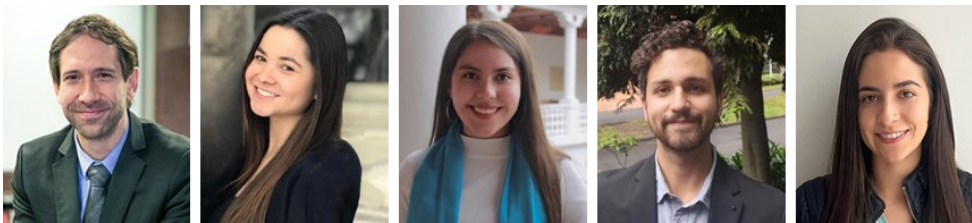


# The effects of Monetary Policy on Capital Flows: A Meta-Analysis\*



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*JEL codes: C83, E58, F21, F31, F32*

*We investigate whether central banks are able to attract or redirect capital flows, by bringing together the entire empirical literature into the first quantitative meta-analysis on the subject. We dissect policy effects by the type of flow and by the origin of the monetary shock. Further, we assess whether policy effects depend on factors that drive investors to either search for yields or fly to safety. We find a mean effect size (understood as an estimate of the scope or magnitude of our findings) of inflows in the amount of 0.09% of quarterly GDP in response to either a 100 basis point (b.p.) increase in the domestic policy rate or a 100 b.p. reduction in the external rate.*

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## Introduction

This policy brief presents the main aspects of Villamizar-Villegas et al. (2022), which presents the first quantitative meta-analysis on the effects of domestic and external monetary policy on capital flows.

There is major divide in the literature on whether –and to what degree– monetary policy can affect the tides and ebbs of capital flows (Ghosh et al., 2018). For example, a part of the literature argues that increased foreign participation in local markets is associated with increased sensitivity of overall portfolio flows to global financial conditions and increased volatility of yields. On the flip side, advocates argue that foreign participation can instead dampen volatility in bond yields, especially in emerging markets. Therefore, the debate poses the following question: Can central banks attract –or alternatively redirect– flows in order to capitulate on these market gains?

Our investigation sheds light on this question by bringing together the entire literature that empirically evaluates the effect of monetary policy on capital flows. Our study is the first and only quantitative meta-analysis conducted on the subject. We covered 330 estimated effects from 50 different studies, 7 decades (1960 - 2020), and an average of 34 emerging markets per study, in addition to 14 individual countries when the study provides a specific case study (99% of our survey focuses on emerging markets). It involved a web-scraping search among the largest economic repositories and manually checking over 1,300 papers to select those that conducted an empirical estimation of monetary policy on capital flows. Table 1 shows observations categorized by the type of flow: portfolio equity, portfolio bonds (sovereign debt), banking, and foreign direct investment (FDI) while Table 2 shows the geographical and time distribution of the data (observations are counted more than once if the study covers more than one decade).

**Table 1: Observations by flow type and residency**

	Non Residents	Residents	Both	Not specified	Total
Portfolio (Aggregate)	73	2	9	2	<b>86</b>
Portfolio Bonds	36	0	7	2	<b>45</b>
Portfolio Equity	14	6	7	2	<b>29</b>
Banking	35	0	2	0	<b>37</b>
Foreign Direct Investment	39	0	0	0	<b>39</b>
Aggregate Flows	87	1	6	0	<b>94</b>
<b>Total</b>	<b>284</b>	<b>9</b>	<b>31</b>	<b>6</b>	<b>330</b>

**Table 2: Observations by country and decade**

Country	1960	1970	1980	1990	2000	2010	2020	TOTAL
Brazil	0	0	0	8	16	8	0	32
Colombia	0	0	1	3	16	0	0	20
India	0	0	0	4	4	4	0	12
Indonesia	0	0	8	24	16	8	0	56
Japan	2	2	0	0	0	0	0	4
Korea	0	0	4	4	12	0	0	20
Mexico	0	0	0	4	4	4	0	12
Nigeria	0	0	0	2	2	2	0	6
Peru	0	0	0	4	4	4	0	12
Philippines	0	0	0	8	8	8	0	24
Russia	0	0	0	4	4	4	0	12
South Africa	0	0	0	8	8	8	0	24
Thailand	0	0	0	4	12	4	0	20
Turkey	0	0	0	4	4	4	0	12
Panel data	0	26	48	90	154	153	10	481
<b>Total</b>	<b>2</b>	<b>28</b>	<b>61</b>	<b>171</b>	<b>264</b>	<b>211</b>	<b>10</b>	<b>747</b>

## Methodology

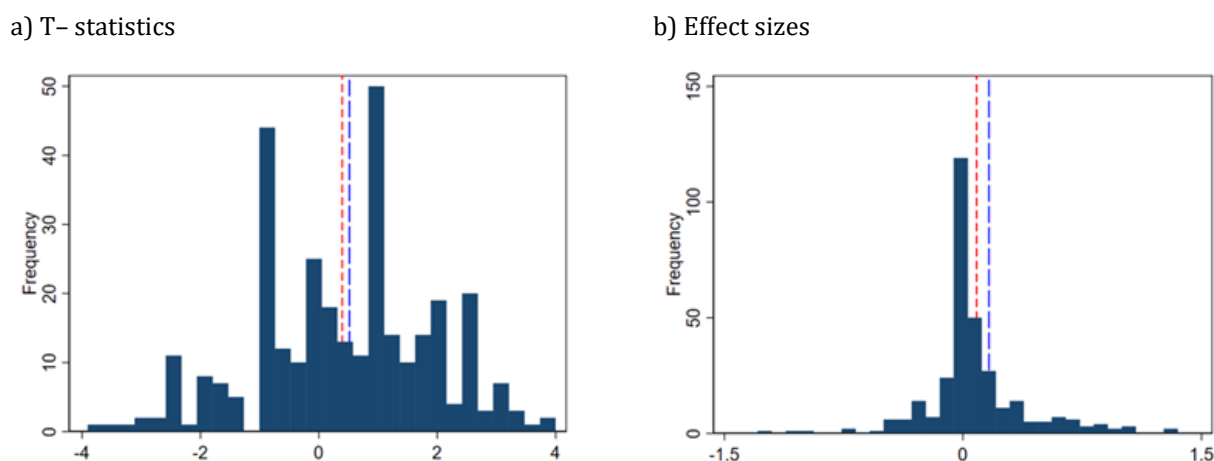
The use of a Meta-analysis provides a useful quantitative method that systematically reviews and synthesizes the empirical evidence of multiple studies focused on the same research question: in our case the effects of monetary policy on capital flows. In the economic literature, meta-analysis has positioned itself as a widely accepted tool that collects related treatment effects and thus increases the overall sample size (granting more statistical power). In part, its acceptance is due to the fact that this method provides a replicable statistical framework for summarizing and interpreting the wide range of scientific evidence. In essence, it clarifies the feasibility that the results reported between similar studies are significantly different from zero, and to explain the possible heterogeneity within and between studies.

Intuitively, the meta-regression analysis performs a multiple regression analysis (Stanley and Jarrell, 1989; Jarrell and Stanley, 1990). The design consists of a variable that represents the estimation on a given effect, while control variables embody the characteristics of each study in a way that it allows to specify the magnitude in which the methods, design, and data used by the authors contribute to the variation between reported results (Stanley, 2001). Our outcomes of interest (and impulses) are measured in the same informative unit. Additionally, we consider two types of effect heterogeneity: individual variation and in between-study variation.

## Results

We first present the unconditional effects of policy on capital flows comparing the entire sample with studies that explicitly control for risk factors, global and/or country specific. As shown in Figure 1, the mean effect size is 0.09% while the study's risk-adjusted effect size is 0.16%. The effects also vary depending on the origin of the shock. The largest effect originates from the domestic policy rate, where the risk-adjusted mean is 0.52% (results should be read as the amount inflows towards the emerging country – in percentage points of quarterly GDP—as a response of 100 basis point increase of the domestic policy rate or as a response of 100 basis point reduction in the US Federal Funds rate).

**Figure 1: Histograms of all results: T-statistics and Effect Sizes**



Note: The figure shows histograms for all T-statistics and Effect Sizes (in % of quarterly GDP). The red short-dash line denotes the mean while the blue long-dashed line denotes the risk-adjusted mean (i.e. excluding studies that do not explicitly control for risk variables.)

Second, we evaluate whether policy effects vary depending on country-specific factors that drive investors to either search for yields or fly to safety. We present meta-regressions for a selected group of country-year and risk specific variables (normalized for readability purposes). We show that an increase in a one standard deviation in foreign exchange reserves amplifies the effects of monetary policy in attracting flows in an amount close to 0.03% of quarterly GDP. This is in line with Alberola et al. (2016), which advocates the role of international reserves as flow stabilizers. So does financial openness and output growth (in roughly 0.01%), which confirms that the structure of flows is heavily conditioned by the state of local financial markets (Mohan, 2009). Regarding the country's exchange rate regime, we find positive effects in those with a crawling peg (in up to 0.04%) and crawling band (in up to 0.09%). When grouping countries in either lower or upper middle income brackets, we find a positive effect for upper-middle income countries, of close to 0.11%. Alternatively, an increase in a one standard deviation in capital controls reduces outflows in up to 0.02% and inflows in up to 0.05%. While we do find that capital controls significantly stem flows, we recognize that they can bring about potentially negative effects on long term investment. Factors that explain why flows are redirected away from the domestic country include: external debt (which can deter flows in up to 0.3%) and departures from the uncovered interest rate parity (UIP) condition (in up to 0.09%).

Third, we assess whether there are systematic differences in policy effects depending on the origin of the monetary shock. We highlight a higher sensitivity of flows in response to external monetary policy (US Federal Funds Rate) in several fronts: (i) higher restrictions on inflows (0.16%), (ii) higher departures from the UIP condition (0.09%), (iii) higher output growth (0.35%), and (iv) a higher level of financial openness (0.15%). In other hand, we also study whether there are systematic differences between local and global risk variables. Results show that flows are more sensitive to domestic monetary policy when dealing with local risks: 5y-CDS, exchange rate volatility, and EME Risk Index, while flows are more sensitive to external monetary (US Federal Funds rate) when dealing with global risks: VIX and oil price volatility. In essence, our results are consistent with the fact that, as a country opens itself financially global shocks become more prevalent (Schoenmaker, 2013; Rey, 2015; Kalemli-Ozcan, 2019).

Fourth, we recognize that effects most likely vary by the type of flow, in fact, some studies show that investors can be very different even within a particular type (Ocampo et al., 2020, Fang et al., 2022). That is why, in line with the bulk of the literature, banking flows (with an average effects size of 0.23%) are the most responsive to monetary policy shocks, while foreign direct investments (FDIs, with an average effects size of 0.05%) seem to be the least responsive (this result is in line with Koepke, 2015). Portfolio equity and bonds appear to have a small response, although we attribute this to a very low number of individual observations in our meta-analysis. When aggregated together, and combined with studies that use aggregate portfolio flows, the response increases to 0.17%.

To further evaluate differences according to the type of flow, we study the differences only between portfolio flows (equity and debt pooled together) or foreign direct investment (FDI). Our results indicate that the retrenchment of portfolio flows is more reactive to a country's external debt and also if it enacts capital restriction on outflows. Conversely, FDIs are more reactive (to monetary policy) for higher levels of output growth and financial openness. Finally, portfolio flows are more sensitive to local risks, while FDIs are more reactive to global risks.

Finally, we examine whether there is evidence of a publication selection bias, which exists when editors, referees, or researchers are inclined towards statistically significant results, often overstating the magnitude of the results. In principle we find a positive bias, however, the coefficient is extremely low (0.004%) – too low to make any discernible difference. ■

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