient that is positive and significant is gross inflows.[61] This gives additional evidence that gross inflow bonanzas have a significant independent effect on the

[59] As stated in section 2 we add real lending rate, depreciation (Nominal exchange rate), de jure current account openness and fed effective funds rate as extra control variables.
[60] Net debt was also significant for both boom channels using random effects.
[61] The other coefficients that were positive and significant using the random effects regression are the correct sign but have lost significance. This may be due to a smaller sample size.

occurrence of banking crises.

5.6.2 Intense Capital Inflow Bonanzas

We now look to see if intense inflow bonanzas travel through credit and asset price boom channels.[62] In theory, we would expect the bonanza coefficients to be more significant as intense bonanzas should affect the occurrence of banking crises more than regular bonanzas.[63] To do this we re-estimate the specifications in Tables 4-7 using only intense bonanzas. The results from re-estimating the specifications in Tables 4-5 are shown on Table A11 and the results from re-estimating the specifications in Tables 6-7 are shown on Table A12; both in the appendix. They show that all inflow bonanzas coefficients apart from portfolio equity (which are insignificant) have become more positive and significant. This is important for two reasons. First, it is in line with what we would expect and lends further evidence to capital inflow bonanzas increasing the occurrence of banking crises. Second, it also provides additional evidence that intense bonanzas have a significant independent effect on the occurrence of banking crises, as net, net debt, gross, gross FDI and gross debt inflow bonanza coefficients are all positive and significant at a 10% level when regressed with either asset price or credit booms.

5.6.3 Single and Double lagged Capital Inflow Bonanzas

The tests we have conducted so far only include a single lag for bonanzas. We now look to see if our results are altered if we include a double lagged bonanza as well. This is important for two reasons. First, bonanzas can last for more than one year. For example, on Graph A6 in the appendix we see that New Zealand experiences a net inflow bonanza, which lasts for both 2002 and 2003. Second, inflow bonanzas may take more than one period to affect the occurrence of banking crises.[64]

To see what the effect of adding a double lag is, we re-estimate the specifications in Tables 4-7 adding a two-period lag for the bonanza variable. The results of re-estimating the specifications in Tables 4 and 5 are shown on Table A13 in the appendix. The double lagged

[62] Intense bonanzas defined when $l_{it} \geq \phi\sigma\ (l_i)$ occurs given $\phi = 2$. See section 3 for more details.
[63] Larger bonanzas should have a larger effect, as the literature says capital inflow bonanzas increase the likelihood of a banking crisis increases.
[64] Credit and asset price booms may take more than one period to burst.

bonanza coefficient is positive and significant for columns 4, 6 and 8, indicating for these types of inflow bonanzas there is evidence it can take more than one period for the bonanza to affect the occurrence of banking crises even when a credit boom is not present. The results of re-estimating the specifications in Tables 6 and 7 are shown on Table A14 in the appendix. All of the single lagged bonanza coefficients are the same as Tables 6 and 7, with only net debt and gross inflows being significant and positive. Inspecting the double lagged coefficients we find the gross FDI coefficient is positive and significant. This is further evidence that gross FDI inflow bonanzas can take more than one year to affect the occurrence of banking crises even when a credit boom is not present.[65]

6. Discussion

In this paper, gross and net inflow bonanzas increase the occurrence of banking crises at both an aggregate level and when broken into their three main components: FDI, portfolio equity and debt. We examine which component contributes to increasing the occurrence of banking crises the most. We then test to see if capital inflow bonanzas affect the occurrence of banking crises after controlling for a credit and asset price boom.

To summarise our results, we find both net and gross capital inflow bonanzas increase the occurrence of banking crises with gross inflows having a stronger effect. When we break these flows into their three components, we find that for both gross and net, FDI and debt inflow bonanzas increase the occurrence of banking crises with gross inflows having a stronger effect. We also find that debt inflow bonanzas have the strongest effect out of the three components. We then test to see if these inflow bonanzas travel through a credit boom channel, finding evidence that some inflow bonanzas still increase the occurrence of banking crises without a credit boom present. This indicates that they travel through more than just a credit boom channel. We then test to see if these inflow bonanzas travel through an asset price boom channel. The results, in conjunction with the credit boom channel results, indicate that net debt and gross inflow bonanzas have a significant independent effect. To establish if this was the case we test to see if the inflow bonanza coefficients remain positive and significant if both credit and asset price booms are regressed together. The result is that even if a credit and asset price boom were not present, net debt, gross FDI, gross debt and gross inflow bonanzas

[65] The double lagged coefficient was significant in both Tables A13 and A14.

increase the occurrence of banking crises. We then used a fixed effects model instead of a random effects model as a robustness test to see if the results found are not due to regression bias. We find that even if a credit and asset price boom were not present, gross inflow bonanzas increased the occurrence of banking crises.

The most important finding from these results is that it gives evidence that capital inflow bonanzas have an independent effect on the occurrence of banking crises after controlling for a credit and asset price boom channel. This is significant as it means countries that structure their capital controls and prudential measures in ways to try to mitigate their risks to credit and asset price booms are not fully protecting themselves against capital inflow bonanzas, especially gross inflow bonanzas. Therefore, more investigation needs to be undertaken to identify the channels the independent effect travels through.

It has been shown in the current literature that capital controls are unable to influence the size of capital inflows. Montiel and Reinhart (1999) find that capital controls appear to have no statistically significant effect on reducing the overall volume of inflows. Capital controls have been found to alter the composition of capital inflows.[66] Therefore, the best method of protection for countries would be to try to influence the composition of capital inflows through capital controls.

Our results show that debt inflow bonanzas have the strongest impact on the occurrence of banking crises and are the most likely to have an independent effect out of the three components.[67] Therefore, the best response would be to gear capital controls to favour FDI and portfolio equity inflows while trying to lower fragility to credit and asset price booms by using prudential measures and strengthening institutions.[68] It is worth noting that the response detailed above is not achievable for many developing countries, as they cannot get adequate FDI and portfolio equity inflows due to investors being unwilling to take on the extra risk that comes with FDI and portfolio equity investment compared to debt. Therefore, for developing countries to liberalize they must be sure that the benefits outweigh the costs given they are not as resilient to capital inflow bonanzas as developed countries as they have weaker institutions.

[66] See Magud, Reinhart and Rogoff (2011).
[67] Debt inflow bonanzas had the highest significance of the three components.
[68] Institutional strength has been shown to be an essential condition to ensure banking stability. See Essid, Boujelbene and Plihon (2014) for details.

A second important finding from these results is that we have contributed further evidence that both net and gross inflow bonanzas are sufficiently different, meaning they both need to be considered when policy makers are determining what controls and prudential measures to put in place. They also show that gross inflow bonanzas have a stronger effect on the occurrence of banking crises than net inflow bonanzas. This indicates that policies that affect gross inflow bonanzas are more important than policies that affect net inflow bonanzas and that future studies should focus more on gross inflows instead of net inflows.

A third important finding from these results is that they provide evidence that both net and gross inflow bonanzas travel through an asset price boom channel.[69] This is important, as it has been theorized in the current literature that this link exists, however no empirical evidence had been found. This in part could have been due to the lack of data available on asset prices.

In this paper we looked at how gross and net capital inflow bonanzas, both at an aggregate level and when broken into their components affect the occurrence of banking crises. We then looked to see if there is an independent effect after controlling for a credit and asset price boom. From carrying out this analysis we have shown that debt inflow bonanzas increase the occurrence of banking crises more than the other two inflow types, that there is an independent effect after controlling for credit and asset price booms and gross inflows are more important than net inflows. These findings will help policy makers determine what capital controls and prudential measures they should put in place to try to lower their fragility to banking crises. They also show that more investigation is needed to fully understand all the channels capital inflows travel through to affect the occurrence of banking crises.

[69] These results need to be considered carefully due to the tested data set having limitations. See section 3 for details.

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Appendix

Table A1

Summary Statistics of all variables used in regressions (1985-2012)

VARIABLES	(1) Observations	(2) Mean	(3) SD	(4) Min	(5) Max
Banking Crisis, Bonanzas and Boom variables					
Banking Crisis	4,452	0.0279	0.165	0	1
RR Net Bonanza (1 SD)	1,858	0.142	0.349	0	1
RR Gross Bonanza (1 SD)	1,858	0.142	0.349	0	1
Net Inflow Bonanza (1 SD)	1,858	0.175	0.380	0	1
Net FDI Bonanza (1 SD)	2,854	0.108	0.310	0	1
Net Portfolio Equity Bonanza (1 SD)	1,931	0.111	0.314	0	1
Net Debt Bonanza (1 SD)	3,947	0.0973	0.296	0	1
Gross Inflow Bonanza (1 SD)	1,858	0.127	0.333	0	1
Gross FDI Bonanza (1 SD)	2,854	0.110	0.313	0	1
Gross Portfolio Equity Bonanza (1 SD)	1,931	0.108	0.310	0	1
Gross Debt Bonanza (1 SD)	3,947	0.105	0.306	0	1
Asset Price Boom (1 SD)	781	0.149	0.356	0	1
Credit Boom (1 SD)	3,434	0.102	0.303	0	1
Control Variables					
Currency Crisis	4,452	0.0332	0.179	0	1
Competition Risk	2,247	0.435	0.941	0	3
Financial Liberalization	3,700	0.358	0.480	0	1
Banking Supervision	2,322	1.304	1.016	0	3
Deposit Insurance	4,266	0.356	0.479	0	1
Moral Hazard	2,159	0.685	3.349	-9	10
Polity2	3,646	3.007	6.704	-10	10
Trade Openness	3,960	81.17	53.03	0.309	531.7
Exchange Rate Regime	3,877	0.418	0.493	0	1
Real Lending Rate	3,061	7.537	25.10	-97.81	789.8
Depreciation (Nom ER)	3,787	0.118	0.471	-0.347	13.45
GDP Growth	4,001	3.666	6.737	-62.08	150.0
De Facto CA Openness	3,978	2.941	13.43	0.138	240.7
De Jure CA Openness	3,848	0.096	1.560	-1.889	2.390
Fed Effective Funds Rate	4,293	0.044	0.026	0.001	0.092

Notes: Definitions and sources of all variables are on Table A3.

Table A2

List of Countries used in Regressions (1985-2012)

Albania	Costa Rica	Indonesia	Netherlands	Sweden
Algeria	Czech Republic	Ireland	New Zealand	Switzerland
Argentina	Denmark	Israel	Nicaragua	Tanzania
Australia	Dominican Republic	Italy	Nigeria	Thailand
Austria	Ecuador	Jamaica	Norway	Tunisia
Azerbaijan	Egypt, Arab Rep.	Japan	Pakistan	Turkey
Bangladesh	El Salvador	Jordan	Paraguay	Uganda
Belarus	Estonia	Kazakhstan	Peru	Ukraine
Belgium	Ethiopia	Kenya	Philippines	United Kingdom
Bolivia	Finland	Kyrgyz Republic	Poland	United States
Brazil	France	Latvia	Portugal	Uruguay
Bulgaria	Georgia	Lithuania	Romania	Uzbekistan
Burkina Faso	Germany	Madagascar	Russian Federation	Venezuela, RB
Cameroon	Ghana	Malaysia	Senegal	Vietnam
Canada	Greece	Mexico	Singapore	Zimbabwe
Chile	Guatemala	Morocco	South Africa	
China	Hungary	Mozambique	Spain	
Colombia	India	Nepal	Sri Lanka	

Table A3
Variable definitions and sources

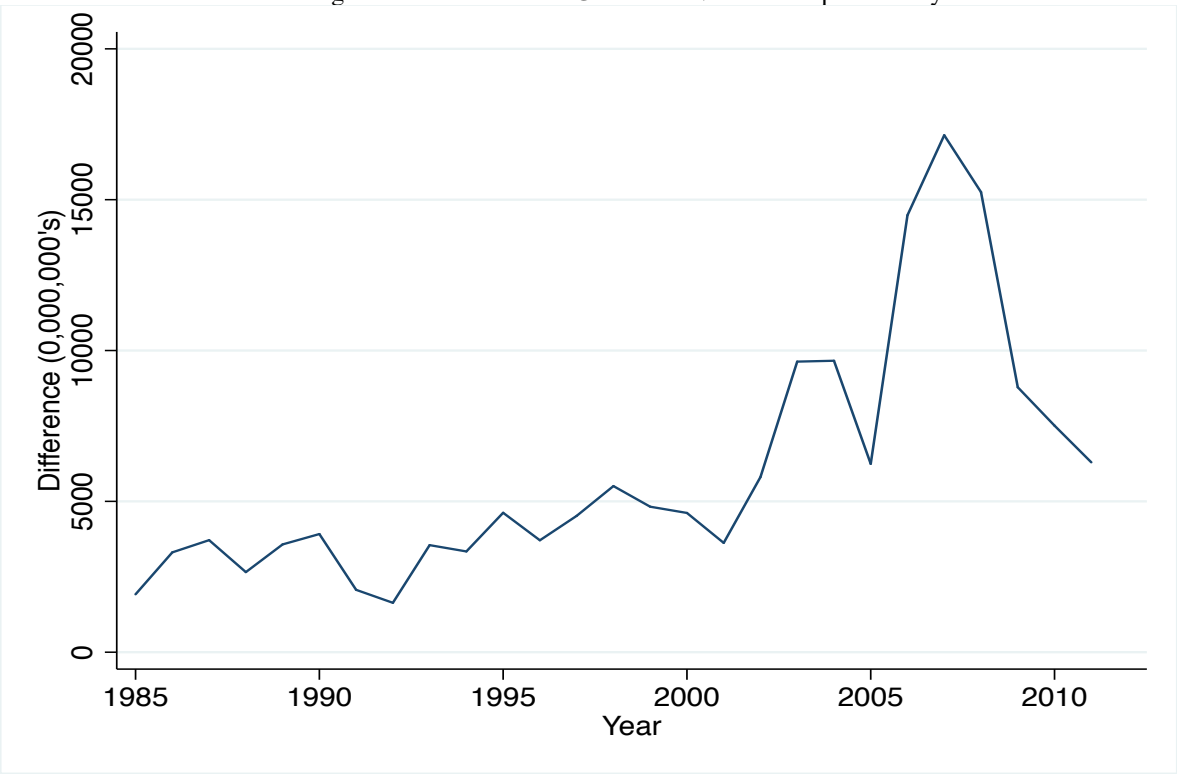
VARIABLES	Definition	Sources
Banking Crisis Starting	This is a dummy variable, which takes the value of 1 if a banking crisis starts in that year and 0 otherwise. I define a banking crisis in section 3.	Systemic banking crises database: An Update Laeven and Valencia (2013)
Capital Inflows	FDI liabilities are defined as the change in the value of FDI liabilities (stock) from the previous year. Portfolio equity liabilities are defined as the change in the value of portfolio equity liabilities (stock) from the previous year. Debt liabilities are defined as the change in the value of debt liabilities (stock) from the previous year. FDI assets are defined as the change in the value of FDI assets (stock) from the previous year. Portfolio equity assets are defined as the change in the value of portfolio equity assets (stock) from the previous year. Debt assets are defined as the change in the value of debt assets (stock) from the previous year. FDI inflows are defined as max(FDI liabilities, 0) - min(FDI assets, 0). FDI outflows are defined as max(FDI assets, 0) - min(FDI liabilities, 0). Portfolio equity inflows are defined as max(portfolio equity liabilities, 0) - min(portfolio equity assets, 0). Portfolio equity outflows are defined as max(portfolio equity assets, 0) - min(portfolio equity liabilities, 0). Debt inflows are defined as max(debt liabilities, 0) - min(debt assets, 0). Debt outflows are defined as max(debt assets, 0) - min(debt liabilities, 0). Gross inflows are defined as the value of gross FDI inflows plus gross portfolio equity inflows plus debt inflows. Net inflows are defined as the value of net FDI inflows plus portfolio equity inflows plus debt inflows.	Computed using data from updated and extended version of dataset constructed by Lane and Milesi-Ferretti (2007)
House Price data	This uses data for countries, which have over 10 years of data available. The data was in a quarterly time format, we change this to an annual format by taking the average of the four quarters.	Computed using data from National sources, BIS Residential Property Price database (http://www.bis.org/statistics/pp.htm).
Credit Boom	This uses the variable Private credit by deposit money banks and other financial institutions to GDP (GFDD.DI.12). A credit boom is defined in general as an episode in which credit to the private sector grows by more than during a typical business cycle expansion. See section 3 for a more detailed explanation.	Computed using data from Global Financial Development Database (GFDD), The World Bank.
Currency Crisis Starting	This is a dummy variable, which takes the value of 1 if a currency crisis starts in that year and a 0 otherwise. A currency crisis is defined as systemic when a nominal depreciation of the currency in relation to the U.S. dollar of at least 30 percent that is also at least 10 percentage points higher than the rate of depreciation in the year before.	Systemic banking crises database: An Update Laeven and Valencia (2013)
Competition Risk	This variable is computed using the methodology of (Caballero, 2014). It is as an interaction variable using the financial liberalization (dummy) and entry barriers to the banking sector. This takes values between 0-3 with 3 representing the highest level of competition risk. This variable only has data till 2005 therefore I assume it stays constant until 2012.	Computed using data from Abiad, Detragiache and Tressel (2010)
Financial Liberalization	This is an index which combines the 7 variables use to measure financial liberalization. It is normalized between 0-1, which is increasing in the level of liberalization. This variable only has data till 2005 therefore I assume it stays constant until 2012.	Abiad, Detragiache and Tressel (2010)
Banking Supervision	This is an index, which takes a value of between 0-3, which is increasing in the level of supervision. This variable only has data till 2005 therefore I assume it stays constant until 2012.	Abiad, Detragiache and Tressel (2010)

Table A3 (continued)
Variable definitions and sources

VARIABLES	Definition	Sources
Deposit Insurance	This is a dummy index, which takes a value of 1 if the country has explicit deposit insurance scheme.	Demirguc-Kunt, Kane and Laeven (2015)
Moral Hazard	This variable is computed using the methodology of (Caballero, 2014). It is an interaction variable using the financial liberalization (dummy) and Polity2. This takes values between -10 and +10 with -10 representing the highest level of moral hazard. This variable only has data till 2005 therefore I assume it stays constant until 2012.	Computed using data from Abiad, Detragiache and Tressel (2010)
Polity2	This variable takes values between -10 to +10 with +10 indicating a country has strong democratic institutions and -10 indicating a country has strong autocratic institutions.	Polity IV Project (http://www.systemicpeace.org/inscrdata.html)
Trade Openness	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product (NE.TRD.GNFS.ZS).	World Development Indicators, The World Bank
Exchange Rate Regime	This is a dummy variable, which takes the value of 1 if a country is considered to have a pegged exchange rate.	Shambaugh (2004) Exchange Rate Regime. (http://www.dartmouth.edu/~jshambau/)
Real Lending Rate	This uses Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator. (FR.INR.RINR)	World Development Indicators, The World Bank
Depreciation (Nom ER)	This uses the annual change in Official exchange rate (LCU per US$, period average)(PA.NUS.FCRF).	World Development Indicators, The World Bank
GDP Growth	Annual percentage growth rate of GDP at market prices based on constant local currency. (NY.GDP.MKTP.KD.ZG)	World Development Indicators, The World Bank
De Facto CA Openness	This variable is computed using the methodology of (Caballero, 2014). It is value of total assets and liabilities to GDP.	Computed using data from updated and extended version of dataset constructed by Lane and Milesi-Ferretti (2007)
De Jure CA Openness	An index measuring a country's degree of capital account openness. This index takes on higher values the more open the country is to cross-border capital transactions.	Chinn and Ito (2006) (http://web.pdx.edu/~ito/Chinn-Ito_website.htm)
Financial Liberalization (dummy)	This variable is computed using the methodology of (Caballero, 2014). It is a dummy variable, which takes a value of 1 if there as been an elimination of interest rate controls in the previous 5 years. For there to be an elimination of interest rate controls the interest rate control index variable needs to increase (it is a 0-4 index variable). This variable only has data till 2005 therefore I assume it stays constant until 2012.	Computed using data from Abiad, Detragiache and Tressel (2010)
Fed Effective Funds Rate	The federal funds rate is the interest rate at which depository institutions trade federal funds (balances held at Federal Reserve Banks) with each other overnight. This data was in a quarterly time format, we change this to annual data by taking the average of the four quarters.	Computed using data from Board of Governors of the Federal Reserve System (US)

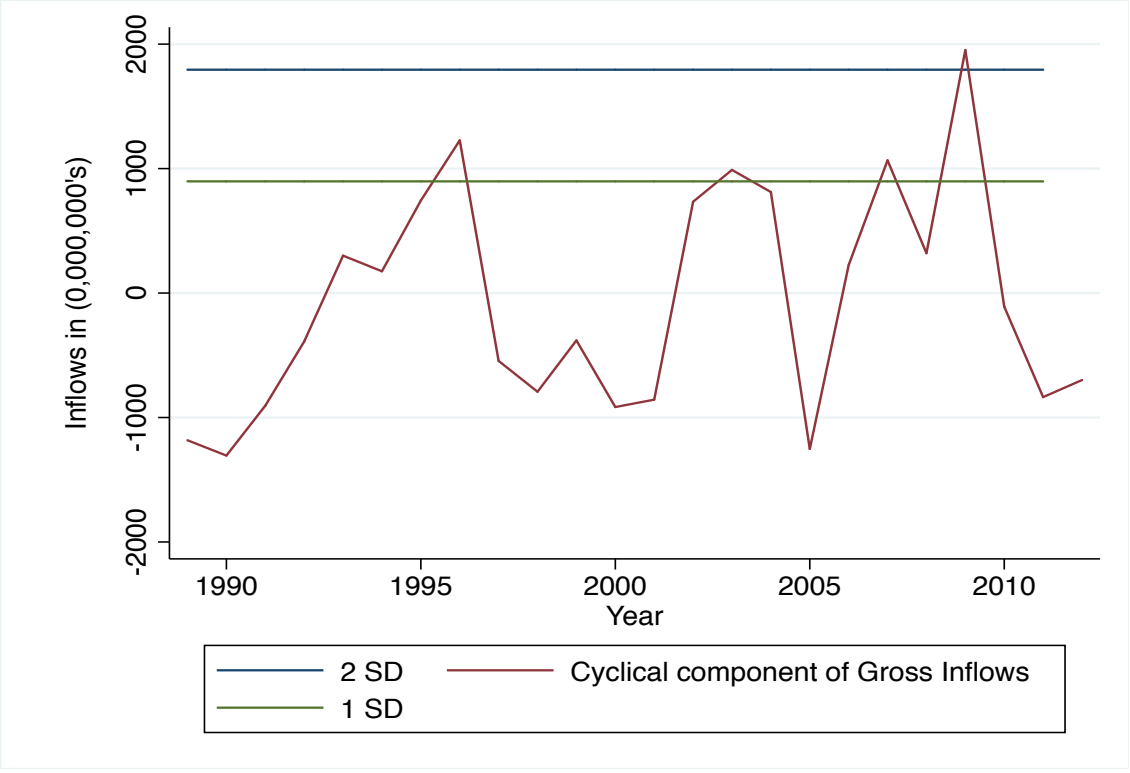
Graph A4

Average difference between Gross and Net Inflows per country



Graph A5

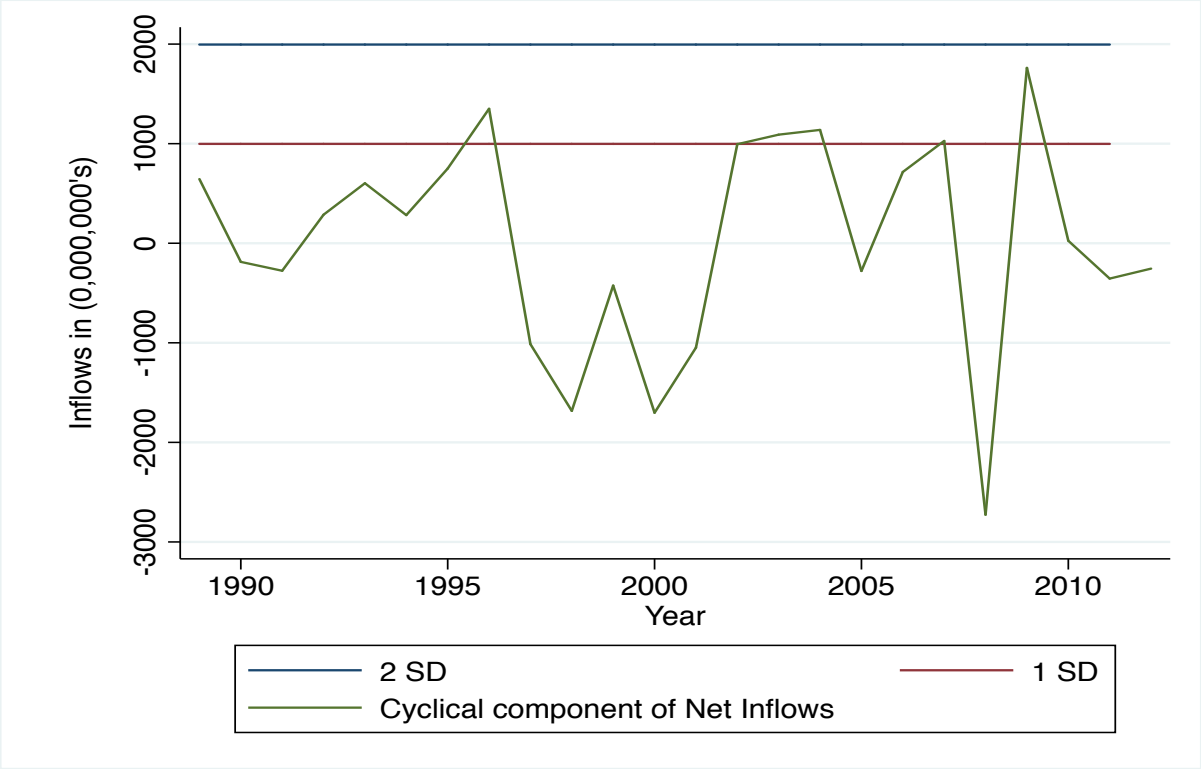
New Zealand's Gross Inflow Bonanzas



Notes: Bonanzas are defined using the threshold method defined by Mendoza and Terrones (2008) for more details see section 2.

Graph A6

New Zealand's Net Inflow Bonanzas



Notes: Bonanzas are defined using the threshold method defined by Mendoza and Terrones (2008) for more details see section 2.

Graph A7

Net FDI, Portfolio Equity and Debt Bonanzas between 1985 and 2011

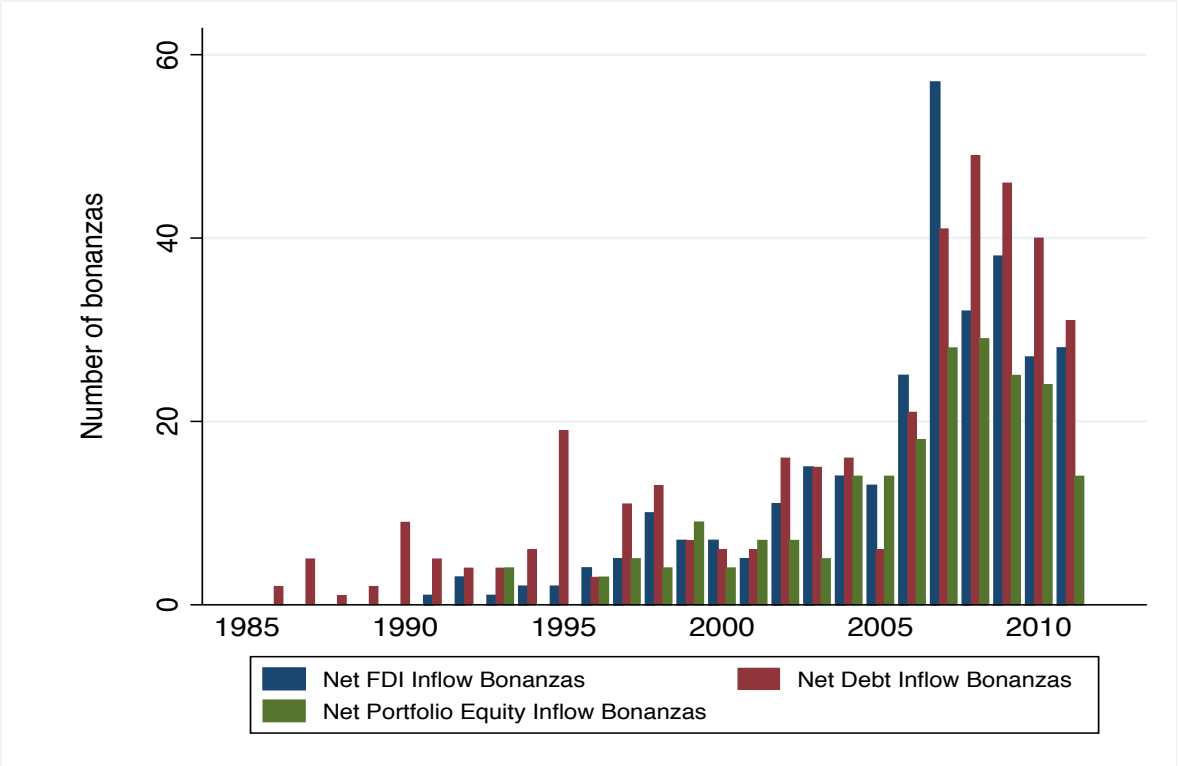


Table A8

Credit Booms and Capital Inflow Bonanzas (1 SD) Net, Gross and decomposed. Logit Model

VARIABLES	(1) Net Inflow	(2) Net FDI	(3) Net Portfolio Equity	(4) Net Debt	(5) Gross Inflow	(6) Gross FDI	(7) Gross Portfolio Equity	(8) Gross Debt
Bonanza	0.0145	-0.000171	0.00938	0.0151	0.0646***	0.0280	0.0119	0.0395**
	(0.0176)	(0.0181)	(0.0192)	(0.0168)	(0.0184)	(0.0186)	(0.0196)	(0.0163)
Credit Boom	0.0579***	0.0693***	0.0852***	0.0575***	0.0791***	0.0751***	0.0881***	0.0655***
	(0.0199)	(0.0184)	(0.0183)	(0.0184)	(0.0190)	(0.0184)	(0.0183)	(0.0181)
Bonanza*Boom	0.116***	0.0741*	0.0473	0.0548	0.0733	0.0319	0.0240	0.0193
	(0.0371)	(0.0426)	(0.0494)	(0.0372)	(0.0462)	(0.0416)	(0.0490)	(0.0378)
Observations	1008	1333	1025	1481	962	1333	1025	1481
R-squared	0.129	0.074	0.116	0.068	0.136	0.074	0.115	0.070
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Countries	66	77	66	80	65	77	66	80

Notes: For details on the Credit Boom or Interaction Term see Table 5. For all other details see Table 2.

Table A9

Asset Price Booms and Capital Inflow Bonanzas (1 SD) Net, Gross and decomposed. Logit Model

VARIABLES	(1) Net Inflow	(2) Net FDI	(3) Net Portfolio Equity	(4) Net Debt	(5) Gross Inflow	(6) Gross FDI	(7) Gross Portfolio Equity	(8) Gross Debt
Bonanza	0.0309	0.0228	0.0159	0.0749***	0.0857***	0.0123	0.0145	0.0382
	(0.0265)	(0.0275)	(0.0293)	(0.0264)	(0.0271)	(0.0296)	(0.0309)	(0.0276)
Asset Price Boom	0.0342	0.0391	0.0573**	0.0593**	0.0343	0.0290	0.0580**	0.0239
	(0.0258)	(0.0244)	(0.0245)	(0.0251)	(0.0260)	(0.0248)	(0.0244)	(0.0254)
Bonanza*Boom	0.0820*	0.0778	-0.00880	-0.0642	0.0835*	0.114**	-0.0111	0.111**
	(0.0470)	(0.0559)	(0.0590)	(0.0515)	(0.0490)	(0.0535)	(0.0606)	(0.0513)
Observations	508	511	508	511	490	511	508	511
R-squared	0.159	0.150	0.146	0.157	0.173	0.156	0.146	0.164
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Countries	31	31	31	31	31	31	31	31

Notes: For details on the Asset Price Boom or Interaction Term see Table 6. For all other details see Table 2.

Table A10

Asset Price Booms, Credit Booms and Capital Inflow Bonanzas (1 SD) Net, Gross and decomposed. Logit Model

VARIABLES	(1) Net Inflows	(2) Net FDI	(3) Net Portfolio Equity	(4) Net Debt	(5) Gross Inflow	(6) Gross FDI	(7) Gross Portfolio Equity	(8) Gross Debt
Bonanza	0.0331	0.00202	0.0351	0.0454	0.0890***	0.000462	0.0425	0.0317
	(0.0291)	(0.0301)	(0.0315)	(0.0304)	(0.0282)	(0.0328)	(0.0337)	(0.0305)
Credit Boom	0.0810***	0.0597**	0.0920***	0.0378	0.0707***	0.0733***	0.0961***	0.0691***
	(0.0272)	(0.0249)	(0.0253)	(0.0268)	(0.0263)	(0.0257)	(0.0251)	(0.0258)
Bonanza*Credit Boom	-0.0284	0.174**	-0.157**	0.125**	-0.00560	0.0310	-0.185***	0.00998
	(0.0499)	(0.0711)	(0.0712)	(0.0558)	(0.0614)	(0.0625)	(0.0673)	(0.0566)
Asset Price Boom	0.0170	0.0257	0.0392	0.0516*	0.0233	0.00858	0.0367	0.00893
	(0.0281)	(0.0262)	(0.0263)	(0.0270)	(0.0279)	(0.0268)	(0.0259)	(0.0273)
Bonanza*Asset Price Boom	0.0928*	0.00202	0.0334	-0.0695	0.0716	0.144**	0.0553	0.120**
	(0.0498)	(0.0301)	(0.0627)	(0.0546)	(0.0573)	(0.0591)	(0.0666)	(0.0554)
Observations	484	487	484	487	469	487	484	487
R-squared	0.188	0.193	0.184	0.192	0.200	0.190	0.190	0.192
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Countries	30	30	30	30	30	30	30	30

Notes: For details on the Credit Boom or Interaction Term see Table 5. For all other details see Table 2.

Table A11

Credit Booms and Capital Inflow Bonanzas (2 SD) Net, Gross and decomposed. RE-Mundlak Model

VARIABLES	(1) Net Inflows	(2) Net FDI	(3) Net Portfolio Equity	(4) Net Debt	(5) Gross Inflow	(6) Gross FDI	(7) Gross Portfolio Equity	(8) Gross Debt
Bonanza (2 SD)	2.331***	1.152*	-1.078	1.736***	2.537***	1.972***	-0.984	1.846***
	(0.569)	(0.624)	(1.303)	(0.542)	(0.551)	(0.528)	(1.206)	(0.495)
Credit Boom	1.651***	1.535***	1.754***	1.165***	1.396***	1.796***	1.837***	1.361***
	(0.500)	(0.433)	(0.429)	(0.428)	(0.473)	(0.443)	(0.428)	(0.438)
Bonanza*Boom	0.476	-0.228	0.996	0.480	0.562	-1.338	0.317	-0.752
	(0.683)	(0.806)	(1.075)	(0.694)	(0.861)	(0.836)	(1.061)	(0.763)
Observations	1074	1399	1091	1547	1025	1399	1091	1547
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Wald test	64.19	54.27	47.67	56.79	70.20	61.34	47.92	64
Wald p-value	0.001	0.003	0.016	0.002	0.001	0.001	0.015	0.001
Countries	66	77	66	80	65	77	66	80

Notes: For details on the Credit Boom or Interaction Term see Table 4. For all other details see Table 2.

Table A12

Asset Price Booms and Capital Inflow Bonanzas (2 SD) Net, Gross and decomposed. RE-Mundlak Model

VARIABLES	(1) Net Inflows	(2) Net FDI	(3) Net Portfolio Equity	(4) Net Debt	(5) Gross Inflow	(6) Gross FDI	(7) Gross Portfolio Equity	(8) Gross Debt
Bonanza (2 SD)	1.821***	0.597	1.050	1.658**	1.865***	1.784***	0.798	1.430*
	(0.692)	(0.825)	(0.894)	(0.737)	(0.579)	(0.688)	(0.825)	(0.796)
Asset Price Boom	2.274***	1.999***	2.518***	2.325***	1.708***	1.801***	2.785***	0.675
	(0.564)	(0.560)	(0.522)	(0.577)	(0.638)	(0.679)	(0.521)	(0.870)
Bonanza*Boom	0.284	1.465*	0.0901	-0.00623	0.358	0.531	-1.278	2.135*
	(0.710)	(0.758)	(0.818)	(0.772)	(0.651)	(0.902)	(0.868)	(1.179)
Observations	683	690	683	690	651	690	683	690
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Wald test	55.56	52.46	47.45	54	63.39	67.72	47.34	65.63
Wald p-value	0.001	0.003	0.012	0.002	0.001	0.001	0.012	0.001
Countries	31	31	31	31	31	31	31	31

Notes: For details on the Asset Price Boom or Interaction Term see Table 6. For all other details see Table 2.

Table A13

Credit Booms and Capital Inflow Bonanzas (Single and Double Lagged) (1 SD) Net, Gross and decomposed. RE-Mundlak Model

VARIABLES	(1) Net Inflow	(2) Net FDI	(3) Net Portfolio Equity	(4) Net Debt	(5) Gross Inflow	(6) Gross FDI	(7) Gross Portfolio Equity	(8) Gross Debt
Bonanza	1.283**	0.917	0.254	0.939*	1.839***	1.601***	0.414	1.613***
	(0.508)	(0.598)	(0.799)	(0.484)	(0.473)	(0.512)	(0.795)	(0.411)
Bonanza (2 Lag)	0.593	0.703	0.326	0.721*	0.341	1.076**	0.332	0.724*
	(0.524)	(0.496)	(0.605)	(0.429)	(0.550)	(0.447)	(0.576)	(0.402)
Credit Boom	1.398**	1.544***	1.755***	1.261***	1.451***	1.751***	1.750***	1.561***
	(0.576)	(0.450)	(0.448)	(0.443)	(0.490)	(0.464)	(0.461)	(0.464)
Bonanza*Boom	0.502	-0.534	-0.612	-0.135	0.113	-1.464	-0.530	-1.410*
	(0.780)	(0.975)	(1.440)	(0.800)	(0.859)	(0.900)	(1.212)	(0.767)
Observations	1023	1348	1041	1508	976	1348	1041	1508
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	56.52	59.47	46.17	56.36	61.81	60.57	46.42	66.07
Wald p-value	0.003	0.002	0.039	0.004	0.001	0.001	0.037	0.001
Countries	65	76	66	80	65	76	66	80

Notes: For details on the Credit Boom or Interaction Term see Table 4. For all other details see Table 2.

Table A14

Asset Price Booms and Capital Inflow Bonanzas (Single and Double Lagged) (1 SD) Net, Gross and decomposed. RE-Mundlak Model

VARIABLES	(1) Net Inflow	(2) Net FDI	(3) Net Portfolio Equity	(4) Net Debt	(5) Gross Inflow	(6) Gross FDI	(7) Gross Portfolio Equity	(8) Gross Debt
Bonanza	0.893	0.972	0.644	2.684***	1.889**	0.812	0.836	1.286
	(0.802)	(1.260)	(1.166)	(0.928)	(0.793)	(1.354)	(1.189)	(1.018)
Bonanza (2 Lag)	-0.0402	1.113	-0.122	0.170	0.259	1.746**	0.0319	-0.401
	(0.910)	(0.762)	(0.867)	(0.777)	(0.732)	(0.735)	(0.914)	(0.800)
Asset Price Boom	1.831**	1.709**	2.575***	2.803***	1.370	1.364	2.656***	1.231
	(0.818)	(0.821)	(0.726)	(0.946)	(0.951)	(0.896)	(0.715)	(1.039)
Bonanza*Boom	1.695	1.412	-0.827	-2.109*	1.165	1.749	-1.940	1.686
	(1.152)	(1.528)	(1.815)	(1.277)	(1.024)	(1.620)	(1.698)	(1.594)
Observations	559	563	559	563	539	563	559	563
Controls 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	28.75	32.30	27.76	29.34	35.03	32.51	29.18	36.55
Wald p-value	0.531	0.354	0.583	0.500	0.241	0.344	0.508	0.191
Countries	31	31	31	31	31	31	31	31

Notes: For details on the Asset Price Boom or Interaction Term see Table 6. For all other details see Table 2.