Winners and Losers from Sovereign Debt Inflows*

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August 24, 2020

Abstract

We study the transmission of sovereign debt inflow shocks on domestic firms. We exploit episodes of large sovereign debt inflows in six emerging countries that are due to the announcements of these countries' inclusion in two major local-currency sovereign debt indexes. We show that these episodes significantly reduce government bond yields and appreciate the domestic currency, and have heterogeneous stock market effects on domestic firms. Firms operating in tradable industries experience lower abnormal returns than firms in non-tradable industries. In addition, financial, government-related, and firms that rely more on external financing experience relatively higher abnormal returns. The effect on financial and government-related firms is stronger in countries that display larger reductions in government bond yields. The effect on tradable firms is stronger in countries where the domestic currency appreciates more. We provide a stylized model that rationalizes these results. Our findings shed novel light on the channels through which sovereign debt inflows affect firms in emerging economies.

JEL Classification: F31, F32, F36, G15, G23

Keywords: Sovereign debt; capital inflows; exchange rate; government bond yields; stock prices; emerging markets

*We are grateful to Anusha Chari and Anna Pavlova for their constructive discussion at the 43rd Annual NBER International Seminar on Macroeconomics (ISoM). We also received very helpful comments from Graciela Kaminsky, Tommaso Oliviero, Marco Pagano, Giovanni W. Puopolo, Stefano Rossi, Tom Schmitz, Annalisa Scognamiglio, Saverio Simonelli, seminar participants at the Bank of Italy, and participants at the III Interdisciplinary Sovereign Debt Research and Management Conference (DebtCon3) conference, the XV CSEF-IGIER Symposium on Economics and Institutions, the 43rd Annual NBER ISoM, the 2020 Annual Meeting of the American Economic Association, and the XXI Workshop on Quantitative Finance. We thank Colton Larson and Genna Tatu for excellent research assistance, and Mariano Cosentino for his help in the preparation of the dataset. We gratefully acknowledge financial support from the Einaudi Institute for Economics and Finance (2017 EIEF research grant) and the Columbian College Facilitating Fund from George Washington University. All errors remain ours.

1 Introduction

Financial globalization in emerging economies has increased remarkably over the last two decades. Loosening of capital controls and investors' search for yield in times of low interest rates contributed to an upsurge in the presence of foreign investors in emerging asset markets. Local currency sovereign debt markets, in particular, experienced an unprecedented rise in international investors' participation. Since the Global Financial Crisis, the share of emerging countries' local currency sovereign debt held by foreign investors more than doubled, going from about 10% in 2009 to approximately 25% in 2018 (BIS, 2019).

The increased participation of foreigners in domestic debt markets is believed to have significant effects on the recipient economies. Yet, the exact nature of these effects is still debated. For instance, small-open economy models with full financial integration leave little or no role for shocks to the foreign demand for domestic assets.[1] But recent studies argue that shocks to global investors' demand indeed play a role in determining sovereign bond yields and exchange rates.[2] Most of these studies depart from the standard assumption of perfect financial markets by introducing frictions such as market segmentation and limited arbitrage. Under this view, as long as domestic financial markets are not perfectly integrated in international markets, an increase in foreign demand for domestic sovereign debt leads to net capital inflows. These inflows, in turn, affect domestic firms through their effects on interest and exchange rates.[3] These effects are likely to be heterogeneous depending, for instance, on whether a firm operates in a tradable sector or is financially dependent.

Assessing the channels through which sovereign debt inflows are transmitted to domestic firms is challenging from an empirical point of view. The main reason is that sovereign debt flows are clearly endogenous to macroeconomic conditions that affect, and are affected by, domestic

[1] For example, in models of exchange rates determination based on uncovered interest parity, such as Obstfeld and Rogoff (1995), portfolio flows do not affect the equilibrium exchange rates, as noted in Gabaix and Maggiori (2015).

[2] Gabaix and Maggiori (2015) show theoretically that capital inflows can appreciate the currency of recipient countries as long as international financial intermediaries have limited risk-absorbing capacity. Du and Schreger (2016) argue that local currency sovereign debt markets are typically not internationally integrated, so that clientele demand shocks are important determinants of local currency sovereign bond prices.

[3] Consistent with this, Pandolfi and Williams (2019) provide empirical evidence that sovereign debt inflows increase both the value of the domestic currency and the price of local-currency denominated sovereign bonds. Relatedly, Hofmann et al. (2019) find that currency appreciations in emerging economics are often contemporaneous to reduction in government bond yields.

economic conditions. Typically, sovereign debt flows, sovereign bond yields, exchange rates, and firms' fundamentals are jointly determined. For instance, they can all be affected by positive technological or political shocks which reduce sovereign risk, improve fundamentals and, at the same time, attract foreign investors. As a result, any correlation between sovereign debt inflows and the profitability of domestic firms cannot be interpreted as evidence of a causal relationship.

The aim of this paper is to assess the impact of sovereign debt inflows on domestic firms, shedding light on the main transmission channels. To do so, we exploit episodes of large sovereign debt inflow shocks in six emerging countries (Colombia, Czech Republic, Mexico, Nigeria, Romania, and South Africa). Specifically, we take advantage of sudden and unanticipated announcements of country inclusions in two major sovereign debt indexes: the Citigroup World Government Bond Index (WGBI) and the J.P. Morgan Government Bond Index Emerging Markets (GBI-EM). These two indexes represent two of the most widely tracked benchmarks for international investors in local currency sovereign debt markets. Because of this, country inclusion announcements induce large rebalancings in the portfolios of international investors who, in order to replicate the composition of the index they follow, suddenly increase their demand for the newly included country's local currency government bonds and domestic currency.

These announcements provide an ideal setting to address our research question. First, they trigger large inflows which are specific to the sovereign debt markets of newly included countries: as the two indexes are exclusively composed of sovereign bonds, their rebalancings only entail inflows to sovereign bond markets and not to equity nor corporate debt markets. Second, the dates in which index providers announce the inclusions are not anticipated by investors, nor do they coincide with important news about the economy of included countries or with major policy changes. Thus, these features allow us to adopt an event study methodology – which exploits the unexpected timing of the announcements – to assess the impact of sovereign debt inflows on the cost of government debt, the domestic currency, and the stock market returns of domestic firms.

Our results are as follows. In the two days following the announcement episodes, 5-year local currency sovereign bond yields in all countries drop significantly. The 2-day reduction in yields is sizable, as it corresponds on average to 32.5 basis points. Exchange rates also move in the 2

days following the announcement: the domestic currency appreciates in all countries, the average appreciation being 1.1 percentage points.

Domestic firms' stock prices also respond significantly and heterogeneously to the announcements. Figure 1 provides a graphical representation of these results. The price of financial and government-related firms tend to increase sharply in the first trading day following the announcement episodes. Instead, the market value of firms operating in tradable sectors remains relatively stable when inclusions are announced. Importantly, while prices of all these firms are on the same trend in the 7 trading days prior to the episodes, they clearly diverge in the dates of the announcements. Further, this divergence persists even 20 trading days after the announcements.

To assess the economic magnitude of these heterogeneous effects, we analyze how abnormal returns of firms evolve after each announcement episode in a series of regressions in which we can control for potential overlap between different firm categories and for firms' dependance on external financing. These regressions show that financial and government-related firms experience larger than average cumulative abnormal returns (CARs) in the two days following the announcements. Instead, tradable firms experience relatively lower CARs in the aftermath of the events. Additionally, we find that CARs tend to be larger for firms operating in more financially constrained industries.

We conjecture that these effects of sovereign debt inflows are mostly driven by changes in sovereign bond yields and exchange rates. Indeed, we find that countries which experience larger reductions in the 5-year local currency sovereign bond yield are the ones in which the effect on financial and government-related firms is more pronounced. Similarly, countries whose currency appreciates more are the ones where tradable firms are more affected by the announcement. Quantitatively, sovereign debt inflows that lead to a 100 basis points reduction in the 5-year government bond yield, increase the CARs of financial and government related firms by 1.7 percentage points. In turn, inflows that lead to a 1% appreciation of the exchange rate are associated with 0.41 percentage points lower CARs for tradable firms. We also find that the cross-country heterogeneity in the 2-day changes in sovereign bond yields and exchange rates following each announcement is related to the magnitude of the inclusion-driven sovereign debt inflows in each country. We provide

additional results that support our empirical analysis and various robustness checks.[4]

We present a stylized model of a small-open economy to formalize our empirical findings. The economy contains tradable firms, non-tradable firms and banks. The tradable sector is capital intensive. Banks hold government debt and intermediate between domestic savers and borrowers. Crucially, there are no domestic financial frictions but there is limited borrowing from the international financial market.

We model sovereign inflows as an increase in foreign purchases of government bonds. These inflows are shown to affect the economy through two channels. First, since the economy is constrained, they entail net capital inflows and thus reduce the domestic interest rate. This raises the price of government debt, which benefits banks directly, and expands domestic credit and thus the relative production of the tradable good. Among all firms, moreover, lower interest rates benefit especially those that are financially constrained, and – by reducing the cost of financing for the government – also those that are related to the public sector. Second, sovereign inflows raise the relative supply of tradables in the domestic economy, thereby appreciating the real exchange rate and benefitting the non-tradable sector. The model thus illustrates the basic forces at work behind our empirical estimates.

Our results are related to three broad strands of the literature. First, they contribute to the growing literature that focuses on the effects of financial flows on government bond yields and exchange rates in imperfectly integrated financial markets. Among those, for instance, Gabaix and Maggiori (2015) develops a model of exchange rate determination in which global investors' portfolio flows can lead to currency appreciations in recipient countries because of the limited capacity of financiers to absorb currency demand shocks. Evidence of the imperfect integration across local currency sovereign debt markets is provided in Du and Schreger (2016), which argues that an increased presence of foreign investors in local currency sovereign debt markets can have important implications for the pricing of local-currency denominated bonds.[5] Relatedly, Pandolfi

[4]For instance, we show that the difference in the post-announcement CARs of financial and government-related firms *vs.* tradable firms is not driven by different pre-existing trends. Further, consistent with the fact that the announcements entail shocks which are specific to countries' sovereign debt markets, we show that sovereign debt inflows in these countries increase sharply in the announcement year, while private inflows do not.

[5]Other studies which focus on the interactions between international investors' participation and the pricing of local

and Williams (2019) presents evidence that sovereign debt inflows due to international investors' portfolio rebalancings can increase the price of local currency sovereign bonds and appreciate the domestic exchange rate. More broadly, our results are also related to the vast literature that focuses on the effects of demand shocks on sovereign bond yields in both emerging and developed economies.[6] Very related to ours is the study by Kolasa and Wesolowski (2020), which develops a two-country open economy model with segmented markets, and shows that quantitative easing in developed countries can induce sovereign debt inflows in emerging countries which boost domestic demand but dampen international competitiveness. Our results are indeed consistent with these theoretical predictions.

Our results speak also to a second important strand of literature that analyzes how changes in government bond yields and exchange rates affect firms. Many of these studies focus on the stock market effects of increased sovereign default risk on domestic firms, and the consequent rise in sovereign bond yields on domestic firms.[7] Our findings are in line with the evidence in these studies even though we exploit events which reduce government financing costs, rather than increase them. They are consistent also with the theoretical predictions in Gennaioli et al. (2014) – according to which changes in sovereign default risk and sovereign bond yields can transmit to firms through the balance sheet of banks holding government bonds[8] – and Arellano et al. (2017) – according to which firms with larger external financing needs are more sensitive to changes in sovereign default risk. Additionally, our findings are related to numerous studies analyzing how exchange rate movements affect the terms of trade of a country and, therefore, domestic firms.[9]

currency sovereign bonds are those by Borri and Shakhnov (2018), Hofmann et al. (2019), and Morelli et al. (2019). Relatedly, Warnock and Warnock (2009) and Kohn (2015) analyze the effects of foreign purchases of U.S. government debt on U.S. sovereign bond yields.

[6] Among others, Vayanos and Vila (2009), and Greenwood and Vayanos (2010) discuss the role of demand shocks from preferred-habitat investors in the determination of government bond yields. Recent studies focusing on the quantitative easing measures taken after the Global Financial Crisis also highlight that demand shocks and market segmentation can be important determinants of government bond yields (Krishnamurthy and Vissing-Jorgensen, 2011; Krishnamurthy et al., 2017).

[7] For instance, Hébert and Schreger (2017) estimates the cost of sovereign default for listed Argentinian companies exploiting legal rulings against Argentina. Similarly, Andrade and Chhaochharia (2018) and Chari et al. (2018) analyze the costs of sovereign default (in Europe and Puerto Rico, respectively) and find that firms that are more closely related with the domestic government tend to be more sensitive to changes in the risk of default.

[8] Altavilla et al. (2017), and Bottero et al. (2020) also provide evidence which is consistent with this channel.

[9] Gabaix and Maggiori (2015) argue that a depreciation of the domestic currency improves a country's terms of trade, which in turn leads to an increase in employment in tradable industries. This view is questioned by other studies according to which exchange rate depreciations may not affect firms' competitiveness as export prices are sticky in

Finally, this paper also relates to a vast international macroeconomics literature that focuses on the channels through which capital flows affect firms in the economy.[10] This literature mostly focus on FDI, bank flows, and equity portfolio flows. A study which is closely related to ours is Blanchard et al. (2017), which argues that, while equity inflows can be expansionary for emerging countries, bond inflows should be in general contractionary. We show that, when taking into account the effect on government bond yields, sovereign debt inflow shocks can have both expansionary and contractionary effects, depending on the sectoral composition of the economy and the sensitivity of domestic firms to changes in sovereign bond yields and the exchange rate. Finally, our results are in line with the evidence in Benigno et al. (2015) of a systematic reallocation of labor and investment from tradable to non-tradable sectors, after episodes of large capital inflows.

The rest of the paper is structured as follows. Section 2 presents the empirical setting, decribing the testable implications that we bring to data, the announcement episodes, and the data used to conduct the analysis. Section 3 presents the first set of results on sovereign bond yields and exchange rates. Section 4 presents the main results on the stock market effects of sovereign debt inflow shocks on domestic firms. Section 5 discusses the potential determinants of the heterogenous cross-country reaction in response to the announcement episodes, the role of expected and actual inflows, and the drivers of the stock market effects. Section 6 presents a model that rationalizes our empirical findings. Finally, Section 7 concludes.

2 Empirical Setting

2.1 Conceptual Background

In the textbook small, open economy model without frictions, shocks to foreigners' demand for local currency sovereign debt should have no impact on the domestic economy. In a nutshell, the gross inflows entailed by foreigners' demand for domestic debt would be compensated one-for-one

a dominant currency (*i.e.*, the U.S. dollar) (Gopinath et al., 2020).

[10] See among others Schnabl (2012), Alfaro et al. (2014), Lane and McQuade (2014), Baskaya et al. (2017), Calomiris et al. (2020), Sander (2019). Related to this strand of literature are the studies on capital account liberalizations and their effects on firms' stock market value (see Chari and Henry (2004), Chari and Blair Henry (2008) and Larrain (2015) among others).

by a reduction of other gross inflows or by an increase of gross outflows. In the presence of financial frictions, however, this is not true.

First, financial frictions may hamper access to international financial markets. In this case, sovereign inflows increase the availability of financial resources and lead to a reduction in government yields and other domestic interest rates. In other words, sovereign inflows reduce the government's reliance on domestic financial markets and free up resources for the private sector (Becker and Ivashina, 2018; Ongena et al., 2019; Williams, 2018).[11] In this way, they foster private investment and fuel the expansion of firms and sectors that rely heavily on external finance (Arellano et al., 2017). Moreover, through their effect on the price of public debt, sovereign inflows provide an windfall for bondholders, in particular domestic financial institutions (Gennaioli et al., 2014). We will test for these implications in the data by empirically analyzing the effects of sovereign inflows on domestic financial firms, on firms that are more financially constrained, and on firms that are connected to the government. (Chari et al., 2018).

Second, by increasing the relative availability of tradable goods, sovereign debt inflows should lead to an appreciation of the exchange rate. This appreciation should in principle hurt, in relative terms, firms in the tradable sector (Gabaix and Maggiori, 2015).

In Section 6, we formalize this conceptual discussion with the help of a stylized model. For now, we use it to guide our empirical analysis. In particular, we analyze the effects of exogenous shocks to the foreign demand for local currency sovereign debt on the stock returns of: (i) domestic financial firms; (ii) firms that are connected to the government ; (iii) firms that are more financially dependent; and (iv) tradable firms. To the extent that sovereign inflows relax domestic financial conditions, we expect (i), (ii), and (iii) to be positive. To the extent that sovereign inflows lead to an appreciation of the exchange rate, we expect (iv) to be negative.

[11] In other words, foreign purchases of public debt reduce its "crowding-out" effect thereby raising private investment (see Broner et al. (2014), Broner et al. (2019), and Priftis and Zimic (2020)).

2.2 Index Inclusions as Sovereign Debt Inflow Shocks

In order to analyze the consequences of sovereign debt inflows for domestic firms, we exploit episodes of country inclusion in two major global, local-currency sovereign debt indexes that are widely used as benchmarks by international investors: the Citigroup WGBI and the JP Morgan GBI-EM.[12],[13] Specifically, the episodes we exploit are the inclusions in the GBI-EM of local-currency denominated sovereign bonds issued by the governments of Colombia, Czech Republic, Nigeria, and Romania, and the inclusions in the WGBI of Mexican and Southern African local-currency denominated sovereign bonds. These episodes were announced by index providers on specific dates which we retrieved from their websites.[14]

These inclusion events constitute an ideal laboratory to address our research question as they trigger massive sovereign debt inflows by foreign investors. International investors who are benchmarked against each index have indeed the incentive to rebalance their portfolios, purchasing sovereign bonds of the newly included country to replicate the index composition.[15] Even though the inclusion is usually implemented gradually by index providers over the 3 to 12 months subsequent to the announcement, more active investors have the incentive to start rebalancing their portfolios already at the announcement date in order to minimize the cost of the rebalancing. Fig-

[12] For more details on how these indexes are created and their importance see Section A.1 in the Appendix.

[13] Since the focus of our analysis is to study the effects of inflows to local currency sovereign debt markets, we do not consider country inclusions into foreign currency sovereign debt indexes, such as the J.P. Morgan EMBI Global Diversified. Also, the inclusion criteria used to construct the J.P. Morgan EMBI Global Diversified differ from those used to construct the two indexes that we consider. The inclusion of an emerging country into the latter is typically the result of an increased accessibility and liquidity of the domestic sovereign debt market. Instead, the EMBI only contains dollar denominated bonds that are traded and settled internationally. Thus, all countries classified as emerging markets enter the index automatically when they issue bonds that comply with the index criteria (size, maturity, currency of denomination, and daily price availability). In fact, to our knowledge, there is only one episode of country inclusion into the EMBI which is similar to the ones studies in this paper. This is the recent inclusion, in 2019, of 5 Gulf Cooperation Council (GCC) countries, which is due to a change in the criteria used by J.P. Morgan to categorize emerging countries. Even though analyzing this episode is outside the scope of this paper, in Section 6, we discuss the potential differences between the effects of local currency and foreign currency sovereign debt inflows.

[14] In particular, the first trading days after the announcement episodes are the 19^{th} of March 2014 (Colombia), the 22^{nd} of February 2017 (Czech Republic), 31^{st} of March 2010 (Mexico) the 16^{th} of August 2012 (Nigeria), the 16^{th} of January 2013 (Romania), and the 17^{th} of April 2012 (South Africa). More details about these two indexes are provided in Section A.2 in the Appendix.

[15] Evidence of international investors' tendency to replicate the composition of the indexes they track is abundant in the literature. See for instance Cremers et al. (2016) and Raddatz et al. (2017). Basak and Pavlova (2013) and Kashyap et al. (2018) show theoretically that asset managers whose performance are evaluated against a common benchmark have the incentive to increase their demand for securities included in the benchmark index. This can in turn affect the price of firms in the benchmark, which end up being subsidized by asset managers.

ure 2 depicts the evolution in the average share of sovereign debt held by private foreign investors across 4 of the 6 countries in our sample around the corresponding announcement dates.[16] The figure clearly shows that, already in quarter of the announcement, the foreign investor base of these countries' sovereign debt increases sharply and deviates from the pre-announcement trend.

To grasp the magnitude of these inclusion-driven shocks, we follow Pandolfi and Williams (2019) and adapt their Flows Implied by Rebalancings (FIR) measure to our setting. We compute the estimated inflow shocks to the sovereign debt market of each country as the change in benchmark weight – calculated over the entire implementation period – multiplied by the assets under management of funds tracking their returns against the corresponding benchmark index, normalized by the market value of the securities that are going to be included in the index. The FIR measure captures the total inflows that would enter the country if all institutional investors were to precisely replicate the index composition. For the episodes in our sample the estimated FIR is 18% in Colombia, 25% in Czech Republic, 12% in Mexico, 31% in Nigeria, 30% in Romania, and 10% in South Africa. Hence, the estimated sovereign debt inflows due to the inclusion events are very large, especially if compared to the size of these countries' sovereign debt markets.

Additionally, these events share some features which are key for our identification strategy. First, the dates in which index providers announce the inclusions are unexpected. Of course, the inclusions themselves do not come as a surprise, as markets in most cases were expecting these countries to be included into an emerging sovereign debt index at some point in the future. However, the exact timing of the inclusion in the index is not anticipated by investors.[17] Second, the announcements made by index providers are not contemporaneous to macroeconomic shocks nor to relevant policy changes which might have a direct effect on stock prices.[18] Because of this, the announcements are unlikely to reveal information about changes in the countries' fundamentals.

[16] The data used to produce this figure is from Arslanalp and Tsuda (2014), and do not include information of foreign private holdings of Czech and Nigerian debt.

[17] Consistent with the unexpected nature of the shock, in Section 3, we show that 5-year government bond yields in all newly included countries drop significantly on the exact dates in which inclusions are announced, which makes implausible that investors were anticipating the events and trading accordingly in the days prior to the announcement dates.

[18] Precisely because of this, the inclusion of Argentina in the GBI-EM is not part of our sample. For this country, the inclusion event coincides with the removal of capital controls, which mostly likely had a direct impact on the Argentinian equity market.

If they did, they should be followed by large capital inflows into the private sector as well. As Figure 3 shows, however, this is not the case

Figure 3 depicts the cross-country average public and private inflows in the three years before the announcement episode, as well as the average private and public inflows in the year of the inclusion event. In the figure, private inflows are made of portfolio debt, equity and foreign direct investment inflows, while public inflows are inflows to the sovereign debt market. The figure shows that the events trigger large inflows which are specific to the sovereign debt markets of newly included countries: public inflows nearly triple in the year of the inclusion episode, compared to average inflows in the three years before. Instead, private inflows remain almost unchanged. This evidence provides important support to our empirical strategy, as it further corroborates the hypothesis that the announcement episodes have a negligible information content and are not associated to other events which trigger also private inflows to the countries.[19]

2.3 Data

To conduct the empirical analysis, we combine data from several sources. We collect from Datastream the time-series of daily (end-of-day) stock prices of domestic public companies in Colombia, Czech Republic, Mexico, Nigeria, Romania, and South Africa. We gather from Datastream also additional information about companies in these countries, including the International Securities Identification Number (ISIN), the industry classification, and a concise description of each firm's business activity. We combine this information with end-of-year balance sheet data from Worldscope.

We then collect the daily time series of local currency 5-year government bond yields and prices from Bloomberg, and the daily time series of (end-of-day) exchange rates from Datastream. The exchange rate is computed as the amount of local currency needed to buy one U.S. dollar. To compute the abnormal returns of firms in our sample, we gather data about regional and global factors: from Datastream we obtain the daily time series of returns on the MSCI Emerging Markets

[19] Figure A1 in the Appendix reports the evolution of private and public inflows around the announcement year for each of the countries in our sample, separately.

Index and the MSCI World Index.

We supplement these data with additional firm-specific information. In particular, to identify firms which are closely related to the domestic government, we proceed in two steps. First, from Thomson Reuters Securities Data Company (SDC) Platinum we retrieve the list of firms whose major shareholder is the state. Second, we perform a search in the business description of firms and look for the words *government* or *public*. Hence, we construct the indicator variable $\mathbb{1}(Govt)$, which equals one if a company is partially owned by the domestic government or its business activity is related to the domestic government. To identify financial firms, we follow the industry classification in Datastream. Specifically, we construct the indicator variable $\mathbb{1}(Financial)$ which equals to 1 if a firm is classified as a bank, a financial firm, an investment firm, or a life insurance company. We use the industry classification in Datastream also to identify firms operating in tradable sectors. In particular, we construct the indicator variable $\mathbb{1}(Tradable)$ which takes value 1 if a firm operates in a tradable industry and 0 otherwise, following the classification scheme in Mian and Sufi (2014).[20] Further, we use the balance sheet information from Worldscope to measure firms' dependance on external financing. We follow Rajan and Zingales (1998) and compute, for each firm, the ratio between capital expenditures net of cash flows from operations, and capital expenditures. We then compute the median of this measure in each industry and use it as our proxy for firms' external financial dependance (which we denote as EFD).

To identify firms which have access to corporate debt markets, we retrieve from Thomson Reuters SDC Platinum the list of companies that issue corporate bonds or have syndicated loans in our sample of countries at any time before the announcement. We match firms in this list to firms in our database using the SEDOL and generate the dummy variable $\mathbb{1}(DebtIssuer)$, which equals 1 in case of a successful merge. Finally, we merge the list of firms in our sample with the list of companies that are included in the MSCI Emerging Markets index, which we get from the MSCI website. Since stocks of these companies are more likely to be held by foreigners, we use this information to create the indicator variable $\mathbb{1}(ForOwnership)$, which is equal to 1 if a company is

[20] In particular, we take the list of tradable industries according to the first classification criterion in Mian and Sufi (2014). According to this classification scheme, tradable industries are those whose exports plus imports is greater or equal than 10,000 U.S. dollars per worker or greater or equal than 500 million U.S. dollars.

included in this equity index in the quarter preceding the shock and 0 otherwise.

Table 1 reports summary statistics of firms in our sample. The table reports the share of financial firms, government-related firms, and tradable firms (on the announcement date) in the entire sample and in each country separately. About one third of firms in the sample operate in tradable sectors, while 14% of firms are financial firms and 9% of them are classified as government-related. The country where the financial sector is most prominent is Colombia, where 36% of firms in our sample are financial firms. Czech Republic and Romania, instead, feature the largest share of government-related firms and tradable firms, respectively (36% and 54%). In all countries there are firms included in the MSCI Emerging Markets index, as well as firms issuing corporate bonds or syndicated loans. Finally, the least represented country in our sample is Czech Republic, with 14 companies, while the most represented one is South Africa, with 361 companies. In total, our sample is composed of 909 companies.[21]

3 Sovereign Debt Inflows, Exchange Rates, and Sovereign Bond Yields

According to our hypotheses, sovereign debt inflows can have a substantial impact on the economies of recipient countries through their effect on sovereign bond yields and exchange rates. We thus begin our empirical analysis by assessing the response of these two variables to the country-inclusion announcement episodes in our sample.

First, in Figure 4, we depict the daily time series of each country's local-currency, 5-year government bond yield in the 2 years around the announcement episode. The figure clearly shows that government yields drop sharply when index providers announce the inclusion of countries into their benchmark indexes. Further, the figure shows that there are no common pre-announcement trends in government bond yields across countries, thus supporting our identifying assumption that announcement dates were unexpected.

[21] In our sample, we consider each observation as a distinct company. Actually, 28 companies appear twice in our dataset, as each of them issue two distinct securities. In the Appendix, we show that reducing each of these companies to a single observation does not change the results of our analysis.

Figure 5 reports the daily time series of each country's exchange rate in the 2 years around the announcement episodes. The exchange rate in each country is the amount of domestic currency needed to buy one US dollar and is normalized to its value in the last trading day before the announcement. In all countries, the exchange rate drops on the announcement date, which means that the domestic currency appreciates in response to the inclusion announcements. The appreciation is not as sharp as the drop in the yields, which can be presumably explained by the higher volatility of exchange rates relative to sovereign bond yields, even in calm periods. What is important to note is that, as for the sovereign bond yields, there is not a pre-announcement trend that is common to all countries.

To assess the economic magnitude of these two effects, we compare, for each country, the 2-day changes in the sovereign bond yield and the exchange rate after the announcement with the average 2-day changes in the 2 years around the announcement. Figures 6 and 7 provide a graphical representation of this comparison. In all countries, the 2-day change in both the government bond yield and the exchange rate after the announcement is larger (in absolute value) than the average 2-day change. In most cases, the 2-day change after the announcement lies in the very left tail of the distribution of 2-day changes, thus representing an outlier observation. In Table 2, we report the size of these post-announcement changes. In the two days after the announcement episode, the local currency 5-year government bond yield decreases, on average, by 32.5 basis points. The country experiencing the largest drop in the yield is Romania, where the yield decreases by almost 90 basis points. Conversely, the country experiencing the lowest reduction in the yield is Mexico (4.8 basis points). In all countries, the 2-day changes after the announcement episodes are statistically different from the average 2-day change in the yield, which is close to 0. Similarly, the average appreciation across countries is 1.09 percentage points. The lowest appreciation is the one that occurs in Nigeria (0.057 percentage points), while the largest ones are observed in Colombia and Romania (2 percentage points). In all countries, the 2-day appreciation following the announcement date is statistically different from the average 2-day change in the 2 years around the announcement.

We analyze also how our estimates compare to the price effects of index inclusion episodes in

the existing literature.[22] Most of these studies focus on U.S. equity indexes, and find an average estimated price increase for newly included stocks of approximately 3.5%.[23] In emerging asset markets, index inclusions are instead found to have lower effects, of about 2% (Hacibedel and van Bommel, 2007). Our estimated price effects on included sovereign bonds are in line with this evidence. As shown in Figure 8, the estimated increase in the price of sovereign bonds is about 1.1% in the 2 days following the announcement and about 2.5% in the two weeks after the event.

4 The Effects of Sovereign Debt Inflows on Domestic Firms: an Event Study

To measure the effect of sovereign debt inflow shocks on domestic firms, we conduct a multiple event study around the dates in which country inclusions are announced by index providers. Specifically, we calculate the cumulative abnormal returns of domestic listed firms in the two trading days following the announcements – which should reflect changes in firms' profitability and future prospects – and use them to test the empirical predictions discussed in Section 2.1.

We compute abnormal returns for listed domestic firms in four ways. First, we calculate, for each firm, daily abnormal returns as the difference between the return in each trading day and the average daily return in the year preceding the announcement.[24] We then cumulate such abnormal returns on the first two trading days after the announcements and define the resulting CAR as CAR_i^{Demeaned}. Second, we compute each firms' daily abnormal returns as the difference between the actual returns and the returns predicted by a 1-factor model where the only risk factor is the

[22] We thank Anna Pavlova for suggesting this comparison.

[23] Among the first to examine the price effects of index inclusions into the S&P500, Shleifer (1986) and Harris and Gurel (1986) find an estimated price increase due to the inclusion of stocks in the index of approximately 2.8% and 3.1%. there has been an extensive literature on measuring the effects of stock additions into the S&P500. More recently, Chen et al. (2004) deliver an estimated index inclusion premium ranging between 3.2% and 5.4% while Patel and Welch (2017) estimate this to be around 3.5%.

[24] In particular, the average pre-announcement daily return is calculated over a 252-trading-day window which ends 10 days before each country's announcement date.

daily return of the MSCI EM Index.[25] We label the 2-day CAR thus calculated as $CAR_i^{\text{1-Factor}}$.[26] Third, we calculate daily abnormal returns as the difference between the actual returns and the returns predicted by a 2-factor model which, on top of the regional factor, includes also a global factor, *i.e.*, the daily return of the MSCI World Index. Cumulating these abnormal returns on the days following the announcement we get the $CAR_i^{\text{2-Factor}}$. Fourth, we calculate daily abnormal returns as the difference between the actual returns and the returns predicted by a 5-factor model which adds to the regional and global factors, a small minus big (SMB), high minus low (HML), and momentum (WML) factor, which we use to obtain to calculate the $CAR_i^{\text{5-Factor}}$.[27] In our baseline specification we use 2-day CARs calculated with these four alternative models as our main dependent variables.[28]

4.1 Overall Effect of Sovereign Debt Inflow Shocks

We start our empirical analysis by looking at the overall effect of the announcements and the associated sovereign debt inflow shocks on domestic firms. To this end, we calculate the average CAR of all firms in our sample in the two days following the announcement dates as:

$$\overline{CAR}^j = \frac{\sum_i^I CAR_i^j}{I} \tag{1}$$

where I the total number of observations and CAR_i^j is the 2-day CAR of firm i calculated using model j.

Table 3, Panel A, reports the average post-announcement CAR of domestic listed firms in our

[25] We do not use domestic stock market indexes to compute predicted returns since, in some of the countries in our sample, these indexes are made of few large firms (often financial firms), whose returns have a major impact on the performance of the index. Thus, the returns of the domestic index would absorb a large part of the variation that we want to exploit.

[26] Factor loadings of the 1-factor model – as well as those of the 2-factor and 5-factor models – are estimated by running a series of firm-specific regressions over a time window of 252 trading days which ends 10 trading days before the announcement date in each country.

[27] To compute the SMB, HML, and WML factors we follow Cakici et al. (2013). These three factors are computed using stock market data about all countries in our sample.

[28] In our baseline specification we use 2-day CARs, as most of the event studies which exploit stock market data (see for instance Alfaro et al. (2017)). However, in the Appendix (Figure A2), we show that results are robust to using 3-day, 4-day, and 5-day CARs. Also, in our baseline specification, we exclude observation in the top and bottom percentiles of the country-specific distribution of 2-day CARs, to control for outlier observations.

sample. On average, the post-announcement 2-day CARs are positive as they range between 0.11 and 0.22 percentage points, depending on the way abnormal returns are calculated. However, except for those computed with the first model (the demeaned returns), the average 2-day CAR is not statistically distinguishable from 0. Panel B of Table 3 reports, instead, the average CAR before the announcement date, calculated as the average CAR in the interval $[t-3, t-2]$, where t is the first trading day after the announcement. In this case, the average CAR is very close to 0, especially if computed using the 1-, 2-, and 5-factor models. In columns 2 to 4, the average pre-announcement CAR is below 0.05 percentage points. The evidence in Panel B, lends important support to our empirical strategy, as it corroborates the hypothesis that announcement dates are not anticipated by investors and shows that, in the days prior to the events, the factor models used to predict returns deliver a good approximation of the actual returns.

The evidence in Table 3 thus illustrate two important results. First, prior to the announcements, firms' abnormal returns are on average very close to 0. Second, in the two days following the announcements, the average CAR turns positive, but is relatively small in magnitude and not statistically distinguishable from 0. However, this result actually masks important heterogeneity across firms, as we show in the next section.

4.2 Heterogeneous Effects of Sovereign Debt Inflow Shocks

As discussed in Section 2.1, sovereign debt inflows can have heterogenous effects on domestic firms operating in different industries. In particular, financial and government-related firms can be expected to benefit most from the inflows, while firms operating in tradable sectors can be relatively hampered by them. Hence, the fact that the effect of announcemenet episodes appears to be small and not statistically significant on average may conceal the presence of strong effects, albeil in opposite directions, at a more granular level, i.e., for different types of firms.

Figure 9 provides evidence that this is indeed the case for firms in our sample. In the figure, we plot the abnormal returns of firms – cumulated on an interval that starts 3 trading days before the announcement date in each country and ends 5 days after it – for all firms in our sample (left

panel), and for financial and government-related firms *vs.* tradable firms (right panel). While the average aggregate CAR is close to 0 over the entire interval of time, the average CAR of financial and government-related firms, and that of tradable firms are not. The average CARs of these two groups of firms are both close to 0 in the days before the announcement, but then sharply diverge on the announcement date. In particular, while the average CAR of financial and government-related firms turns positive in the post-announcement period, that of tradable firms becomes negative.

Table 4 reports the average post-announcement 2-day CAR of financial firms, government-related firms, and tradable firms, separately. In the 2 days after the announcement, financial firms experience positive CARs which are on average equal to 0.65 percentage points (and statistically different from 0 in all specifications). Similarly, government-related firms exhibit positive CARs of approximately 0.8-0.9 percentage points (statistically different from 0 under all models). Conversely, the average CAR of tradable firms is negative but not distinguishable from zero.

Estimates in Table 4, however, do not take into account the potential overlap between the different groups of firms. For instance, some tradable firms might also be government-related. Additionally, they do not take into account the heterogeneity of firms in terms of external financial needs. To take this into account, we therefore estimate the following equation:

$$CAR_i = \alpha + \beta_1 \mathbb{1}(Financial)_i + \beta_2 \mathbb{1}(Govt)_i + \beta_3 \mathbb{1}(Tradable)_i + \beta_4 EFD_i + \varepsilon_i \tag{2}$$

where: $\mathbb{1}(Financial)$ is an indicator variable which takes value 1 for financial firms, and 0 otherwise; $\mathbb{1}(Govt)$ is an indicator variable which takes value 1 for firms which are connected to the domestic government; $\mathbb{1}(Tradable)$ is an indicator variable which takes value 1 for firms operating in tradable industries, and 0 otherwise; EFD is a measure of firms' external financial dependance (computed at the industry level following Rajan and Zingales (1998)); and ε is the error term. This specification allows us to measure the differential impact of sovereign debt inflows on each of the above-defined categories of firms, and to test whether the inflows tend to benefit more financially constrained firms.

Results are reported in Table 5. Financial and government-related firms experience larger than

average CARs in the two days following the announcement episode. The estimated coefficients of $\mathbb{1}(Financial)$ ranges between 0.53 and 0.61, and is statistically significant in all models. Similarly, the coefficient of $\mathbb{1}(Govt)$ ranges between 0.6 and 0.7, and is always statistically different from 0.[29] Instead, tradable firms experience significantly lower than average CARs in the 2 days following the announcement. The estimated coefficients of $\mathbb{1}(Tradable)$ ranges between -0.45 and -0.51, and is statistically significant in all specifications. Table 5 also reports the difference between the estimated coefficients on financial firms and tradable firms, as well as the difference between the coefficient on government-related and tradable firms. In all models, these differences are statistically significant at the 99% confidence level and quantitatively close to 1 percentage point.

Consistent with the hypothesis that more financially constrained firms also benefit from the shocks, we find that the coefficient of EFD is positive and significant under all specifications. Firms operating in industries which depend more on external financing experience larger CARs in the aftermath of the announcements. Quantitatively, a one-standard deviation increase in the proxy for external financial dependence increases the 2-day CAR by approximately 0.22 percentage points.[30]

We then re-estimate the coefficients in Equation 2 controlling for other firm-specific observables. In particular, we use as additional controls: i) the indicator variable $\mathbb{1}(IssueDebt)$ which takes value 1 for companies that have access to the corporate debt market (either through corporate bonds or syndicated loans); ii) the indicator variable $\mathbb{1}(ForOwnership)$, which takes value 1 if a stock is

[29] In Table A1 in the Appendix, we also estimate our main specification separating between firms partially owned by the government and firms with close relationship with it. We find both coefficients to be positive (even though the latter is not significant, most likely because of the small number of firms partially owned by the government in our sample) and of a similar magnitude. This suggests that the positive effect on government-related firms is driven by both government ownership and reliance on government demand.

[30] In Table A2 in the Appendix, we show that our main results are robust to: i) excluding *illiquid* stocks, that is stocks whose price never change in the 20 trading days around the announcement date; ii) reducing the weight of firms with more than one stock, by considering for each of these companies only the average 2-day CAR of the company's traded securities; iii) excluding Czech Republic and Nigeria from our sample. Czech Republic is indeed the least represented country in our sample, while Nigeria is the only country in our sample whose announcement date is in part ambiguous, as it is unclear whether the news were released on the 14th or on the 15th of August 2012 (as we explain in greater detail in Section A.2 in the Appendix). In all cases, our results are quantitatively and qualitatively very close to those in Table 5. Further, in Table A3 we show that our results are robust to controlling for country fixed effects. Finally, in Table A4, Panel A, we replicate our estimates in the days prior to the announcement, using as dependent variable the CARs in the interval $[t-3, t-2]$, where t is the first trading day after the announcement. None of the 16 coefficients of interest is statistically significant at the 95% confidence level, and only one is statistically different from 0 at the 90% confidence level.

also included in the MSCI Emerging Markets Index, and is therefore more likely held by foreigners; iii) size, measured by the logarithm of total assets. In principle, some of these controls might be related to the effect of the announcement on CARs. For instance, firms issuing bonds could benefit from reductions in government bond yields, as highlighted in Dittmar (2008). At the same time, these firms are more likely to be the least financially constrained (within each industry), so that the overall effect is a priori ambiguous.

Table 6 reports the results from this analysis. None of the additional controls have coefficients which are statistically significant. More importantly, including them does not alter our main results, as our main coefficients of interest remain quantitatively close to those in Table 5. When controlling for the log of assets, some coefficient fall below the conventional significance threshold, but this is most likely because balance sheet data are not available for almost 200 firms and therefore controlling for assets reduces sample size and power. Nevertheless, the difference between the coefficients on financial and tradable firms, as well as the difference between the coefficients on government-related and tradable firms, remain large and highly statistically significant under all specifications.

4.3 Exploiting Cross-Country Variation

Our results so far show that financial and government-related firms tend to have larger than average CARs after the announcement episodes, while firms operating in tradable industries exhibit lower than average CARs. These findings do not exploit the cross-country variation in the changes in sovereign bond yields and exchange rates after the announcement dates (described in Section 3). Such heterogeneity is potentially important, as it can shed further light on the hypotheses developed in Section 2.1. According to our conceptual discussion, the size of the stock market effects should be correlated, across countries, with the magnitude of the changes in sovereign bond yields and exchange rates. In particular, we should find that: i) the effect of the shock on financial and government-related firms is more pronounced in countries with larger reductions in sovereign bond yields; and ii) the effect on tradable firms is stronger in countries where the domestic currency appreciates more. We now present additional evidence that is consistent with these two hypotheses.

We first estimate six separate regressions, one for each country, of the form

$$CAR_i = \alpha + \beta_1 \mathbb{1}(Govt\&Fin)_i + \beta_2 \mathbb{1}(Tradable)_i + \beta_3 EFD_i + \varepsilon_i, \tag{3}$$

where $\mathbb{1}(Govt\&Fin)$ is an indicator variable which takes value 1 for financial and government-related firms. Then, in Figure 10, we plot the estimated β_1 coefficient as a function of the country-specific 2-day change in the 5-year local currency sovereign bond yield (left panel) and the estimated β_2 as a function of the country-specific 2-day currency appreciation. The figure shows that, as expected, the magnitude of these coefficients are related with the post-announcement changes in sovereign bond yields and exchange rates. In particular, the CARs of financial and government-related firms are larger in countries that experience a larger 2-day reduction in the yield following the announcement. Moreover, the CARs of tradable firms are smaller in countries that experience a larger 2-day appreciation of the domestic currency following the announcement.[31]

To quantitatively assess the relationship between changes in government bond yields and exchange rates, othe one hand, and the CARs of firms around the announcements, on the other, we estimate the following equation:

$$CAR_{ic} = \theta_c + \beta_1 \mathbb{1}(Govt\&Fin)_i \times \Delta Yield_c + \beta_2 \mathbb{1}(Tradable)_i \times \%\Delta ExchRate_c + \beta_3 EFD_i + \varepsilon_{ic} \tag{4}$$

where: θ_c are country fixed effects, and $\mathbb{1}(Govt\&Fin)$ and $\mathbb{1}(Tradable)$ are interacted, respectively, with the country-specific 2-day change in the 5-year local currency sovereign bond yield ($\Delta Yield$) and the 2-day currency appreciation ($\%\Delta ExchRate$). Both shocks are in absolute values: larger values correspond to larger reductions in sovereign bond yields and larger appreciations. Under this specification, the β_1 coefficient should capture the cross-country relationship between the reduction in the sovereign bond yield and the CARs of financial and government-related firms. Similarly, the β_2 coefficient captures the relationship between the appreciation of the domestic currency and the CARs of tradable firms.[32]

[31] In Section 5, we discuss some potential determinants of the differential effects of the inclusion announcements on sovereign bond yields and exchange rates across countries.

[32] In this regression we do not include the dummies $\mathbb{1}(Govt\&Fin)_i$ and $\mathbb{1}(Tradable)_i$ thus assuming that they have

Table 7 reports the estimated coefficients from Equation (4). The coefficients of both interaction terms are statistically significant and consistent with the above-stated hypotheses. This analysis allows us also to provide a more quantitative interpretation to our results: according to the estimates in Table 7, a sovereign debt inflow shock that reduces the 5-year government bond yield by 100 basis points increases the CARs of financial and government-related firms by 1.7 percentage points. Conversely, a sovereign debt inflow shock that leads to a 1% appreciation of the domestic currency reduces the CARs of tradable firms by 0.41 percentage points.[33]

5 Discussion

5.1 Estimated Inflows and Heterogeneity of Shocks

The evidence in Section 4.3 shows that the effects of the announcement episodes on the stock prices of domestic firms are related to the size of the 2-day changes in sovereign bond yields and exchange rates in the aftermath of the announcements. In this section, we test whether such heterogeneity is in turn related to the magnitude of the inflows that are expected to enter each of the countries in our sample as a result of the index inclusion. First, we compute the estimated flows, in U.S. dollars, entering each country as the change in benchmark weight – over the entire implementation period – multiplied by the assets under management of funds benchmarked against the corresponding index. We normalize the inflows first with respect to the total value of the local-currency sovereign bonds that are going to be included in the index, and then with respect to GDP (both measured in U.S. dollars). The first normalized inflows-measure proxies for the magnitude of the inclusion-driven inflow shocks relative to the size of the sovereign debt market of each country. The hypothesis is that the effect of a dollar of inflows on sovereign bond prices and yields should be larger in

no effect other than through their interaction with the government bond yield and the exchange rate, respectively. In fact, when included in the regressions, both dummies are not statistically distinguishable from zero in all specifications. The coefficients of the interaction terms remain of comparable magnitude, even though in some cases the coefficient on $\mathbb{1}(Govt\&Fin)_i \times \Delta Yield_c$ fall below the conventional significance level.

[33] In Table A4, Panel B, we present the results of a placebo test where we re-estimate Equation (4) using as dependent variable the CARs in the interval $[t-3, t-2]$, where t is the first trading day after the announcement. None of the coefficients is statistically distinguishable from 0, thus further corroborating that the cross-country relationships estimated in Table 7 emerge only after the announcement episodes.

countries with smaller sovereign debt markets. The second measure, that of estimated inflows relative to GDP, captures the magnitude of the estimated inclusion-driven inflows relative to the overall size of the country's economy. We use this second measure to test for the hypothesis that the effect of inflows on the exchange rate should be larger in countries with smaller economies.

Figure 11 presents the results from this analysis. Panel A shows the relationship, across countries, between the 2-day change in the 5-year local currency sovereign bond yield after the announcement and the estimated inflows relative to the size of the sovereign debt market. Panel B depicts the relationship between the 2-day percentage appreciation of the domestic currency and the estimated inflows relative to the GDP. In both cases, we see that sovereign bond yields and exchange rates tend to respond more in countries experiencing larger relative inflow shocks. The only country that appears to be in outlier in both figures is Czech Republic. However, this can be explained by two things: first, Czech Republic is the only country where the inclusion to the GBI-EM is accompanied by a simultaneous exclusion from another index, the GBI-DM (for developed markets). J.P. Morgan does not provide data on the amount of assets benchmarked against the GBI-DM, so we cannot estimate the potential outflows due to this exclusion. As a result, the true net inflows in Czech Republic are likely to be smaller than those we estimate; second, the 5-year sovereign bond yield is Czech Republic is already close to the zero lower bound on the announcement date, which plausibly reduces the scope for inflow shocks to reduce the yield.[34]

5.2 Expected versus Actual Inflows

In our analysis so far, we have analyzed the effects of sovereign debt inflows based on the announcements of country inclusions. Of course, sovereign debt inflows do not enter the country only at the time of the announcement. In particular, passive investors are likely to enter the country at the time of implementation, which takes place between 2 and 6 months after the announcement.[35] Although markets should in principle react to all inflows, actual and expected, at the time of the

[34] In fact one news article suggests that estimated inflows at the time of the announcement were between 3 and 6 billions U.S. dollars. Our estimated inflows are 6.8 billion dollars, larger than the average estimated net inflows. Source: Pio Online. https://www.pionline.com/article/20170428/ONLINE/170429837/j-p-morgan-drops-czech-republic-bonds-to-emerging-markets-indexes-inflows-expected (Retrieved on May 6, 2020).

[35] Indeed, Raddatz et al. (2017) have shown that there are portfolio movements at the time of implementation.

announcement, there could still be price effects at the time of implementation in the presence of limited arbitrage. To see whether this is the case, we analyze the behavior of sovereign bond prices on the implementation dates.

In particular, we compute the average prices of 5-year local currency sovereign bonds around the effective implementation dates. Figure 12 shows the average change in the log price of these bonds in the 15 trading days around each implementation date. The figure clearly shows that the price of sovereign bonds does not move significantly on these dates, differently from its behavior in the aftermath of the announcment, when it increases by almost 2% in 5 days (Figure 8). In a similar vein, we also find the stock market effects on the dates of implementation to be negligible. In Table 8, we report our main coefficients of interest estimated in the two days following the actual implementation dates. None of the estimated coefficients is significantly different from zero. Overall, this suggests that the reaction of bond and stock prices in the few days following the inclusion announcements reflects both, the actual and the future expected inflows.

5.3 The Drivers of the Stock Market Effects of Sovereign Debt Inflows

In this study, we assess the impact of sovereign debt inflow shocks on firms by looking at the evolution of stock market prices in the days immediately following six major sovereign debt inflow shocks in emerging countries. We have thus far documented that stock prices respond significantly to sovereign debt inflows and that not all firms are equally affected.

But what drives these findings? Stock prices are the present discounted value of future dividends, so that their variation may be driven either by changes in the expected future dividends of firms or by changes in the "interest rate", i.e., in the expected return required by investors. Empirically distinguishing which of the two channels is driving the change in stock market prices is challenging, especially for the high-frequency identification we use in our main analysis. In general, changes in dividends are likely to have a more heterogeneous effect across firms than changes in the interest rate. When the 5-year local currency sovereign bond yields decline in response to the inclusion episodes, so does the compensation required by investors to hold domestic stocks. As long

as the sensitivity of firms to domestic and global risk factors remains the same, all domestic stock prices should be positively affected by the inclusion episodes.

This suggests that changes in dividends (or cash flows) could play an important role to explain our main results. Financial firms that hold sovereign bonds benefit from a positive balance sheet shock as the price of bonds rises, which in turn raises their expected profits and thus the dividends that investors expect to receive. Government-related firms also experience an increase in expected profits, either because they are expected to face a higher demand for their goods by the domestic government (for firms which are related to the government because of their business activity) or because they are expected to have increased access to public funding (for firms which are partially owned by the government). Finally, the expansion in the domestic credit supply means that firms operating in more financially constrained industries can be expected to expand their productive investments without having to retain earnings, which unambiguously increases the expected dividends paid to shareholders. Instead, relative to the non-tradable sector, tradable firms are expected to suffer due to the appreciated exchange rate.

According to this interpretation of the results, the heterogeneous stock market effects that we have documented should translate into a heterogenous evolution of firm outcomes in the middle- and long-run. An empirical analysis of this issue would require substantially extending the sample period beyond the country-inclusion announcement episodes, making estimates more vulnerable to identification concerns. Nevertheless, as reported in Pandolfi and Williams (2020), it does appear that the long-term effects of country-inclusion events are consistent with the above-stated hypotheses. Pandolfi and Williams (2020) document that – in the three years following the inclusion episodes exploited in this study – financial and government-related firms exhibit a larger growth in income, employment, dividends, and total assets relative to firms operating in the tradable sector. In particular, financial and government-related firms tend to increase their dividends during this period, whilst tradable firms become more likely to stop paying dividends. In addition, more financially constrained firms also become relatively more likely to distribute dividends to shareholders in the years following index inclusions. This evidence strongly supports the view that the heterogeneous stock market responses to sovereign debt inflow shocks can be at least in part

explained by changes in the expected prospects of domestic firms.

6 A model of sovereign debt inflows

The empirical results presented in the previous sections show that positive shocks to governments' access to international financial markets have heterogeneous effects on domestic firms. In particular, the effects are more positive for government related firms, financial firms, non-tradable firms, and financially-dependent firms. We have so far provided a somewhat informal discussion of why these heterogeneous effects reflect realistic economic forces. In this section, we present a simple model to formalize our arguments and illustrate the mechanisms at play.

6.1 Setup

We consider a small economy that lasts for two periods, $t \in \{0, 1\}$. The economy is populated by a continuum of measure one of residents. All residents have identical preferences:

$$U(C_N, C_T) = \left[\nu \cdot C_N^{\frac{\eta-1}{\eta}} + (1-\nu) \cdot C_T^{\frac{\eta-1}{\eta}}\right]^{\frac{\eta}{\eta-1}},$$

where C_T and C_N respectively denote consumption of tradable and non-tradable goods at $t = 1$, and η is the elasticity of substitution between both goods. We assume throughout that $\eta < 1$.[36]

Production is organized in firms. There is a continuum of measure one of firms in each of the tradable and non-tradable sectors. As we shall specify below, firms may need to borrow funds in the credit market in order to produce. We assume that all credit is intermediated by a continuum of measure one of competitive banks. Firms and banks are all owned by the economy's residents.

There is also a government that collects taxes from firms at $t = 1$ in order to repay pre-existing public debt and provide subsidies.

[36] See Akinci (2017) for a review of the empirical evidence.

6.1.1 Tradable and non-tradable firms

Firms are indexed by sector T (tradable) and N (non-tradable) and by an individual firm index $s \in [0,1]$. Each tradable firm s is endowed at $t = 0$ with ω_{Ts} units of tradable good. The total tradable endowment at $t = 0$ is thus given by

$$\omega_T = \int_0^1 \omega_{Ts} \cdot ds.$$

At $t = 1$, the tradable good is produced competitively by final good producers that combine capital and labor according to the production function

$$Y_T = K^\alpha \cdot L^{1-\alpha},$$

where L denotes labor and

$$K = \left(\int_0^1 k_s^{\frac{\varepsilon-1}{\varepsilon}} \cdot ds \right)^{\frac{\varepsilon}{\varepsilon-1}}$$

is an aggregator of differentiated varieties of capital. We assume throughout that the elasticity of substitution ε is high but finite.

Each variety of capital s is produced by its corresponding tradable firm through investment. In particular, if tradable firm s invests i_s units of the tradable good at $t = 0$ it produces

$$k_s = A \cdot i_s$$

units of capital s at $t = 1$.

Each resident is endowed with one unit of labor that is supplied inelastically in a competitive labor market, so that

$$L = 1.$$

In the non-tradable sector, firm s is endowed with ω_{Ns} units of the non-tradable good at $t = 1$.

The total non-tradable endowment at $t = 1$ is thus given by

$$\omega_N = \int_0^1 \omega_{Ns} \cdot ds.$$

6.1.2 Banks and financial markets

Firms in the financial sector, referred to as banks, are indexed by sector B and by an individual index $s \in [0, 1]$. Banks start at $t = 0$ with a pre-existing stock of public debt b as assets and deposits by residents d as liabilities. A fraction λ of public debt is long-term and matures at $t = 1$; the remaining fraction $1 - \lambda$ is short-term and matures at $t = 0$. All deposits are short-term and mature at $t = 0$. We assume that banks start with more short-term liabilities than short-term assets; namely

$$d > (1 - \lambda) \cdot b.$$

At $t = 0$, banks repay maturing deposits, take new deposits from residents and (some) tradable firms, extend loans to (other) tradable firms, receive the proceeds from maturing short-term public debt, and either sell or buy long-term public debt.

Banks can sell long-term public debt to the international financial market (IFM), although they cannot borrow directly from the IFM. We assume that the IFM buys an exogenous amount x^* of long-term public debt. The variable x^* is the key parameter of the model. We will interpret increases in x^* as reflecting the exogenous inclusion of the country in sovereign debt indices. In the model, x^* determines both sovereign debt inflows and total capital inflows since the private sector cannot borrow directly from the IFM. We assume that $x^* \leq \omega_T$.

6.1.3 Public sector

The government does not spend or impose any taxes at $t = 0$. It just rolls over all maturing short-term public debt at the market interest rate R.

At $t = 1$, the government taxes the profits of tradable and non-tradable firms and banks. We

assume that all profits are taxed at an exogenous rate τ. Tax revenues are used to repay public debt and all remaining funds are transferred back as subsidies to a subset of "related" firms and banks. Total subsidies are thus given by

$$\tau \cdot (\pi_N + \pi_T + \pi_B) - b \cdot [\lambda + (1 - \lambda) \cdot R],$$

where π_N, π_T, and π_B respectively denote profits of non-tradable firms, tradable firms, and banks.

We assume that the same fraction θ of firms in each sector and banks are related to the government. Also, whether a firm is related to the government is independent of its endowment. Finally, the subsidy is proportional to profits and it can be interpreted as a reduction in the tax rate. Letting σ_s denote the subsidy rate of a related firm or bank, it follows that

$$\sigma_s = \frac{1}{\theta} \cdot \left[\tau - \frac{b \cdot (\lambda + (1 - \lambda) \cdot R)}{\pi_N + \pi_T + \pi_B}\right].$$

6.2 Equilibrium

As usual with two-period models, we first analyze conditional equilibria at $t = 1$ and then solve for the full equilibrium at $t = 0$. At $t = 1$, the prices of labor and capital are given by

$$w = (1 - \alpha) \cdot K^{\alpha} \quad \text{and} \quad q = \alpha \cdot K^{\alpha - 1}.$$

The price of each variety of capital s is proportional to the overall price of capital q and decreasing in the relative supply k_s/K of the variety:

$$p_s = q \cdot \left(\frac{K}{k_s}\right)^{\frac{1}{\varepsilon}}.$$

Pre-tax profits of tradable firms, non-tradable firms and banks are respectively given by

$$\pi_{Ts} = p_s \cdot k_s + (\omega_{Ts} - i_s) \cdot R,$$

$$\pi_{Ns} = p_N \cdot \omega_{Ns},$$

$$\pi_{Bs} = \lambda \cdot b + [(1-\lambda) \cdot b - d] \cdot R,$$

where $\omega_{Ts} - i_s$ are net deposits by tradable firms $(1-\lambda) \cdot b - d$ are net lending by banks at $t = 0$.

At $t = 0$, tradable firms decide how much to invest taking K and R as given. Each tradable firm s maximizes its market value

$$V_{Ts} = \frac{\pi_{Ts}}{R} \cdot (1 - \tau + \sigma_s) = \left[\left(\frac{A \cdot p_s}{R} - 1 \right) \cdot i_s + \omega_{Ts} \right] \cdot (1 - \tau + \sigma_s) \,.$$

The optimal investment is thus given by

$$i_s = \left(\frac{\varepsilon - 1}{\varepsilon} \cdot \frac{\alpha \cdot A^{\frac{\varepsilon-1}{\varepsilon}}}{R} \right)^{\varepsilon} \cdot K^{1+\varepsilon \cdot (\alpha - 1)}.$$

It follows that $i_s = i$ for all tradable firms s, where i also denotes total investment. Noting that $K = A \cdot i$, we can solve for investment demand i as a function of the interest rate R:

$$i = \left(\frac{\varepsilon - 1}{\varepsilon} \cdot \frac{\alpha \cdot A^{\alpha}}{R} \right)^{\frac{1}{1-\alpha}} . \tag{5}$$

Domestic residents roll over their deposits since they do not consume at $t = 0$. Market clearing then requires that investment be equal to the endowment of tradable firms plus sovereign debt inflows x^*:

$$i = \omega_T + x^*. \tag{6}$$

Equations (5) and (6) jointly determine the equilibrium interest rate

$$R = \frac{\varepsilon - 1}{\varepsilon} \cdot \alpha \cdot A^{\alpha} \cdot (\omega_T + x^*)^{\alpha - 1} \,.$$

Note that the equilibrium interest rate is lower than the marginal return of investment $\alpha \cdot A^{\alpha} \cdot i^{\alpha-1}$. The reason is that market power depresses investment and thus the demand for credit.

Given investment and the interest rate, consumption of tradables and non-tradables are respectively given by

$$C_T = Y_T - R \cdot x^* = A^\alpha \cdot (\omega_T + x^*)^{\alpha-1} \cdot \left(\omega_T + \left(1 - \alpha \cdot \frac{\varepsilon - 1}{\varepsilon}\right) \cdot x^*\right), \tag{7}$$

$$C_N = \omega_N. \tag{8}$$

Together with the relative demand of non-tradable goods

$$\left(\frac{C_N}{C_T}\right)^{\frac{1}{\eta}} = \frac{\nu}{1-\nu} \cdot \frac{1}{P_N},$$

Equations (7) and (8) allow us to derive the equilibrium price of non-tradables

$$P_N = \frac{\nu}{1-\nu} \cdot \omega_N^{-\frac{1}{\eta}} \cdot \left[A^\alpha \cdot (\omega_T + x^*)^{\alpha-1} \cdot \left(\omega_T + \left(1 - \alpha \cdot \frac{\varepsilon - 1}{\varepsilon}\right) \cdot x^*\right)\right]^{\frac{1}{\eta}}.$$

We can now compute the value of firms of different types. In the tradable sector, the value of firm s is given by

$$V_{Ts} = \left[\frac{1}{\varepsilon - 1} \cdot (\omega_T + x^*) + \omega_{Ts}\right] \cdot (1 - \tau + \sigma_s).$$

The value of the average tradable firm equals

$$V_T = \int_0^1 V_{Ts} \cdot ds = \left[\frac{\varepsilon}{\varepsilon - 1} \cdot \left(\omega_T + \frac{x^*}{\varepsilon}\right)\right] \cdot \left[1 - \frac{b \cdot (\lambda + (1-\lambda) \cdot R)}{\pi_N + \pi_T + \pi_B}\right].$$

In the non-tradable sector, the value of firm s is given by

$$\begin{aligned} V_{Ns} &= \frac{P_N \cdot \omega_{Ns}}{R} \cdot (1 - \tau + \sigma_s) = \\ &= \kappa_{Ns} \cdot \left(A^\alpha \cdot (\omega_T + x^*)^{\alpha-1}\right)^{\frac{1-\eta}{\eta}} \cdot \left[\left(\omega_T + \left(1 - \alpha \cdot \frac{\varepsilon - 1}{\varepsilon}\right) \cdot x^*\right)\right]^{\frac{1}{\eta}} \cdot (1 - \tau + \sigma_s), \end{aligned}$$

where $\kappa_{Ns} = \frac{\nu}{1-\nu} \cdot \frac{\varepsilon-1}{\varepsilon} \cdot \omega_{Ns} \cdot \omega_N^{-\frac{1}{\eta}}$. The value of the average non-tradable firm equals

$$\begin{aligned} V_N &= \int_0^1 V_{Ns} \cdot ds = \\ &= \kappa_N \cdot \left(A^\alpha \cdot (\omega_T + x^*)^{\alpha-1}\right)^{\frac{1-\eta}{\eta}} \cdot \left[\left(\omega_T + \left(1 - \alpha \cdot \frac{\varepsilon-1}{\varepsilon}\right) \cdot x^*\right)\right]^{\frac{1}{\eta}} \cdot \\ &\quad \cdot \left[1 - \frac{b \cdot (\lambda + (1-\lambda) \cdot R)}{\pi_N + \pi_T + \pi_B}\right], \end{aligned}$$

where $\kappa_N = \frac{\nu}{1-\nu} \cdot \frac{\varepsilon-1}{\varepsilon} \cdot \omega_N^{1-\frac{1}{\eta}}$.

Finally, the equilibrium value of bank s is given by

$$V_{Bs} = \frac{b \cdot \lambda - [d - b \cdot (1-\lambda)] \cdot R}{R} \cdot (1 - \tau + \sigma_s),$$

and the value of the average bank equals

$$\begin{aligned} V_B &= \int_0^1 V_{Bs} \cdot ds = \\ &= \left[\frac{\varepsilon}{\varepsilon - 1} \cdot \frac{b \cdot \lambda \cdot (\omega_T + x^*)^{1-\alpha}}{\alpha \cdot A^a} - d + (1-\lambda) \cdot b\right] \cdot \left[1 - \frac{b \cdot (\lambda + (1-\lambda) \cdot R)}{\pi_N + \pi_T + \pi_B}\right]. \end{aligned}$$

6.3 Winners and losers from inflows

How does an increase in sovereign debt inflows x^* affect relative firm valuations? Using the firm valuations obtained above and after some straightforward algebra the following results follow:

Financial dependence: Financially-dependent firms are those that borrow more. In the model only tradable firms participate in the financial market at $t = 0$ and their borrowing is given by $i - \omega_{Ts}$. Hence, tradable firms with lower endowment ω_{Ts} are considered more financially dependent. The impact of sovereign debt inflows on the value of tradable firms

$$\frac{1}{V_{Ts}} \cdot \frac{dV_{Ts}}{dx^*} \text{ is decreasing in } \omega_{Ts}.$$

In other words, the value of more financially-dependent firms increases more with x^* than the value

of less financially dependent ones. This result follows directly from the fact that reductions in the interest rate benefit borrowers.

Non-tradable versus tradable firms: On average, the impact of sovereign debt inflows is higher for non-tradable than for tradable firms

$$\frac{1}{V_N} \cdot \frac{dV_N}{dx^*} > \frac{1}{V_T} \cdot \frac{dV_T}{dx^*}.$$

This happens because sovereign debt inflows raise domestic consumption of tradables and, thus, lead to an increase in the relative price of the non-tradable good.

Government-related firms: Within each sector, sovereign debt inflows increase the value of related relative to unrelated firms; namely

$$\frac{1}{V_{Ss}} \cdot \frac{dV_{Ss}}{dx^*} \text{ is increasing in } \sigma_s$$

for sectors $S \in \{T, N, B\}$. This happens for two reasons. Sovereign debt inflows reduce the interest rate and allow the government to roll-over its debt at a lower cost, which reduces government outlays. Moreover, capital inflows are expansionary and this increases tax revenues. Ultimately, both channels raise the government subsidy and hence the relative valuation of related to unrelated firms.[37]

Financial firms: The impact of sovereign debt inflows on the value of banks

$$\frac{1}{V_B} \cdot \frac{dV_B}{dx^*} \text{ is increasing in } \lambda \text{ and } d.$$

Sovereign debt inflows reduce the interest rate and raise the price of long-term bonds. The associated capital gains to banks are larger in absolute terms if the share of long-term public debt λ is higher. In addition, the higher initial deposits d are the more leveraged banks are and, thus, the

[37] Of course, our assumption that the government simply distributes its surplus as a handout among related firms is an extreme simplification. We could think, at the cost of complicating the model, of other ways in which a relaxation of the government resource constraint would eventually benefit firms that are related to the government (e.g., through an expansion in the government's demand for the goods produced by these firms).

more these capital gains translate into higher stock returns. If these effects are strong enough the value of banks increases more than the value of tradable and non-tradable firms.

Overall, the analysis in this section supports our view that the private sector is to some extent excluded from international financial markets and, thus, increases in foreign demand for domestic public debt lead to net capital inflows. In particular, once we make this assumption the model naturally delivers all our empirical results on the heterogeneous effects of inclusions in international sovereign debt indices.

7 Conclusions

This paper studies the effects of large local currency sovereign debt inflows on domestic firms. To this end, we exploit six announcements of country inclusion into two major local currency sovereign debt market indexes. These announcements are not anticipated by investors and trigger large inflows from international investors wishing to replicate the index compositions.

Our results show that sovereign debt inflows significantly reduce the local currency sovereign bond yields and lead to an appreciation of the domestic currency. Also, they have sizable heterogeneous effects on domestic firms: financial and government-related firms exhibit larger CARs in the 2 days following country inclusion announcements; instead, firms operating in tradable industries experience lower CARs. The former effect is more pronounced in countries where the 5-year government bond yields drops more after the event, whilst the latter effect is larger in countries where the currency appreciates more.

Our findings shed novel light on the channels through which capital inflows to sovereign debt markets affect firms in the economy. They highlight that sovereign debt inflows can have important effects on the domestic economy of recipient countries. In addition, they can contribute to reshape emerging economies, favoring the growth of the non-tradable sector at the expense of the tradable one, promoting the development of the financial sector, and relaxing the financial constraints faced by domestic firms.

We have focused here on the effects of domestic-currency debt inflows. One important question going forward is how these effects compare to those of foreign-currency debt inflows. In principle, since domestic banks in emerging economies tend to hold a significant amount of domestic government debt in local currency, but a relatively lower share of foreign currency sovereign debt, the positive effect of sovereign debt inflows on banks might be much lower when in foreign currency. Also, if foreign currency inflows have smaller effects on exchange rates, their negative effects on tradable firms relative to non-tradable firms might be smaller as well. These are exciting questions which we leave for future research.

References

Akinci, O., 2017. A Note on the Estimation of the Atemporal Elasticity of Substitution Between Tradable and Nontradable Goods. mimeo.

Alfaro, L., Chari, A., Kanczuk, F., 2017. The real effects of capital controls: Firm-level evidence from a policy experiment. Journal of International Economics 108, 191–210.

Alfaro, L., Kalemli-Ozcan, S., Volosovych, V., 2014. Sovereigns, Upstream Capital Flows, And Global Imbalances. Journal of the European Economic Association 12, 1240–1284.

Altavilla, C., Pagano, M., Simonelli, S., 2017. Bank Exposures and Sovereign Stress Transmission. Review of Finance 21, 2103–2139.

Andrade, S. C., Chhaochharia, V., 2018. The costs of sovereign default: Evidence from the stock market. The Review of Financial Studies 31, 1707–1751.

Arellano, C., Bai, Y., Bocola, L., 2017. Sovereign Default Risk and Firm Heterogeneity. NBER Working Papers 23314, National Bureau of Economic Research, Inc.

Arslanalp, S., Tsuda, T., 2014. Tracking Global Demand for Emerging Market Sovereign Debt. IMF Working Papers 14/39, International Monetary Fund.

Bank for International Settlements (BIS), 2019. Monetary Policy Frameworks in EMES: Inflation Targeting, the Exchange Rate and Financial Stability. In: *Annual Economic Report*.

Basak, S., Pavlova, A., 2013. Asset Prices and Institutional Investors. American Economic Review 103, 1728–1758.

Baskaya, Y. S., di Giovanni, J., Kalemli-Ozcan, S., Peydro, J.-L., Ulu, M. F., 2017. Capital flows and the international credit channel. Journal of International Economics 108, 15–22.

Becker, B., Ivashina, V., 2018. Financial repression in the european sovereign debt crisis. Review of Finance 22, 83–115.

Benigno, G., Converse, N., Fornaro, L., 2015. Large capital inflows, sectoral allocation, and economic performance. Journal of International Money and Finance 55, 60–87.

Blanchard, O., Ostry, J. D., Ghosh, A. R., Chamon, M., 2017. Are Capital Inflows Expansionary or Contractionary? Theory, Policy Implications, and Some Evidence. IMF Economic Review 65, 563–585.

Borri, N., Shakhnov, K., 2018. Limited Participation and Local Currency Sovereign Debt. Unpublished, available at SSRN: https://ssrn.com/abstract=2978127.

Bottero, M., Lenzu, S., Mezzanotti, F., 2020. Sovereign debt exposure and the bank lending channel: impact on credit supply and the real economy. Journal of International Economics, *forthcoming*.

Broner, F., Clancy, D., Erce, A., Martin, A., 2019. Fiscal Multipliers and Foreign Holdings of Public Debt. Working Paper Series 2255, European Central Bank.

Broner, F., Erce, A., Martin, A., Ventura, J., 2014. Sovereign Debt Markets in Turbulent Times: Creditor Discrimination and Crowding-out Effects. Journal of Monetary Economics 61, 114–142.

Cakici, N., Fabozzi, F. J., Tan, S., 2013. Size, value, and momentum in emerging market stock returns. Emerging Markets Review 16, 46–65.

Calomiris, C. W., Larrain, M., Schmukler, S. L., 2020. Capital Inflows, Equity Issuance Activity, and Corporate Investment. Journal of Financial Intermediation, *forthcoming*.

Chari, A., Blair Henry, P., 2008. Firm-specific information and the efficiency of investment. Journal of Financial Economics 87, 636–655.

Chari, A., Henry, P. B., 2004. Risk Sharing and Asset Prices: Evidence from a Natural Experiment. Journal of Finance 59, 1295–1324.

Chari, A., Leary, R., Phan, T., 2018. The Costs of (sub)Sovereign Default Risk: Evidence from Puerto Rico. Working Paper 18-3, Federal Reserve Bank of Richmond.

Chen, H., Noronha, G., Singal, V., 2004. The Price Response to S&P 500 Index Additions and Deletions: Evidence of Asymmetry and a New Explanation. Journal of Finance 59, 1901–1930.

Cremers, M., Ferreira, M. A., Matos, P., Starks, L., 2016. Indexing and Active Fund Management: International Evidence. Journal of Financial Economics 120, 539–560.

Dittmar, R. F., 2008. Do Sovereign Bonds Benefit Corporate Bonds in Emerging Markets? Review of Financial Studies 21, 1983–2014.

Du, W., Schreger, J., 2016. Local Currency Sovereign Risk. Journal of Finance 71, 1027–1070.

Gabaix, X., Maggiori, M., 2015. International Liquidity and Exchange Rate Dynamics. The Quarterly Journal of Economics 130, 1369–1420.

Gennaioli, N., Martin, A., Rossi, S., 2014. Sovereign Default, Domestic Banks, and Financial Institutions. Journal of Finance 69, 819–866.

Gopinath, G., Boz, E., Casas, C., Díez, F. J., Gourinchas, P.-O., Plagborg-Moller, M., 2020. Dominant Currency Paradigm. American Economic Review 110, 677–719.

Greenwood, R., Vayanos, D., 2010. Price Pressure in the Government Bond Market. American Economic Review 100, 585–590.

Hacibedel, B., van Bommel, J., 2007. Do emerging markets benefit from index inclusion? Money Macro and Finance (MMF) Research Group Conference 2006 128, Money Macro and Finance Research Group.

Harris, L., Gurel, E., 1986. Price and Volume Effects Associated with Changes in the S&P 500 List: New Evidence for the Existence of Price Pressures. Journal of Finance 41, 815–29.

Hébert, B., Schreger, J., 2017. The Costs of Sovereign Default: Evidence from Argentina. American Economic Review 107, 3119–3145.

Hofmann, B., Shim, I., Shin, H. S., 2019. Bond risk premia and the exchange rate. BIS Working Papers 775, Bank for International Settlements.

Kashyap, A. K., Kovrijnykh, N., Li, J., Pavlova, A., 2018. The Benchmark Inclusion Subsidy. NBER Working Papers 25337, National Bureau of Economic Research, Inc.

Kohn, D., 2015. Addicted to Debt: Foreign Purchases of U.S. Treasuries and the Term-Premium. Department of Economics Working Papers 2015-1, Universidad Torcuato Di Tella.

Kolasa, M., Wesolowski, G., 2020. International spillovers of quantitative easing. Journal of International Economics, *forthcoming*.

Krishnamurthy, A., Nagel, S., Vissing-Jorgensen, A., 2017. ECB Policies Involving Government Bond Purchases: Impact and Channels. NBER Working Papers 23985, National Bureau of Economic Research, Inc.

Krishnamurthy, A., Vissing-Jorgensen, A., 2011. The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy. Brookings Papers on Economic Activity 42, 215–287.

Lane, P. R., McQuade, P., 2014. Domestic credit growth and international capital flows. The Scandinavian Journal of Economics 116, 218–252.

Larrain, M., 2015. Capital Account Opening and Wage Inequality. Review of Financial Studies 28, 1555–1587.

Mian, A., Sufi, A., 2014. What Explains the 2007-2009 Drop in Employment? Econometrica 82, 2197–2223.

Morelli, J., Perez, D., Ottonello, P., 2019. Global Banks and Systemic Debt Crises. 2019 Meeting Papers 644, Society for Economic Dynamics.

Obstfeld, M., Rogoff, K., 1995. Exchange Rate Dynamics Redux. Journal of Political Economy 103, 624–660.

Ongena, S., Popov, A., Horen, N. V., 2019. The Invisible Hand of the Government: Moral Suasion during the European Sovereign Debt Crisis. American Economic Journal: Macroeconomics 11, 346–379.

Pandolfi, L., Williams, T., 2019. Capital Flows and Sovereign Debt Markets: Evidence from Index Rebalancings. Journal of Financial Economics 132, 384–403.

Pandolfi, L., Williams, T., 2020. Real Effects of Sovereign Debt Inflows. AEA Papers and Proceedings, *forthcoming*.

Patel, N., Welch, I., 2017. Extended Stock Returns in Response to S&P 500 Index Changes. Review of Asset Pricing Studies 7, 172–208.

Priftis, R., Zimic, S., 2020. Sources of Borrowing and Fiscal Multipliers. The Economic Journal Ueaa051.

Raddatz, C., Schmukler, S., Williams, T., 2017. International Asset Allocations and Capital Flows: The Benchmark Effect. Journal of International Economics 108, 413–430.

Rajan, R. G., Zingales, L., 1998. Financial Dependence and Growth. American Economic Review 88, 559–586.

Sander, N., 2019. Causal Effects of Capital Inflows. mimeo.

Schnabl, P., 2012. The International Transmission of Bank Liquidity Shocks: Evidence from an Emerging Market. The Journal of Finance 67, 897–932.

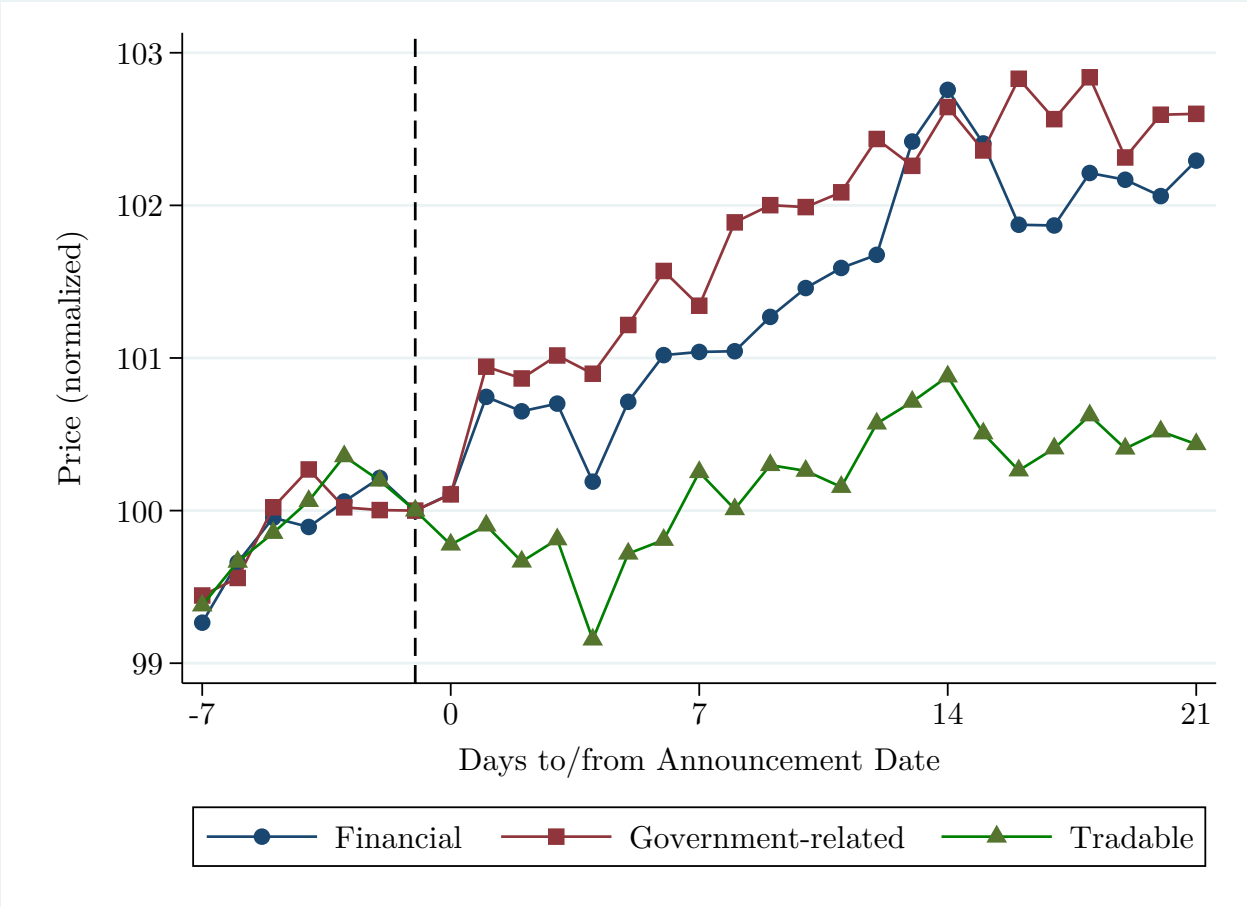
Shleifer, A., 1986. Do Demand Curves for Stocks Slope Down? Journal of Finance 41, 579–90.

Vayanos, D., Vila, J.-L., 2009. A Preferred-Habitat Model of the Term Structure of Interest Rates. CEPR Discussion Papers 7547, C.E.P.R. Discussion Papers.

Warnock, F., Warnock, V., 2009. International Capital Flows and U.S. Interest Rates. Journal of International Money and Finance 28, 903–919.

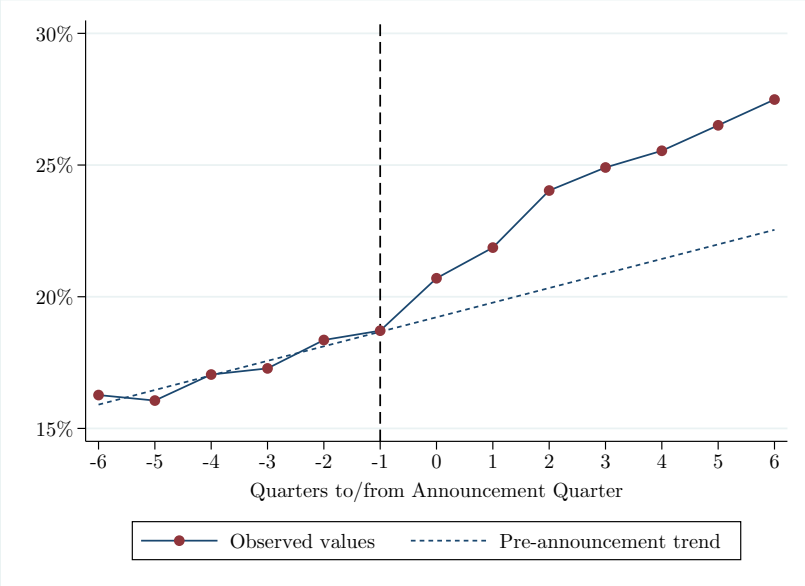
Williams, T., 2018. Capital inflows, sovereign debt and bank lending: Micro-evidence from an emerging market. Review of Financial Studies 31, 4958–4994.

Figure 1: Stock Prices around Events

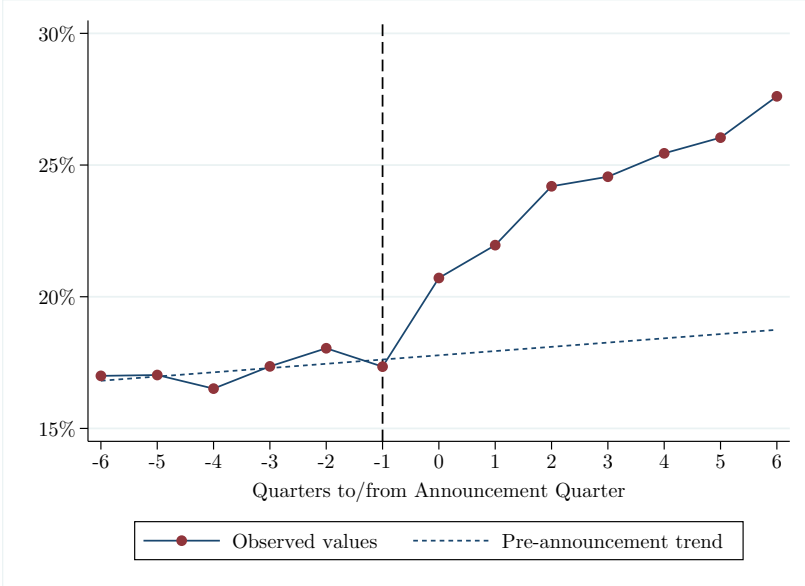


Note: This figure depicts the evolution of the stock prices of financial firms, government-related firms, and firms operating in tradable sectors, separately, over a time window which starts 7 days before the announcement of each country's inclusion in the corresponding index, and ends 14 days after it. Stock prices are normalized to their values in the last trading day before each announcement episode, indicated by a vertical dashed line. Observations in the top and the bottom percentile of the country-by-date distribution of stock prices are excluded.

Figure 2: Foreign Share of Sovereign Debt around Events



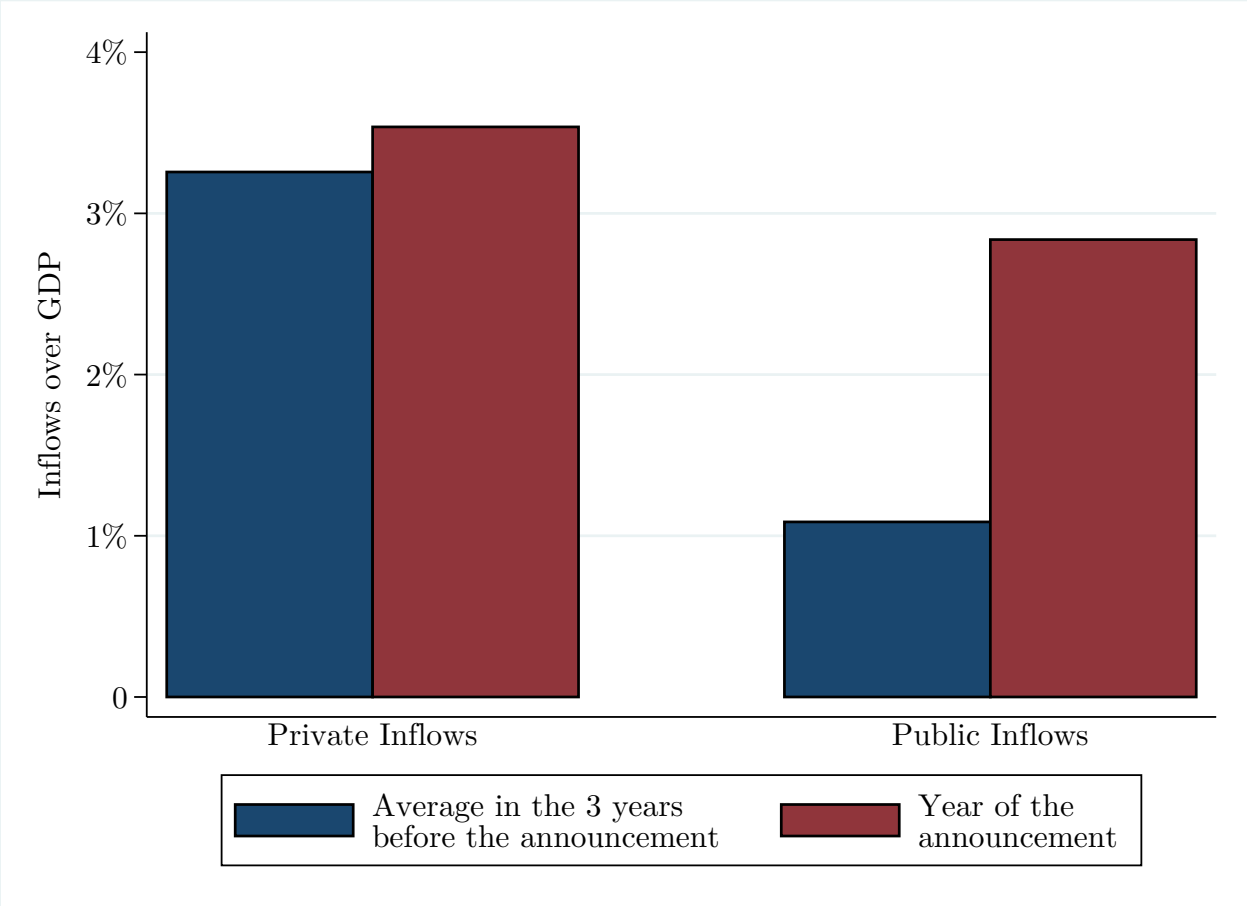
Average Private Foreign Share of Government Debt



Median Private Foreign Share of Government Debt

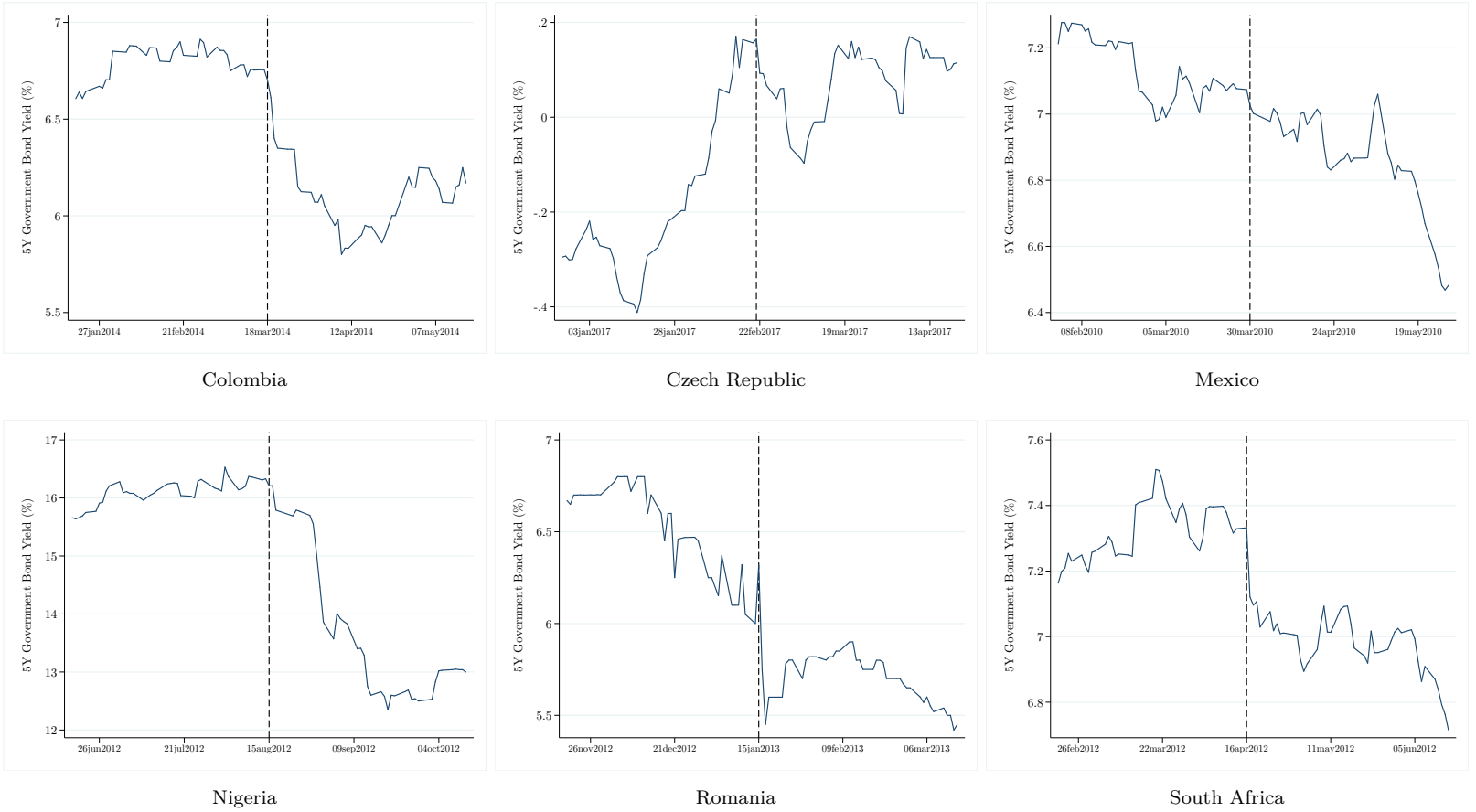
This figure depicts the quarterly time series of the average and the median (left panel and right panel, respectively) share of sovereign debt held by foreign private investors for Colombia, Mexico, Romania and South Africa over a time window which starts 6 quarters before the announcement of each country's inclusion in the corresponding index, and ends 6 quarters after it. In both panels, the dotted line is a linear trend estimated on the pre-announcement period. The vertical dashed line indicates the quarter prior to the announcement episodes. Data is from Arslanalp and Tsuda (2014).

Figure 3: Balance of Payments: Private *vs.* Public Inflows



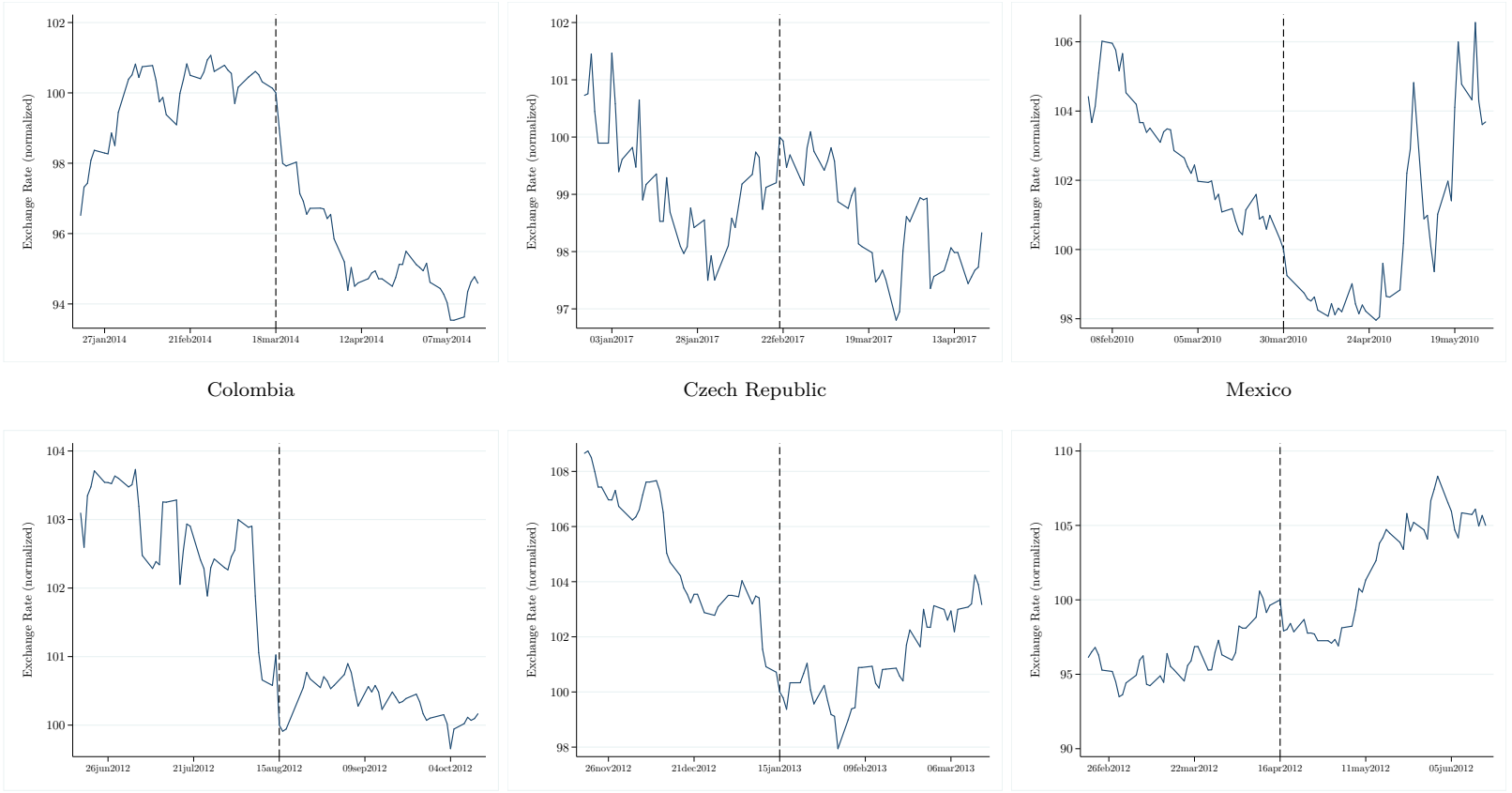
This figure depicts the average private and public net inflows to Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa in the year of the announcement of each country's inclusion into the corresponding index *vs.* the average of public and private inflows to these countries in the three years before the announcement episodes. Private inflows are the sum of foreign direct investments, portfolio equity net inflows and private debt net inflows. Public inflows are net inflows to the countries' sovereign debt markets. Both are in U.S. dollars and are normalized by the GDP of each country, before being averaged across countries. Data is from the IMF Balance of Payments Statistics and IMF WEO.

Figure 4: 5-Year Government Bond Yields around Events



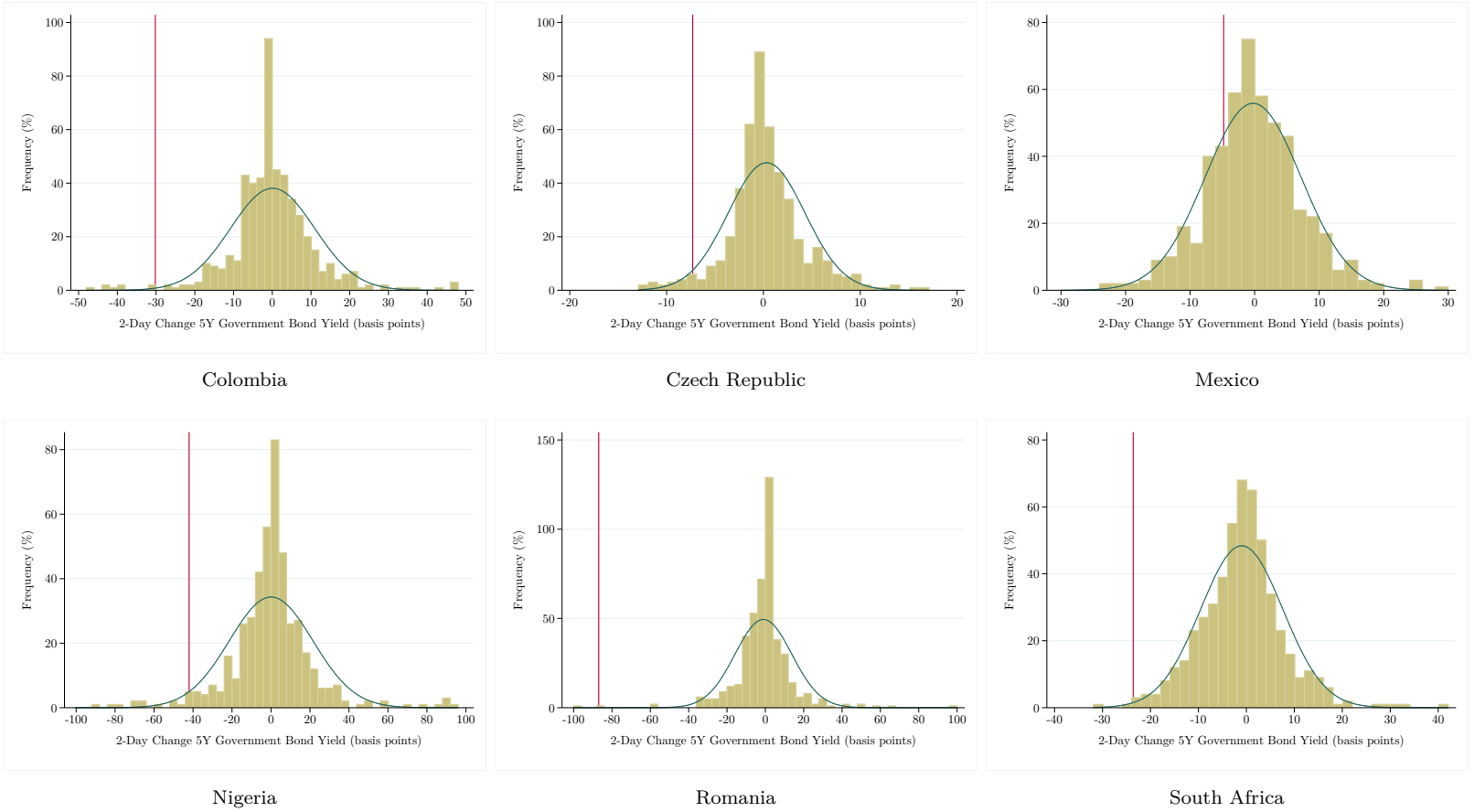
This figure depicts the time series of the 5-year local currency government bond yield in Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa over a time window which starts 2 months before the announcement of each country's inclusion in the corresponding index, and ends 2 months after it. The vertical dashed line indicates the last trading day before each announcement episode.

Figure 5: Exchange Rates around Events



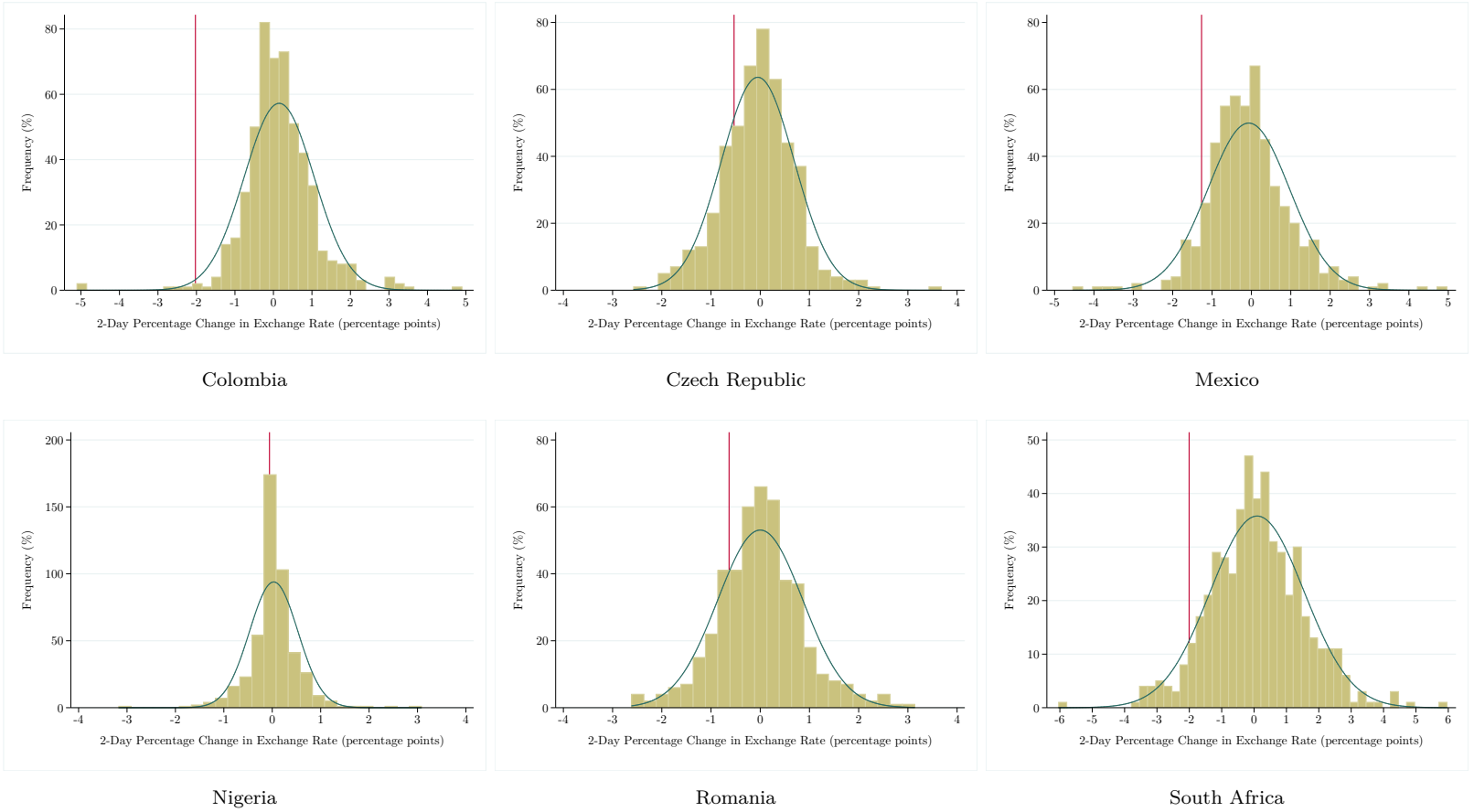
This figure depicts the time series of the exchange rate in Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa over a time window which starts 2 months before the announcement of each country's inclusion in the corresponding index, and ends 2 months after it. The exchange rate for each country is the amount of local currency needed to buy 1 U.S. dollar, and is normalized to its value in the last trading day before each announcement episode, indicated by a vertical dashed line.

Figure 6: Distribution of 2-day Changes in 5Y Government Bond Yields



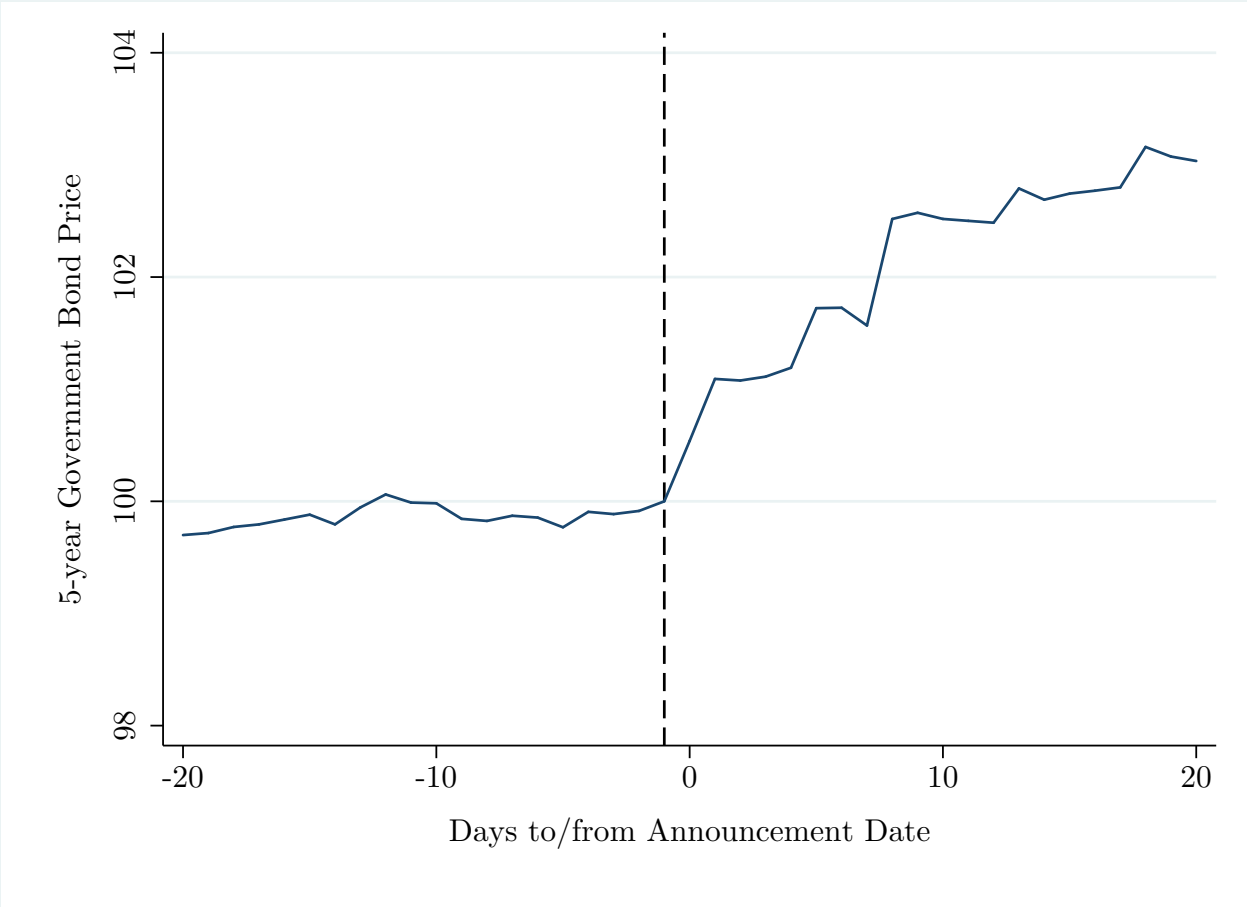
This figure depicts the distribution of 2-day changes in the 5-year local currency government bond yield in Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa in the 2 years around the announcement of each country's inclusion in the corresponding index. The vertical line in each panel indicates the change in the 5-year government bond yield in the 2 days following the announcement episode in each country.

Figure 7: Distribution of 2-day Percentage Changes in Exchange Rates



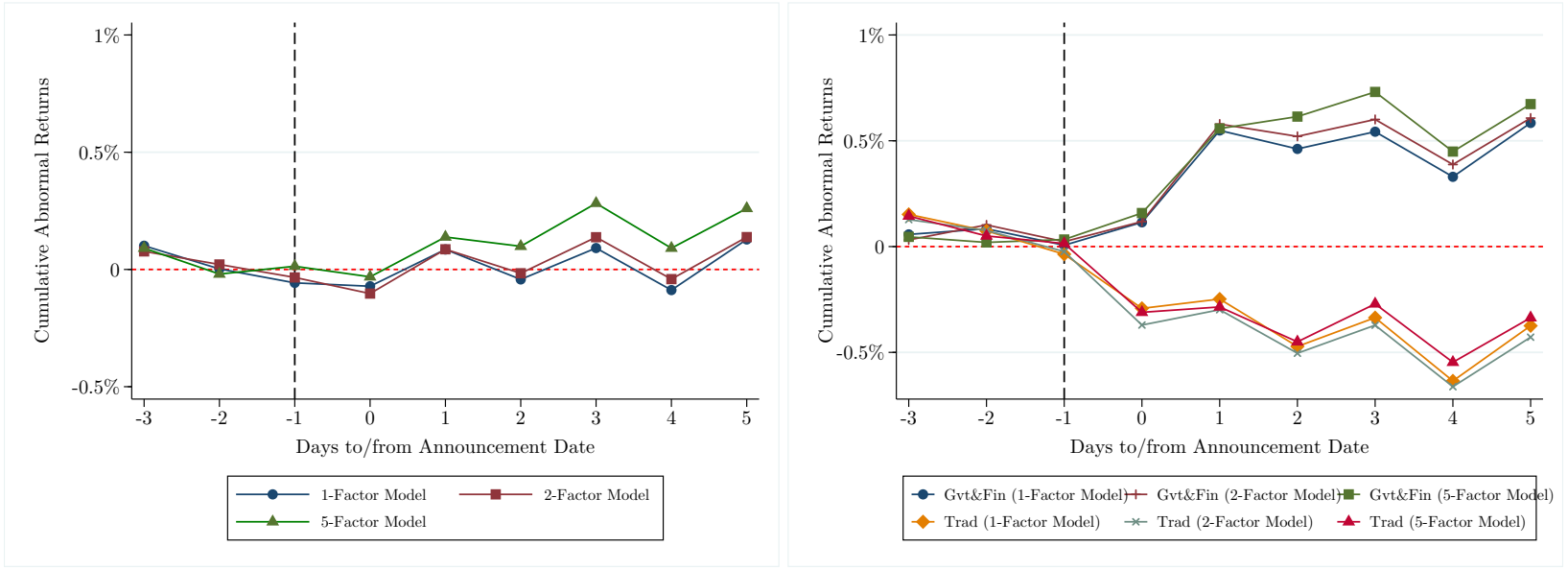
This figure depicts the distribution of 2-day changes in the log of the exchange rate in Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa in the 2 years around the announcement of each country's inclusion in the corresponding index. The vertical line in each panel indicates the percentage change in the exchange rate in the 2 days following the announcement episode in each country.

Figure 8: 5-Year Government Bond Prices around Events



This figure depicts the time series of the average 5-year local currency government bond prices across Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa over a time window which starts 20 trading days before the announcement of each country's inclusion in the corresponding index, and ends 20 trading days after it. The index (which is equal to 100 in the day before the announcement for each country) is constructed by taking the average change in log prices across countries. The vertical dashed line indicates the last trading day before each announcement episode.

Figure 9: Cumulative Abnormal Returns around Events

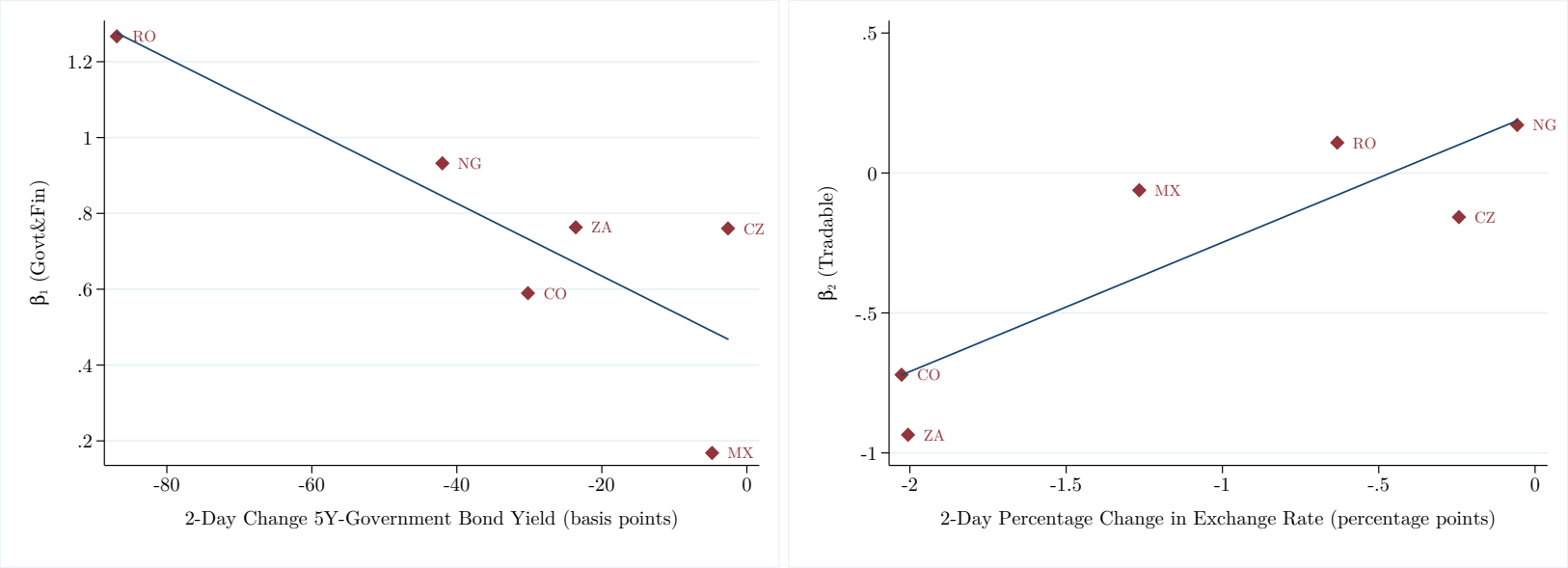


All firms

Financial & Government-related *vs.* tradable firms

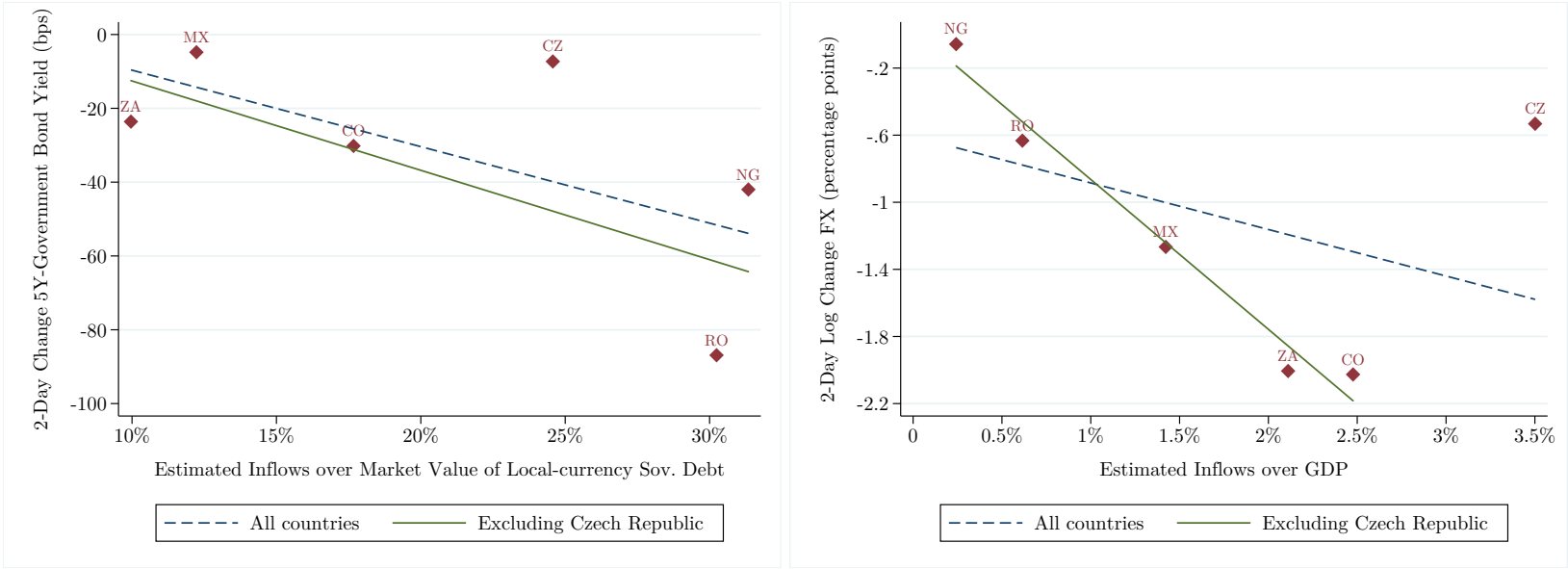
This figure depicts the evolution of the cumulative abnormal returns of domestic firms over a time window which starts 3 days before the announcement of each country's inclusion in the corresponding index, and ends 5 days after it. The left panel depicts the cumulative abnormal returns of all firms, while the right panel depicts the cumulative abnormal returns of financial and government-related firms, and tradable firms, separately. Cumulative abnormal returns are computed using three models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor models include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. The vertical dashed line indicates the last trading day before the announcement. Observations in the top and the bottom percentile of the country-by-date distribution of cumulative abnormal returns are excluded.

Figure 10: Heterogeneous Effects of the Shocks



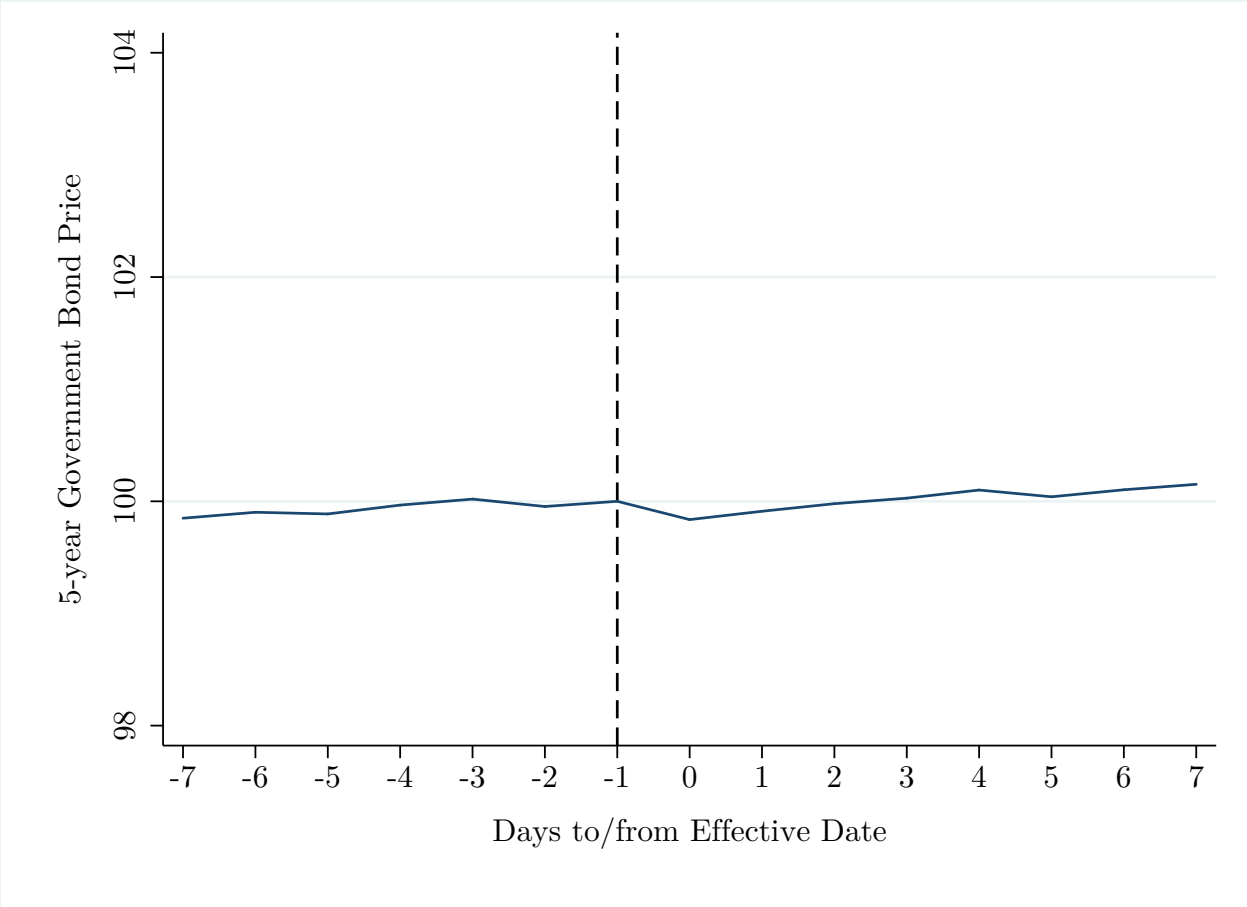
This figure depicts the relationship between the size of the 2-day changes in sovereign bond yields and exchange rates (in the two days following the announcement of each country's inclusion in the corresponding index), and the stock market effects on government-related and financial firms (left panel), and tradable firms (right panel), separately. β_1 and β_2 are the OLS estimated coefficients of 6 country-specific regressions of the form: $CAR = \beta_1 \mathbb{1}(Govt\&Fin) + \beta_2 \mathbb{1}(Tradable) + \beta_3 EFD + \varepsilon$, where CAR is the cumulative abnormal returns of each firm in the two days following the announcement episode (computed using a 1-factor model where the only risk factor is the return of the MSCI Emerging Markets Index), $\mathbb{1}(Govt\&Fin)$ is a dummy variable which equals 1 for government-related and financial companies, $\mathbb{1}(Tradable)$ is a dummy which equals 1 for firms operating in tradable sectors, and EFD is a measure of external financial dependance computed at the industry-level. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded.

Figure 11: Estimated Inflows and Size of the Shocks



This figure depicts the relationship between the size of the 2-day changes in sovereign bond yields and exchange rates (in the two days following the announcement of each country's inclusion in the corresponding index), and the estimated sovereign debt inflows relative to the size of each country's local-currency sovereign debt market (left panel) and each country's GDP (right panel), separately. The estimated inflows, the market value of sovereign debt markets, and countries' GDP are in US dollars. Estimated inflows are computed as the change in benchmark weight following the inclusion of each country in the index, calculated over the entire implementation period, multiplied by the assets under management of funds tracking their returns against the corresponding index. The dashed and the solid line are regression lines describing the relationship between estimated inflows and shocks, with and without Czech Republic, respectively.

Figure 12: 5-Year Government Bond Prices around Implementation



This figure depicts the time series of the average 5-year local currency government bond prices across Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa over a time window which starts 7 trading days before the implementation date, and ends 7 trading days after it. The index (which is equal to 100 in the day before the announcement for each country) is constructed by taking the average change in log prices first across implementations for each country, and then across countries. The vertical dashed line indicates the last trading day before each implementation episode.

Table 1: Summary Statistics

	Mean	St. Dev.	CO	CZ	MX	NG	RO	ZA
Financial	0.14	0.35	0.36	0.21	0.14	0.17	0.10	0.10
Government-Related	0.09	0.29	0.19	0.36	0.07	0.11	0.05	0.08
Tradable	0.35	0.48	0.19	0.21	0.23	0.42	0.54	0.32
External Financial Dependance	-2.04	2.91	-2.53	-1.88	-2.04	-2.19	-1.65	-2.05
Foreign Ownership	0.11	0.31	0.18	0.21	0.16	0.09	0.02	0.12
Issue Debt	0.16	0.36	0.38	0.36	0.47	0.04	0.05	0.09
Log(Assets)	15.44	3.25	21.68	16.57	16.43	17.41	12.18	14.33
Observations	909		72	14	137	170	155	361

This table reports summary statistics about domestic firms in our sample. The first two columns report the mean and the standard deviation of our main explanatory variables computed over the entire sample of firms. Columns 3 to 8 report the average of these variables in each of the countries in our sample (Colombia, Czech Republic, Mexico, Nigeria, Romania, and South Africa). *Financial* is an indicator variable that is equal to 1 for financial firms. *Government-Related* is an indicator variable that is equal to 1 for government-related firms. *Tradable* is an indicator variable that is equal to 1 for firms in tradable industries (according to the classification in Mian and Sufi (2014)). *External Financial Dependance* is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). *Foreign Ownership* is an indicator variable that is equal to 1 for firms which are included in the MSCI Emerging Markets Index in the year prior to the announcement date. *Issue Debt* is an indicator variable that is equal to 1 for firms that issued corporate debt or obtained a syndicated loan in the years before the announcement date.

Table 2: Shocks

	Colombia	Czech Rep.	Mexico	Nigeria	Romania	South Africa
ΔYield (bps)	-30.190	-7.300	-4.800	-42.000	-86.900	-23.600
$\Delta\text{Yield} - \overline{\Delta\text{Yield}}$	-30.649***	-7.641***	-4.569***	-42.870***	-85.819***	-22.674***
$\%\Delta$ExchRate (pp)	-2.026	-0.532	-1.266	-0.057	-0.633	-2.006
$\%\Delta\text{ExchRate} - \overline{\%\Delta\text{ExchRate}}$	-2.179***	-0.484***	-1.200***	-0.077***	-0.635***	-2.120***

This table reports the changes in government bond yields and exchange rates in the 2 days following the announcement of each country's inclusion in the corresponding index. $\Delta Yield(bps)$ is the 2-day change in the 5-year local currency government bond yield in basis points. $\%\Delta ExchRate(pp)$ is the 2-day percentage change in the exchange rate (computed as the difference in the log of the exchange rate) in percentage points. $\Delta Yield - \overline{\Delta Yield}$ and $\%\Delta ExchRate - \overline{\%\Delta ExchRate}$ are the differences between the changes in government bond yields and exchange rates in the 2 days following the announcement episodes, and the average 2-day changes of these two variables in the 2 years around the announcement of each country's inclusion in the corresponding index. *, **, ***, denote that these differences are statistically different from 0 at the 10%, 5%, and 1% confidence level, respectively.

Table 3: Aggregate Cumulative Abnormal Returns

Panel A: Cumulative Abnormal Returns after Announcement Dates				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Average 2-day CAR	0.219**	0.133	0.111	0.117
	(0.099)	(0.102)	(0.102)	(0.108)
Number of Countries	6	6	6	6
Observations	861	861	861	861
Panel B: Cumulative Abnormal Returns before Announcement Dates				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Average 2-day CAR	0.117	0.014	0.041	-0.006
	(0.096)	(0.096)	(0.096)	(0.097)
Number of Countries	6	6	6	6
Observations	861	861	861	861

This table reports the average cumulative abnormal return of firms in our sample after and before the announcement of each country's inclusion in the corresponding index (Panel A and Panel B, respectively). The average CAR in Panel A is computed as the average CAR in the 2 days following the announcement. The average CAR in Panel B is computed as the average CAR over the interval $[t-3, t-2]$, where t is the first trading day after the announcement. CARs in the first column (the demeaned returns) are computed as the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote that the the average CAR is statistically different from 0 at the 10%, 5%, and 1% confidence level, respectively.

Table 4: Cumulative Abnormal Returns, by Firm Type

Panel A: Financial firms				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Average 2-day CAR	0.688***	0.666***	0.643***	0.607***
	(0.181)	(0.173)	(0.166)	(0.183)
Number of Countries	6	6	6	6
Observations	118	118	118	118
Panel B: Government-related firms				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Average 2-day CAR	0.909***	0.802***	0.831***	0.866***
	(0.237)	(0.245)	(0.247)	(0.250)
Number of Countries	6	6	6	6
Observations	78	78	78	78
Panel C: Tradable firms				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Average 2-day CAR	-0.132	-0.205	-0.239	-0.202
	(0.173)	(0.166)	(0.165)	(0.177)
Number of Countries	6	6	6	6
Observations	306	305	305	304

This table reports the average cumulative abnormal return of financial firms (Panel A), government-related firms (Panel B), and firms operating in tradable sectors (Panel C) in the 2 days following the announcement of each country's inclusion in the corresponding index. CARs in the first column (the demeaned returns) are computed as the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote that the the average CAR is statistically different from 0 at the 10%, 5%, and 1% confidence level, respectively.

Table 5: Main Results

2-Day Cumulative Abnormal Returns after Announcement Dates				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.525*	0.613**	0.614**	0.573*
	(0.290)	(0.285)	(0.280)	(0.302)
Government-Related	0.632***	0.598**	0.656***	0.700***
	(0.241)	(0.249)	(0.247)	(0.252)
Tradable	-0.514**	-0.472**	-0.495**	-0.450*
	(0.218)	(0.220)	(0.220)	(0.235)
External Financial Dependance	0.072*	0.070*	0.075*	0.073*
	(0.041)	(0.041)	(0.040)	(0.043)
Financial – Tradable	1.04***	1.09***	1.11***	1.02***
	(0.31)	(0.30)	(0.29)	(0.31)
Govt-Related – Tradable	1.15***	1.07***	1.15***	1.15***
	(0.32)	(0.33)	(0.32)	(0.33)
Number of Countries	6	6	6	6
Observations	857	857	857	857
R^2	0.02	0.02	0.02	0.02

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm in the 2 days following the announcement of each country's inclusion in the corresponding index. The explanatory variables are: *Financial*, which is an indicator variable that is equal to 1 for financial firms; *Government-Related*, which is an indicator variable that is equal to 1 for government-related firms; *Tradable*, which is an indicator variable equal to for firms in tradable industries (according to the classification in Mian and Sufi (2014)); and *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). The table reports also the difference between the estimated coefficient on *Financial* and that on *Tradable*, as well as the difference between the estimated coefficients on *Government-Related* and that on *Tradable*. CARs in the first column (the demeaned returns) are computed as the the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.

Table 6: Additional Controls

2-Day Cumulative Abnormal Returns after Announcement Dates								
	Demeaned Returns		1-Factor Model		2-Factor Model		5-Factor Model	
Financial	0.497*	0.494	0.584**	0.618*	0.569**	0.557*	0.578*	0.539
	(0.276)	(0.339)	(0.275)	(0.336)	(0.271)	(0.329)	(0.297)	(0.364)
Government-Related	0.505**	0.451*	0.500**	0.441	0.569**	0.498*	0.641***	0.557**
	(0.237)	(0.264)	(0.244)	(0.270)	(0.243)	(0.271)	(0.245)	(0.271)
Tradable	-0.431*	-0.539**	-0.398*	-0.499*	-0.421*	-0.533*	-0.364	-0.431
	(0.226)	(0.273)	(0.226)	(0.279)	(0.227)	(0.279)	(0.246)	(0.307)
External Financial Dependance	0.074*	0.083*	0.072*	0.083*	0.076*	0.087*	0.076*	0.085*
	(0.041)	(0.048)	(0.042)	(0.050)	(0.041)	(0.049)	(0.043)	(0.051)
Foreign Ownership	0.222	0.112	0.073	0.002	0.049	-0.092	0.056	-0.089
	(0.243)	(0.262)	(0.255)	(0.278)	(0.249)	(0.277)	(0.249)	(0.283)
Issue Debt	0.133	0.087	0.040	0.010	0.008	-0.049	-0.042	-0.113
	(0.246)	(0.266)	(0.253)	(0.274)	(0.268)	(0.295)	(0.279)	(0.314)
Log(Assets)		0.026		0.013		0.039		0.046
		(0.046)		(0.046)		(0.049)		(0.060)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Financial – Tradable	0.93***	1.03***	0.98***	1.12***	0.99***	1.09***	0.94***	0.97**
	(0.29)	(0.37)	(0.29)	(0.36)	(0.28)	(0.35)	(0.31)	(0.39)
Govt-Related – Tradable	0.94***	0.99***	0.90***	0.94**	0.99***	1.03***	1.01***	0.99**
	(0.32)	(0.37)	(0.33)	(0.39)	(0.33)	(0.39)	(0.34)	(0.40)
Number of Countries	6	6	6	6	6	6	6	6
Observations	857	663	857	663	857	663	857	664
R^2	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm in the 2 days following the announcement of each country's inclusion in the corresponding index. The explanatory variables are: *Financial*, which is an indicator variable that is equal to 1 for financial firms; *Government-Related*, which is an indicator variable that is equal to 1 for government-related firms; *Tradable*, which is an indicator variable equal to for firms in tradable industries (according to the classification in Mian and Sufi (2014)); *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998); *Foreign Ownership*, which is an indicator variable that is equal to 1 for firms which are included in the MSCI Emerging Markets Index in the year prior to the announcement date; *IssueDebt*, which is an indicator variable that is equal to 1 for firms that issued corporate debt or obtained a syndicated loan in the years before the announcement date; and *Log(Assets)*, which is the logarithm of the total value of a firm's assets. All regressions include country fixed effects. The table reports also the difference between the estimated coefficient on *Financial* and that on *Tradable*, as well as the difference between the estimated coefficients on *Government-Related* and that on *Tradable*. CARs in the first column (the demeaned returns) are computed as the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.

Table 7: Interaction with Size of the Shocks

2-Day Cumulative Abnormal Returns after Announcement Dates								
	Demeaned Returns		1-Factor Model		2-Factor Model		5-Factor Model	
ΔYield × Govt&Fin	0.015***	0.017***	0.015***	0.017***	0.015***	0.017***	0.015***	0.017***
	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)
%ΔExchRate × Tradable	-0.354**	-0.411***	-0.341**	-0.393***	-0.358**	-0.414***	-0.295*	-0.349**
	(0.147)	(0.144)	(0.145)	(0.144)	(0.146)	(0.144)	(0.166)	(0.162)
External Financial Dependance		0.070*		0.066		0.070*		0.068*
		(0.038)		(0.040)		(0.039)		(0.041)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Countries	6	6	6	6	6	6	6	6
Observations	861	857	861	857	861	857	861	857
R^2	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm in the 2 days following the announcement of each country's inclusion in the corresponding index. The explanatory variables are: $\Delta Yield \times Govt\&Fin$, which is the product of indicator variable that is equal to 1 for financial and government-related firms, and the 2-day change in the 5-year local currency government bond yield, in basis points; $\%\Delta ExchRate \times Tradable$, which is the product of indicator variable that is equal to 1 for firms in tradable industries (according to the classification in Mian and Sufi (2014)), and the 2-day percentage change in the exchange rate (computed as the difference in the log of the exchange rate) in percentage points; and *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). All regressions include country fixed effects. CARs in the first column (the demeaned returns) are computed as the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor models include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.

Table 8: Main Results on Implementation Dates

2-Day Cumulative Abnormal Returns after Announcement Dates				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.014	-0.065	-0.139	-0.188
	(0.184)	(0.245)	(0.241)	(0.264)
Government-Related	-0.039	-0.062	-0.031	-0.012
	(0.172)	(0.181)	(0.179)	(0.178)
Tradable	0.009	0.028	0.052	0.043
	(0.159)	(0.153)	(0.156)	(0.157)
External Financial Dependance	-0.034	-0.041	-0.039	-0.061
	(0.027)	(0.028)	(0.028)	(0.038)
Number of Countries	6	6	6	6
Observations	1781	1781	1781	1781
R^2	0.00	0.00	0.00	0.00

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm in the 2 days following the implementation of each country's inclusion in the corresponding index. The explanatory variables are: *Financial*, which is an indicator variable that is equal to 1 for financial firms; *Government-Related*, which is an indicator variable that is equal to 1 for government-related firms; *Tradable*, which is an indicator variable equal to for firms in tradable industries (according to the classification in Mian and Sufi (2014)); and *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). The table reports also the difference between the estimated coefficient on *Financial* and that on *Tradable*, as well as the difference between the estimated coefficients on *Government-Related* and that on *Tradable*. CARs in the first column (the demeaned returns) are computed as the the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.

A Appendix

A.1 International Benchmark Indexes for Local Currency Sovereign Bond Markets

International indexes are indexes which combine and track assets of different classes from different countries. Depending on the criteria used to select the countries to be included in the index, international indexes can be categorized in regional and global indexes. The former track securities whose issuers are located in a given region – either geographically or based on the classification of countries in frontier, emerging, and developed markets –, while the latter track securities whose issuers are located in multiple regions. With the rise of financial globalization, international indexes have gained considerable importance, as they constitute the main benchmark for an increasingly large number of international investors.

Two of the main and most widely tracked international indexes for local currency–denominated government debt securities are the World Government Bond Index (WGBI) and J.P. Morgan Government Bond Index Emerging Markets (GBI-EM), which are constructed by Citigroup and J.P. Morgan, respectively. Both indexes represent key benchmarks for international investors in local currency sovereign debt markets. However, while the former is a global index which tracks the returns on sovereign bonds denominated in local currency issued by the governments of both developed and emerging countries, the latter is a regional index which solely focuses on emerging countries.[38]

As of 2016, the assets under management benchmarked against the WGBI were approximately 1.5 trillions U.S. dollars, and those benchmarked against the GBI-EM were approximately 200 billion U.S. dollars. Hence, when index providers change the composition of these two indexes, many international investors wishing to replicate the index composition rebalance their portfolios accordingly. Index rebalancings therefore trigger capital flows which, as shown in Pandolfi and

[38] As a result, the sovereign debt bonds of some emerging countries are included in both indexes. However, given that the average market capitalization of the securities in the WGBI is much larger than that in the GBI-EM, the weight of emerging countries in the former is typically much lower than the weight they have in the latter. For instance, Mexican local currency sovereign bonds account for about 10% of the GBI-EM, while they account for less than 1% of the WGBI.

Williams (2019), can have important price effects on the value of the local currency sovereign bonds involved in the rebalancing.

In this paper, in particular, we focus on some large rebalancings in these two indexes which are due to the inclusion of the following emerging countries: Colombia, Czech Republic, Mexico, Nigeria, Romania, and South Africa. During our sample period – which spans from 2010 to 2018 – Argentina was also included in the GBI-EM (in 2017). However, this event is not included in our sample as the inclusion was driven by the decision of the Argentinian government of removing the mandatory 120-days holding period for foreign capital, which was taken the day before the country inclusion announcement.

A.2 Details on Country Inclusion Events

A.2.1 Colombia

On the 19th of March 2014, J.P. released a communication to investors which announced the inclusion of five Colombian treasury bonds (named TES) into the GBI-EM family of indexes. The index inclusion was planned to be implemented gradually between May and September 2014, bringing Colombian weight in the GBI-EM Global Diversified from 3.2% to an estimated 8% (as three TES were already included in the index before the inclusion episode). The document released by J.P. Morgan does not contain a time stamp, so we searched the web for news related to this event. The first news article we found was published by Reuters at 1:52PM (Eastern Standard Time), which corresponds to 12:52PM in Colombian time, when Colombian markets were still open.[39] Hence, the first trading day for Colombia coincides with the announcement date and is set on the 19th of March 2014. As regards the drivers of the inclusion, J.P. Morgan states that this the "[...] result of improved transparency and accessibility for international investors in the local TES market [...]". Nevertheless, we could not find any relevant news about policy changes or changes in the functioning of Colombian sovereign debt market which might overlap with the inclusion announcement made by J.P. Morgan. The most significant regulatory change affecting

[39]Source: Reuters. https://www.reuters.com/article/colombia-jpmorgan-debt/j-p-morgan-to-boost-colombia-bond-weighting-peso-up-most-in-6-months-idUSL2N0MG12I20140319 (Retrieved on May 6, 2020).

Colombian sovereign debt market before the inclusion episode was a tax cut on foreigners investing in TES which occurred in January 2013, more than one year before the inclusion announcement.

A.2.2 Czech Republic

On the 22nd of February 2017, J.P. Morgan released a communication to investors which announced the inclusion of nine local-currency denominated Czech sovereign bonds into the GBI-EM family of indexes. The index inclusion was planned to be implemented gradually between April and June 2017, bringing Czech weight in the GBI-EM Global Diversified from 0% to an estimated 3.3%. The document was disseminated at 9:44AM (Eastern Standard Time), which corresponds to 3:44PM in Czech Republic time, when Czech markets were still open. Hence, the first trading day for Colombia coincides with the announcement date and is set on the 22nd of February 2017. The inclusion of Czech Republic in the J.P. Morgan GBI-EM was due to reclassification of the country from a developed to an emerging market, since: "Czech Republic's GNI per-capita levels falling below the Index Income Ceiling for three consecutive years". As a result, Czech sovereign bonds were excluded from developed markets indexes and included in the Emerging Markets ones. As the weight of Czech Republic in the index for developed countries was much smaller than that in the GBI-EM, the outflows due to the exclusion from the former were going to be much smaller than the inflows due to the inclusion in the latter. According to experts, the transition should have brought between 3 and 6 billion U.S. dollar inflows to the country.[40]

A.2.3 Mexico

On the 31st of March 2010, Citigroup announced that Mexican sovereign bonds were eligible for inclusion in the WGBI, with an estimated weight equal to 0.65%. We searched the web for news related to this event. The first news article we found was published by Reuters at 12:41PM (Eastern Standard Time), which corresponds to 11:41AM in Mexican time, when Mexican markets were still

[40]Source: Pensions&Investments Online. https://www.pionline.com/article/20170428/ONLINE/170429837/j-p-morgan-drops-czech-republic-bonds-to-emerging-markets-indexes-inflows-expected (Retrieved on May 6, 2020).

open.[41] Hence, the first trading day for Mexico coincides with the announcement date and is set on the 31st of March 2010. The eligibility announcement stated that: "If Mexico continues to meet all WGBI criteria for three consecutive months starting with the April 2010 index profile, it will become the first Latin American and the 24th government bond market to enter the WGBI. Entry would be effective October 2010". The criteria refer to the size and ratings of the Mexican sovereign bonds, and their accessibility to foreign investors. Several news articles highlighted that Mexico already fulfilled the size and ratings requirements and that during the past year the government of Mexico improved the liquidity of the government bond market by issuing 30-year bonds, selling syndicated debt to foreigners and creating a primary dealers program. As a result, Mexico was eventually included in the WGBI in October 2010.

A.2.4 Nigeria

On the 14th of August 2012, J.P. Morgan released a communication to investors which announced the inclusion of local-currency denominated Nigerian sovereign bonds (FGN) maturing in 2014, 2019 and 2022, into the GBI-EM family of indexes. The index inclusion was planned to be implemented gradually between October and December 2012, bringing Nigerian weight in the GBI-EM Global Diversified from 0% to an estimated 0.59% (the estimate was later revised to 0.72%). The document released by J.P. Morgan does not contain a time stamp, so we searched the web for news related to this event. The first news article we found was published by Reuters on the 15th of August at 12:46PM (Eastern Standard Time), which corresponds to 5:46PM in Nigerian time, when Nigerian markets had already closed.[42] Due to the one-day delay between the communication by J.P. Morgan and the diffusion of the news, we assume that the latest date is the one in which the information was effectively received by international investors. In fact, we do observe an increase in transaction of local currency sovereign bonds on the day following the dissemination of the Reuters' article. Hence, we set the first trading day after the announcement on the 16th of August 2012. As regards

[41] Source: Reuters. https://www.reuters.com/article/mexico-index/update-1-citi-says-mexico-eligible-for-wgbi-bond-index-idUSN3121335820100331 (Retrieved on May 6, 2020).

[42] Source: Reuters. https://in.reuters.com/article/us-nigeria-debt-idINBRE87E0TF20120815 (Retrieved on May 6, 2020).

the drivers of the inclusion, J.P. Morgan stated that this is the result of the improved liquidity of the Nigerian sovereign debt market, in large part due to the removal of the mandatory one-year holding period for foreign capital occurred in June 2011, more than one year before the inclusion announcement.

A.2.5 Romania

On the 16th of January 2013, J.P. Morgan released a communication to investors which announced the inclusion of local-currency denominated Romanian sovereign bonds (RON) maturing in 2015, 2016 and 2017, into the GBI-EM family of indexes. The index inclusion was planned to be implemented gradually between March and May 2013, bringing Romanian weight in the GBI-EM Global Diversified from 0% to an estimated 0.54% (the estimate was later revised to 0.87%). The document released by J.P. Morgan does not contain a time stamp, so we searched the web for news related to this event. The first news article we found was published by Reuters on the 16th of January, according to which J.P. Morgan had announced the inclusion overnight.[43] We therefore set the first trading day after the announcement on the 16th of January 2013. As regards the drivers of the inclusion, J.P. Morgan stated that this was the result of the improved liquidity of the Romanian sovereign debt market occurred in the 18 months preceding the announcement.

A.2.6 South Africa

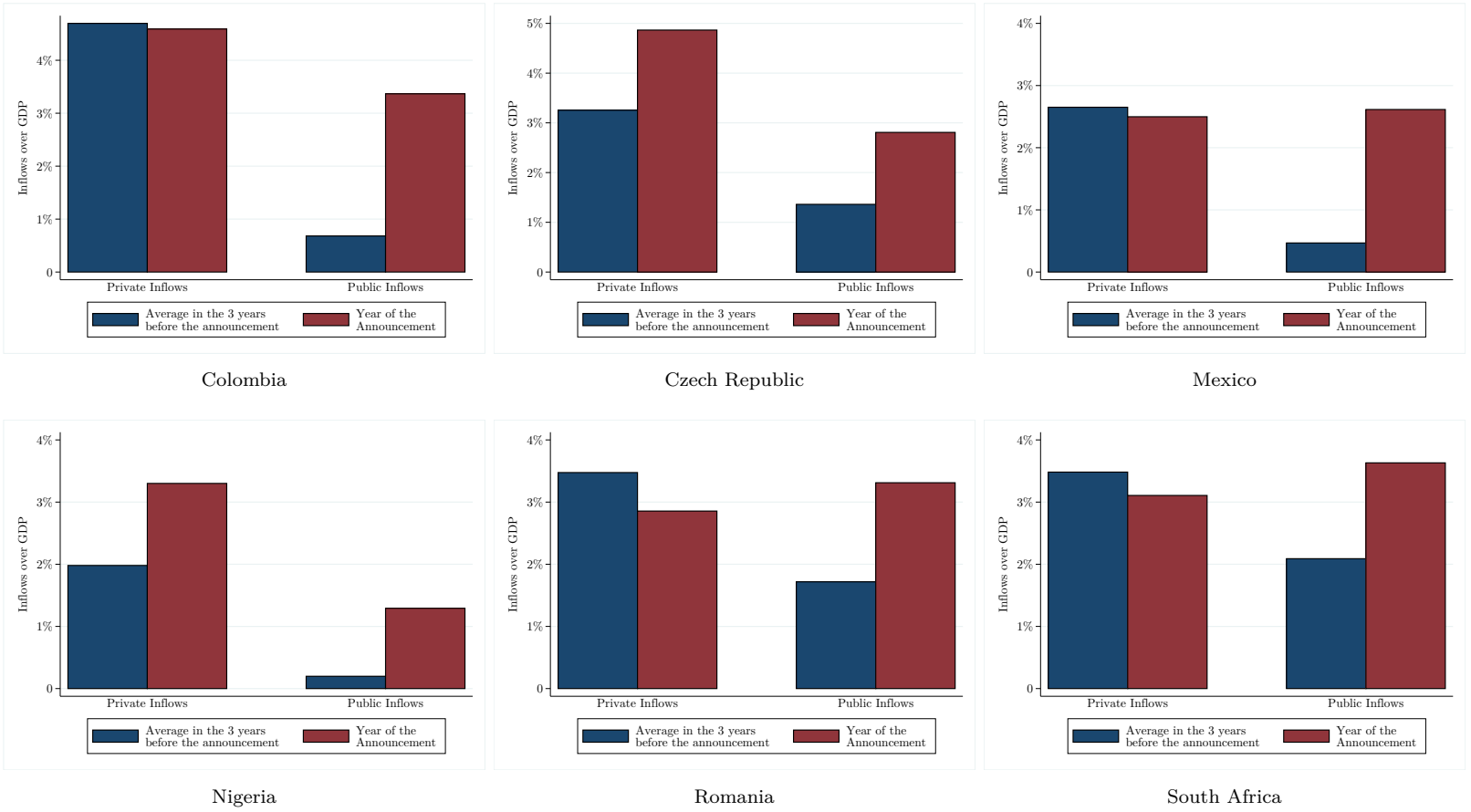
On the 16th of April 2012, Citigroup announced that 11 Southern African sovereign bonds were eligible for inclusion in the WGBI. The document released by Citigroup does not contain a time stamp, so we searched the web for news related to this event. The first news article we found was published on the 17th of April by Reuters at 07:05AM (Eastern Standard Time), which corresponds to 1:05PM in the time of South Africa, when markets were still open.[44] Hence, we set the first trading day after the announcement on the 17th of April 2012. The eligibility announcement

[43]Source: Reuters. https://www.reuters.com/article/romania-debt/jp-morgan-gives-fresh-impetus-to-romania-debt-idUSL6N0AL7IY20130116 (Retrieved on May 6, 2020).
[44]Source: Reuters. https://af.reuters.com/article/southAfricaNews/idAFL6E8FH3YH20120417 (Retrieved on May 6, 2020).

stated that: “If South Africa continues to meet all WGBI criteria with the May and June 2012 profiles, it will become the first African government bond market to be included in the WGBI”. The criteria refer to the size and ratings of the domestic sovereign bonds, and their accessibility to foreign investors. South Africa already fulfilled the size and ratings requirements at the time of the announcement. As for the accessibility to foreign investors, it most likely improved in the year preceding the inclusion, but we could not find more detailed information.

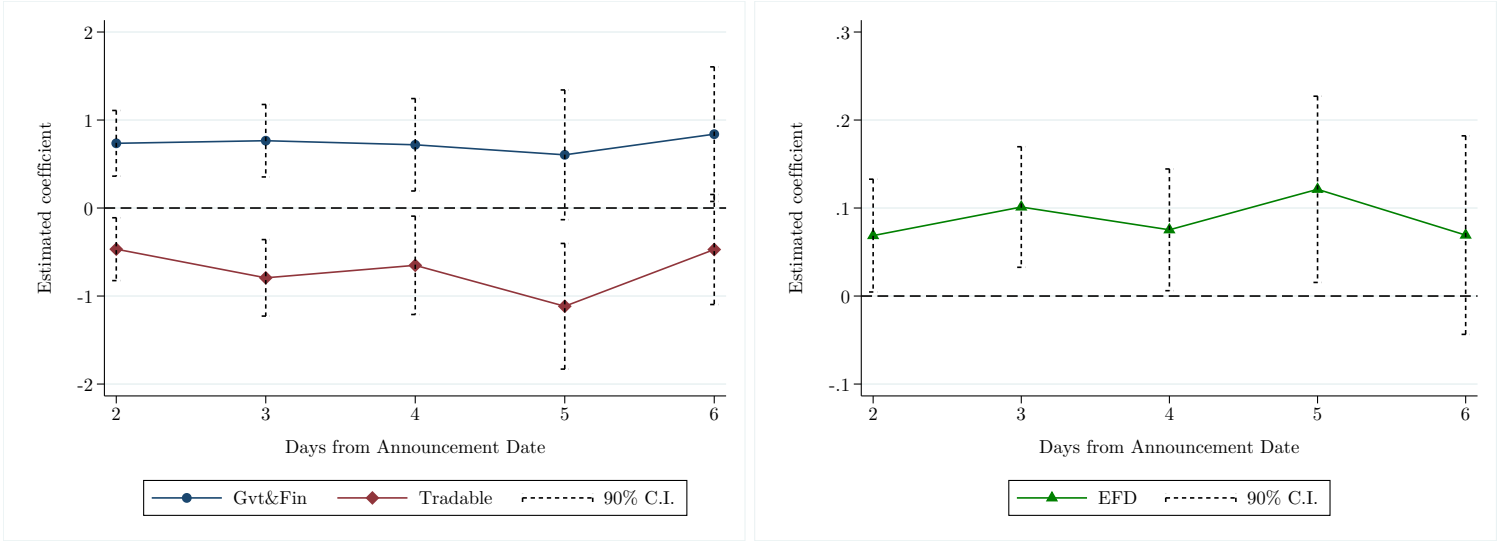
A.3 Additional Figures & Tables

Figure A1: Balance of Payments: Private vs. Public Inflows in Each Country



This figure depicts the private and the public net inflows to Colombia, Czech Republic, Mexico, Nigeria, Romania and South Africa in the year of the announcement of each country's inclusion into the corresponding index *vs.* the average of public and private inflows to these countries in the three years before the announcement episodes. Private inflows are the sum of foreign direct investments, portfolio equity net inflows and private debt net inflows. Public inflows are net inflows to the countries' sovereign debt markets. Both are in U.S. dollars and are normalized by the GDP of each country. Inflows are reported separately for each of the countries in our sample. Data is from the IMF Balance of Payments Statistics and IMF WEO.

Figure A2: Alternative Time Windows



Gvt&Fin-Tradable

External Financial Dependance

This figure depicts the estimated coefficients of $\mathbb{1}(Govt\&Fin)$, $\mathbb{1}(Tradable)$, and EFD in 5 regressions of the form: $CAR_i^t = \beta_1 \mathbb{1}(Govt\&Fin)_i + \beta_2 \mathbb{1}(Tradable)_i + \beta_3 EFD_i + \varepsilon_i$, where CAR_i is the cumulative abnormal return of firm i in the t days following the announcement episode, with $t \in [2, 6]$. CARs are computed using a 1-factor model where the only risk factor is the return of the MSCI Emerging Markets Index. $\mathbb{1}(Govt\&Fin)$ is a dummy variable which equals 1 for government-related and financial companies, $\mathbb{1}(Tradable)$ is a dummy which equals 1 for firms operating in tradable sectors, and EFD is a measure of external financial dependance computed at the industry-level. In each regression, observations in the top and the bottom percentile of the country-specific distribution of cumulative abnormal returns are excluded.

Table A1: Government ownership and government demand

2-Day Cumulative Abnormal Returns after Announcement Dates				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.545*	0.628**	0.632**	0.588*
	(0.289)	(0.284)	(0.279)	(0.301)
Gvt Owned	0.661	0.550	0.608	0.591
	(0.440)	(0.478)	(0.468)	(0.451)
Gvt Demand	0.512**	0.516**	0.549**	0.626**
	(0.245)	(0.249)	(0.254)	(0.267)
Tradable	-0.508**	-0.465**	-0.488**	-0.441*
	(0.218)	(0.221)	(0.220)	(0.236)
External Financial Dependance	0.071*	0.069*	0.074*	0.073*
	(0.041)	(0.041)	(0.041)	(0.043)
Number of Countries	6	6	6	6
Observations	857	857	857	857
R^2	0.02	0.02	0.02	0.02

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm in the 2 days following the announcement of each country's inclusion in the corresponding index. The explanatory variables are: *Financial*, which is an indicator variable that is equal to 1 for financial firms; *Gvt Owned*, which is an indicator variable that is equal to 1 for firms which are partially owned by the domestic government; *Gvt Demand*, which is an indicator variable that is equal to 1 for firms which are related to the domestic government because of their business activity; *Tradable*, which is an indicator variable equal to for firms in tradable industries (according to the classification in Mian and Sufi (2014)); and *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). The table reports also the difference between the estimated coefficient on *Financial* and that on *Tradable*, as well as the difference between the estimated coefficients on *Government-Related* and that on *Tradable*. CARs in the first column (the demeaned returns) are computed as the the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.

Table A2: Robustness Tests

Panel A: No companies with zero returns in (-10,10)				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.537	0.703	0.682	0.678
	(0.451)	(0.448)	(0.430)	(0.474)
Government-Related	0.692**	0.628*	0.672*	0.694*
	(0.350)	(0.362)	(0.353)	(0.357)
Tradable	-0.878***	-0.802**	-0.844***	-0.816**
	(0.313)	(0.316)	(0.315)	(0.332)
External Financial Dependance	0.083	0.084	0.089	0.093
	(0.063)	(0.063)	(0.061)	(0.064)
Financial – Tradable	1.42***	1.50***	1.53***	1.49***
	(0.48)	(0.47)	(0.44)	(0.49)
Govt-Related – Tradable	1.57***	1.43***	1.52***	1.51***
	(0.48)	(0.49)	(0.48)	(0.49)
Observations	565	565	565	565
R^2	0.03	0.03	0.03	0.03
Panel B: No multi-stock companies				
	Detrended Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.444	0.543	0.526	0.545
	(0.388)	(0.387)	(0.370)	(0.408)
Government-Related	0.703**	0.622*	0.656**	0.676**
	(0.307)	(0.322)	(0.313)	(0.310)
Tradable	-0.715***	-0.668**	-0.688***	-0.664**
	(0.262)	(0.265)	(0.264)	(0.279)
External Financial Dependance	0.067	0.064	0.068	0.073
	(0.051)	(0.051)	(0.050)	(0.052)
Financial – Tradable	1.16***	1.21***	1.21***	1.21***
	(0.41)	(0.40)	(0.38)	(0.41)
Govt-Related – Tradable	1.42***	1.29***	1.34***	1.34***
	(0.40)	(0.42)	(0.41)	(0.41)
Observations	652	652	652	652
R^2	0.03	0.02	0.03	0.02
Panel C: Without Nigeria and Czech Republic				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.413	0.534	0.519	0.507
	(0.364)	(0.363)	(0.348)	(0.383)
Government-Related	0.633**	0.566*	0.598*	0.625**
	(0.305)	(0.316)	(0.308)	(0.310)
Tradable	-0.716***	-0.661**	-0.686***	-0.661**
	(0.258)	(0.261)	(0.260)	(0.274)
External Financial Dependance	0.066	0.064	0.069	0.072
	(0.050)	(0.050)	(0.049)	(0.051)
Financial – Tradable	1.13***	1.20***	1.20***	1.17***
	(0.39)	(0.38)	(0.36)	(0.39)
Govt-Related – Tradable	1.35***	1.23***	1.28***	1.29***
	(0.40)	(0.41)	(0.40)	(0.41)
Observations	680	680	680	680
R^2	0.03	0.02	0.02	0.02

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm in the 2 days following the announcement of each country's inclusion in the corresponding index. In Panel A, we exclude firms whose price never changes in the 20 trading days around the announcement date. In Panel B, we reduce the weight of firms issuing more than one stock, by considering for each of these companies only the average 2-day CAR of the company's traded securities. In Panel C, we exclude Nigeria and Czech Republic. In all panels, the explanatory variables are: *Financial*, which is an indicator variable that is equal to 1 for financial firms; *Government-Related*, which is an indicator variable that is equal to 1 for government-related firms; *Tradable*, which is an indicator variable equal to for firms in tradable industries (according to the classification in Mian and Sufi (2014)); and *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). The table reports also the difference between the estimated coefficient on *Financial* and that on *Tradable*, as well as the difference between the estimated coefficients on *Government-Related* and that on *Tradable*. CARs in the first column (the demeaned returns) are computed as the the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.

Table A3: Main Results with Country FE

2-Day Cumulative Abnormal Returns after Announcement Dates				
	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.533*	0.595**	0.574**	0.579*
	(0.284)	(0.279)	(0.274)	(0.300)
Government-Related	0.576**	0.523**	0.579**	0.641**
	(0.241)	(0.245)	(0.244)	(0.248)
Tradable	-0.419*	-0.394*	-0.420*	-0.365
	(0.226)	(0.226)	(0.227)	(0.248)
External Financial Dependance	0.075*	0.072*	0.076*	0.075*
	(0.041)	(0.042)	(0.041)	(0.043)
Country FE	Yes	Yes	Yes	Yes
Financial – Tradable	0.95***	0.99***	0.99***	0.94***
	(0.30)	(0.29)	(0.28)	(0.31)
Govt-Related – Tradable	0.99***	0.92***	1.00***	1.01***
	(0.32)	(0.33)	(0.33)	(0.34)
Number of Countries	6	6	6	6
Observations	857	857	857	857
R^2	0.04	0.04	0.04	0.03

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm in the 2 days following the announcement of each country's inclusion in the corresponding index. The explanatory variables are: *Financial*, which is an indicator variable that is equal to 1 for financial firms; *Government-Related*, which is an indicator variable that is equal to 1 for government-related firms; *Tradable*, which is an indicator variable equal to for firms in tradable industries (according to the classification in Mian and Sufi (2014)); and *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). All regressions include country fixed effects. The table reports also the difference between the estimated coefficient on *Financial* and that on *Tradable*, as well as the difference between the estimated coefficients on *Government-Related* and that on *Tradable*. CARs in the first column (the demeaned returns) are computed as the the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.

Table A4: Placebo Tests

Panel A: 2-Day Cumulative Abnormal Returns (2 Days before announcement)

	Demeaned Returns	1-Factor Model	2-Factor Model	5-Factor Model
Financial	0.264	0.254	0.248	0.219
	(0.250)	(0.263)	(0.264)	(0.258)
Government-Related	-0.160	-0.227	-0.237	-0.227
	(0.232)	(0.245)	(0.249)	(0.242)
Tradable	0.402*	0.343	0.337	0.349
	(0.225)	(0.224)	(0.223)	(0.226)
External Financial Dependance	-0.041	-0.044	-0.046	-0.047
	(0.038)	(0.039)	(0.039)	(0.039)
Number of Countries	6	6	6	6
Observations	857	857	857	857
R^2	0.01	0.01	0.01	0.01

Panel B: 2-Day Cumulative Abnormal Returns (2 Days before announcement)

	Demeaned Returns		1-Factor Model		2-Factor Model		5-Factor Model	
ΔYield $\times$ Govt&Fin	0.003	0.001	0.002	-0.000	0.002	-0.000	0.002	-0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
%ΔExchRate $\times$ Tradable	0.118	0.158	0.068	0.110	0.067	0.112	0.068	0.112
	(0.149)	(0.155)	(0.150)	(0.156)	(0.151)	(0.156)	(0.152)	(0.157)
External Financial Dependance		-0.048		-0.052		-0.054		-0.053
		(0.036)		(0.037)		(0.038)		(0.037)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Countries	6	6	6	6	6	6	6	6
Observations	861	857	861	857	861	857	861	857
R^2	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01

This table reports the OLS coefficients of a regression where the dependent variable is the CAR of each firm over the interval $[t-3, t-2]$, where t is the first trading day after the announcement of each country's inclusion in the corresponding index. In Panel A, the explanatory variables are: *Financial*, which is an indicator variable that is equal to 1 for financial firms; *Government-Related*, which is an indicator variable that is equal to 1 for government-related firms; *Tradable*, which is an indicator variable equal to for firms in tradable industries (according to the classification in Mian and Sufi (2014)); and *External Financial Dependance*, which is a measure of firms' dependance on external financing sources, computed following Rajan and Zingales (1998). In Panel B, the explanatory variables are: $\Delta Yield \times Govt\&Fin$, which is the product of indicator variable that is equal to 1 for financial and government-related firms, and the 2-day change in the 5-year local currency government bond yield, in basis points; $\%\Delta ExchRate \times Tradable$, which is the product of *Tradable* and the 2-day percentage change in the exchange rate (computed as the difference in the log of the exchange rate) in percentage points; *External Financial Dependance*; and country fixed effects. CARs in the first column (the demeaned returns) are computed as the the cumulated differences between the daily returns and the average daily return in the year preceding the announcement. CARs in columns 2 to 4 are computed using three different factor models. The only risk factor in the 1-factor model is the return of the MSCI Emerging Markets Index; the two risk factors in the 2-factor model are the return of the MSCI Emerging Markets Index and the return of the MSCI World Index; the 5-factor model include these two risk factors plus small minus big (SMB), high minus low (HML), and momentum (WML) factors. Observations in the top and the bottom percentile of the country-specific distribution of 2-day cumulative abnormal returns are excluded. Standard errors in parenthesis are clustered at the country-by-industry level. *, **, ***, denote significance at the 10%, 5%, and 1% confidence level, respectively.