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The macroeconomic effects of debt- and equity-based capital inflows[☆]



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ABSTRACT

This paper considers whether debt-based capital inflows have different effects on many short-run macroeconomic indicators than equity-based capital inflows. Using external instruments in a structural VAR for identification, we estimate the response of domestic variables like the output gap, inflation, the exchange rate, stock prices, credit growth, and interest rates to an exogenous shock to debt- or equity-based capital inflows. An exogenous increase in debt inflows leads to a significant increase in the output gap, inflation, stock prices and credit growth and an appreciation of the exchange rate. An exogenous increase in equity-based capital inflows has almost no effect on the same variables. Thus the short-run macroeconomic effects of exogenous capital inflows are almost entirely due to changes in debt, not equity-based, capital inflows.

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1. Introduction

Many advanced and emerging market countries have seen rapid swings in capital inflows over the last few years. Many have blamed these swings in capital flows for causing excessive macroeconomic volatility, and some have even called for policy measures, up to and including capital controls “to manage the macroeconomic and financial stability risks associated with inflow surges or disruptive outflows” ([International Monetary Fund, 2012](#)).

[Forbes and Warnock \(2012\)](#), [Fratzcher \(2012\)](#), and [Rey \(2013\)](#) have all shown that global liquidity and risk have been the major driving forces behind these capital inflows. They argue that these “global push factors” have more of an impact on capital flows into a country than any country-specific “pull factors”. Using data where capital flows are disaggregated into debt flows and equity flows, [Milesi-Ferretti and Tille \(2011\)](#) and [Lane and Milesi-Ferretti \(2012\)](#) show that bank loans and other types of debt-based capital flows have seen the largest swings over the past few years. [Forbes and Warnock \(2014\)](#) show that while both debt- and equity-based capital inflows are driven by “global push factors”, these forces are stronger for debt flows (debt consists of both

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bank loans and portfolio debt flows). Equity flows, which are made up of portfolio equity flows and foreign direct investment (FDI), tend to place greater emphasis on factors specific to the receiving country.

Given that a significant fraction of these large swings in capital inflows are driven by exogenous “global push factors” (exogenous from the point of view of the receiving country), this paper will seek to quantify in a VAR analysis the effect that these capital flows have on macroeconomic and financial conditions in the receiving country. Furthermore, given that different factors seem to be driving debt- and equity-based capital flows, a natural question to ask is whether different types of capital flows have different effects on these same macroeconomic and financial variables.

In order to identify the exogenous shock to capital inflows we rely on the method of using “external instruments in a structural VAR” as described by [Stock and Watson \(2012\)](#), [Mertens and Ravn \(2013\)](#), and [Gertler and Karadi \(2015\)](#). This is a two stage procedure where we will use external instruments, like the VIX, to identify the component of capital inflows that are exogenous from the perspective of the receiving country, and use that as the exogenous shock from which to calculate impulse responses of various macroeconomic variables.

We find that, in accordance with anecdotal evidence and comments from both economic analysts and policy makers, exogenous increases in capital inflows do lead to increases in output, inflation, asset prices, credit growth and exchange rate appreciation. However, these macroeconomic effects of capital inflows are entirely due to debt inflows (either bank loans or portfolio debt). An exogenous shock to equity inflows does not have near the same effect on fluctuations in these macroeconomic and financial variables.

This paper is related to a number of papers that have sought to explain the macroeconomic effect of international capital flows. [Reinhart and Reinhart \(2009\)](#) study the effect of capital inflows on domestic macroeconomic variables in a number of emerging markets and show that a surge in capital inflows leads to an increase in inflation and exchange rate appreciation. [Cardarelli et al. \(2010\)](#) show the same for a group of both emerging and developed economies. [Justiniano et al. \(2014\)](#) show that capital inflows explain a large share of the increase in house prices and household debt in the United States prior to the recent crisis. [Sá et al. \(2014\)](#) show that this is true across OECD economies, and [Tillmann \(2013\)](#) shows this is true across a number of Asian emerging market economies. [Aizenman and Jinjark \(2014\)](#) show across a panel of 36 countries over the last decade that the current account deficit was the second most important factor driving real estate price appreciation, behind inertia in real estate prices and ahead of credit growth.

In addition, a number of papers, some focusing on emerging markets and some studying both emerging markets and developed economies, have shown that a surge in capital inflows leads to an increase in credit growth (see e.g. [Kaminsky and Reinhart, 1999](#); [Kaminsky et al., 2005](#); [Magud et al., 2011](#); [McKinnon and Pill, 1996](#); [Mendoza and Terrones, 2008](#); [2012](#); [Reinhart and Rogoff, 2011](#)).

When considering the effect of disaggregated capital flows, [Frankel and Rose \(1996\)](#) use a panel of annual data of over 100 developing countries and show that a small share of foreign direct investment (FDI) in total capital inflows is a good predictor of a currency crash. [Calderon and Kubota \(2005\)](#) look at the impact of disaggregated capital flows on the probability of a crisis. They find that debt inflows are a type of “bad” capital flow that lead to crises, but FDI can mitigate the credit boom (and thus crisis) following a surge in capital inflows. Similarly, [Aizenman et al. \(2013\)](#) show that over the last few decades there is a robust positive relationship between FDI inflows and economic growth, but the relationship between capital inflows and growth is less robust or even negative for other types of capital flows. [Aizenman et al. \(2010\)](#); [2011](#)) show that portfolio flows and debt flows tend to be associated with increased output volatility, but the same cannot be said for FDI flows. [Jongwanich and Kohpaiboon \(2013\)](#) show that the composition of capital inflows matters in determining the impact of the flows on real exchange rates. Other forms of capital flows, especially portfolio investment, are associated with faster real exchange rate appreciation than FDI flows. [Lane and McQuade \(2014\)](#) show that domestic credit growth is strongly related to debt inflows, but not equity inflows. They show this is true both across European countries prior to the recent crisis and in a broad sample of advanced and emerging market economies. Using firm level data, [Tong and Wei \(2011\)](#) show that the credit crunch during the recent crisis was greater for firms that are more dependent on external finance for working capital. They show that greater dependence on non-FDI capital inflows before the crisis worsens the credit crunch during the crisis, while exposure to FDI alleviates the liquidity constraint.

Throughout the main body of the paper, we follow [Forbes and Warnock \(2014\)](#) and divide capital flows into debt-based capital flows (portfolio debt and bank lending) and equity-based capital flows (portfolio equity and FDI). In the sensitivity analysis we instead split total capital flows into FDI and non-FDI. Non-FDI capital inflows have a significant effect on the output gap, inflation, the exchange rate, stock prices and credit growth, but FDI inflows have almost no effect on these short-run macroeconomic indicators. Thus while the overall goal of this paper is to compare debt- and equity-based capital inflows, one can just as easily compare non-FDI and FDI inflows and tell the same story.

This paper will proceed as follows. The data and econometric model used to quantify the effect of disaggregated capital flows on various macroeconomic and financial variables is described in [Section 2](#). The results from this analysis are presented in [Section 3](#). Here we examine impulse responses to show first the effect of a shock to total capital inflows on various macroeconomic variables, and then we consider the responses of the same variables to separate shock to debt inflows or equity inflows. Then with variance decompositions we show that while shocks to debt inflows play a significant role in driving fluctuations in many macroeconomic variables like output and inflation, shocks to equity inflows have almost no effect on the same variables. [Section 4](#) discusses the robustness of these results to alternative country sub-groupings, alternative methods to identify the exogenous component of capital flows, and a direct comparison of FDI and non-FDI capital inflows. Finally [Section 5](#) concludes with some directions for further research, specifically the all important normative question of how these findings can be used to

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