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On the effects of global uncertainty shocks on portfolio flows*

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Abstract

In this paper, we analyze the effects of uncertainty shocks on portfolio flows in 25 emerging market and 21 advanced economies and shed light on socio-economic characteristics that may be relevant for the country-specific sensitivity towards the shocks. We derive uncertainty shocks from a proxy SVAR model, where the uncertainty shock is identified by changes in the price of gold during selected events. Taking into account the structural shock, we employ local projections of investment fund flows into 25 emerging market and 21 advanced economies for the period 2005M8 to 2023M12. Our results show that uncertainty shocks have much stronger negative effects on capital flows in emerging economies for both bond and equity flows. Our results also show that bond fund flows are much more strongly affected by uncertainty shocks compared to equity flows over both the short and the medium run. Finally, we find that economic characteristics relating to the sensitivity towards the shock differ across advanced economies and emerging markets.

Keywords: Uncertainty, portfolio flows, SVAR, local projections

JEL classification: E43, E47, E52.

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1 Introduction

Understanding capital flow dynamics is notoriously difficult given the increasing connect-
edness of global financial markets and the high volatility of flows. Those flows typically
show a high negative correlation with variables capturing uncertainty (Rey, 2015; Bet-
tendorf and Karadimitropoulou, 2023). This paper aims to shed light on this issue by
identifying the causal effects of uncertainty shocks on capital flows.

The role of capital flows and the driving forces behind them are of particular impor-
tance for emerging economies. Prior to the global financial crisis of 2008-09, the con-
sensus view was that capital liberalization tends to have positive macroeconomic effects
(Bekaert, Harvey, and Lundblad, 2005). However, the question of whether capital inflows
have expansionary or contractionary effects on GDP in emerging markets is controver-
sial (Blanchard, Ostry, Ghosh, and Chamon, 2015). On the one hand, capital inflows
can have positive effects on domestic financial markets and investments, but unwinding
capital outflows represent a major threat to financial stability. The economic literature
often labels major capital inflows as ‘surges’ while reversals of capital flows are labeled
‘sudden stops’ (Forbes and Warnock, 2012). Such patterns can result in various risks such
as contagion and disruptive adjustments, which lead to negative effects on stock prices
and can result in financial crises (Calvo, 1998).

Rey (2015) introduced the term ‘global financial cycle’ for boom and busts or sudden
stops in capital flows, pointing out that global economic conditions are of key relevance
for capital flow dynamics. The potential effect of uncertainty shocks on capital flows is
strongly related to the global role of the dollar, which is seen as a hedge or safe haven
in times of uncertainty. Eren and Malamud (2022) show that debt issuance in dollars is
borrower-driven. They demonstrate that the dollar does tend to appreciate in economic
downturns in the short run and that dollar debt represents a better hedge for firms
against long-term economic downturns compared with other major currencies. From the
perspective of emerging markets, the vulnerability to global financial conditions and global
uncertainty tends to be lower if debt is denominated in local currency (Bruno and Shin,
2013). While the global dominance of the dollar remains unchallenged, many emerging
markets have experienced an increase in debt and also increased local currency debt via
international financial markets, and the relevance of global factors might differ between
bonds and equity flows (IMF, 2020).

Against this background, the key question we tackle in this paper is how international
bond and equity flows are affected by global economic uncertainty. We analyze the effects
of uncertainty shocks on capital flows for both emerging and advanced economies, and
focus on equity and bond flows from funds due to the increasing importance of investment
fund flows since the liberalization and expansion of international capital markets than
began in the 1990s (Li, de Haan, and Scholtens, 2018). Adopting the approach proposed
by Piffer and Podstawski (2018), we estimate a SVAR model for the US economy that
serves as a proxy for the world economy. Using the model, we identify a structural global
uncertainty shock by using changes in high-frequency data for the price of gold as a proxy
variable. We then employ local projections of fund flows data following the identified
shock in order to analyze the effects on capital flows for a broad range of emerging
and advanced economies. This approach is important for two reasons: First, the SVAR
may provide a more precise measure of the uncertainty shock, as it provides additional

information on the proxy variable (e.g. changes in the price of gold). However, the additional events in the longer proxy series itself may also improve the estimation of the structural shock. Second, the SVAR may correct potential misspecifications of the proxy. Third, the model enables us to disentangle the uncertainty component from potential news components. Subsequently, we shed light on factors that may amplify or dampen the effects of uncertainty shocks on capital flows by identifying correlations between the size of the effects and specific macroeconomic as well as institutional variables.

We also contribute to the literature on uncertainty shocks, which has attracted substantial interest from researchers. Several measures of uncertainty and a broad range of effects and transmission channels have been proposed. Overall, there is a wealth of evidence to suggest that uncertainty shocks result in negative macroeconomic effects which can stem from supply or demand side dynamics. Several authors have focused on the effects of uncertainty shocks on the real economy and identified negative effects on consumption and investment (Bloom, 2009; Bloom, Floetotto, Jaimovich, Saporta-Eksten, and Terry, 2018; Leduc and Liu, 2016). While some studies have also focused on the effects of uncertainty on financial markets, for example, in the context of exchange rates or stock markets, the identification of uncertainty effects on disaggregated capital flows is relatively scarce.¹ Another key result from the literature is that uncertainty dynamics can be broken down in country-specific or regional and global uncertainty, with the latter often resulting in substantial effects.

The remainder of this paper is organized as follows: The next section summarizes the existing literature. Section 3 describes the dataset and our empirical methodology. Section 4 discusses our empirical findings, while Section 5 concludes.

2 Literature review

Our work is related to both the literature on capital flows and the literature on uncertainty. In the following, we briefly summarize the main results in the literature relating to both topics. Similarly to Li et al. (2018), we analyze outflows and distinguish between equity and portfolio flows.

Given our focus on emerging markets, it is useful to start by considering the findings relating to capital flows in such economies. Portfolio investment flows can lower the cost of funding and improve economic development (IMF, 2020; Hannan, 2018). However, global uncertainty can result in tightening economic conditions and increased capital flow volatility, resulting in substantial risks (IMF, 2020). Overall, one reason for the unambiguous effects of capital flows is that they are procyclical, which implies that they can lead to contagion effects and act as a propagation mechanism of shocks (Li et al., 2018; Raddatz and Schmukler, 2012). Countries with less developed financial systems are particularly vulnerable (Korinek and Sandri, 2016) and there is some evidence to suggest that countries need specific thresholds in terms of financial and institutional development for capital flows to be beneficial (IMF, 2012). Moreover, the macroeconomic effects of capital flows differ across countries and time (Eng and Wong, 2016; Beckmann and Czudaj,

¹One explanation for this result is that precautionary savings can arise from uncertainty and reduce consumption (Basu and Bundick, 2017; Fernández-Villaverde, Guerrón-Quintana, Kuester, and Rubio-Ramírez, 2015).

2017).

When it comes to determinants of capital flows, a standard distinction separates global “push” and country-specific “pull” factors. The survey article by [Koepke \(2019\)](#) identifies lower global risk aversion, lower mature economy interest rates and higher global economic growth as the key global push drivers that result in higher capital flows to emerging market economies, while higher domestic economic growth, higher asset returns, and lower country risk are associated with higher portfolio capital flows. Recent literature has also emphasized the role of news and sentiment on capital flows. A recent study by [Fraiberger, Lee, Puy, and Ranciere \(2021\)](#) shows that both domestic and global news sentiment can affect capital flows and stock market dynamics. The results of [Caporale, Ali, Spagnolo, and Spagnolo \(2022\)](#) also suggest that media news affects cross-border portfolio flows. Other studies which focus on the role of news are provided by [Koepke \(2018\)](#), who shows that monetary policy expectations affect portfolio flows, and [Fratzscher \(2012\)](#), who analyzes the relevance of survey expectations for fund flows to emerging market economies during the Global Financial Crisis. Work by [Beckmann, Boonman, and Schreiber \(1999\)](#) provides further evidence for the effects of expectations and sentiments on capital flows in emerging markets. [Brennan, Cao, Strong, and Xu \(2005\)](#) argue that domestic investors are better informed about domestic assets compared with foreign investors, which leads to a home bias in investor portfolios. The foreign investor is more sensitive to new public information and as a result, foreign investors buy from domestic investors when there is good news and asset prices rise, and sell to domestic investors when there is bad news and asset prices fall.

From an econometric point of view, a key question is how global uncertainty shocks can be identified.

The literature studying the effects of uncertainty on capital flows often uses GARCH models or simple volatility measures of either capital flows or macroeconomic variables to analyze the effects on capital flows ([Demir, 2009](#); [Aizenman and Marion, 1999](#)). In a nutshell, the evidence suggests that higher volatility or uncertainty results in lower capital flows ([Gourio, Siemer, and Verdelhan, 2015](#)). In line with the literature on global “push” factors, several studies have shown that global uncertainty plays a key role in capital flow dynamics, a finding which has recently been provided for fund flows by [Bettendorf and Karadimitropoulou \(2023\)](#) and in the context of news by [Fraiberger et al. \(2021\)](#).

Overall, several papers do not directly identify uncertainty shocks but rely on established uncertainty measures such as the economic policy uncertainty approach of [Baker, Bloom, and Davis \(2016\)](#). Recent work by [Agoraki, Wu, Xu, and Yang \(2024\)](#) uses, for example, economic policy uncertainty, geopolitical risk measures and a world uncertainty index and identifies a flight-to-safety effect from capital flows in times of uncertainty. [Choi, Ciminelli, and Furceri \(2023\)](#) adopt country-specific world uncertainty indexes and show that uncertainty leads to a substantial and persistent decrease in bank credit and portfolio debt inflows. They also find that mutual funds react to both country-specific and global uncertainty while ETFs only react to global uncertainty. [Caggiano and Castelnovo \(2023\)](#) propose a global financial uncertainty index and show that global financial uncertainty shocks may have amplifying effects on output during a recession such as the Great Recession.

In other work, uncertainty is also often proxied by volatility estimates from large-scale VARs or factor models with stochastic volatility components. [Mumtaz and Theodoridis](#)

(2017) and [Mumtaz and Musso \(2021\)](#) use a factor model with stochastic volatility to disentangle country-specific and global uncertainty, while [Berger and Grabert \(2018\)](#) rely on a factor model with stochastic volatility to obtain global and country-specific measures of output growth uncertainty. One of the few studies which focuses on emerging markets is provided by [Miescu \(2019\)](#), who uses a panel proxy structural VAR to investigate the effects of a global uncertainty shock on emerging economies. While focusing on advanced and emerging economies as country groups is an intuitive choice, there is also some evidence that uncertainty spillovers can differ substantially across countries. [Beckmann et al. \(1999\)](#) focus on a global VAR and analyze survey-based country specific uncertainty spillovers instead of global uncertainty. Their results, based on generalized impulse response functions (IRFs) point to substantial variations regarding both the kind of uncertainty and the effects on the real economy and the financial sector.

[Bhattarai, Chatterjee, and Park \(2020\)](#) analyze spillover effects of US uncertainty shocks in a way that is closely related to our approach. They provide evidence to suggest that US uncertainty shocks have negative effects on output, prices, stock prices in 15 selected EMEs. Moreover, they show that those shocks trigger capital outflows in EMEs.

What distinguishes our work from the previous literature is that we identify a structural global uncertainty shock, which is orthogonal to other shocks by definition and is uncorrelated with all the variables in the model, including their lags. The high frequency identification methodology provides us with a very precise measure of uncertainty. This enables us to estimate disaggregated effects of structural uncertainty shocks on bond and equity flows in a large set of single advanced and emerging market economies. An additional benefit of this approach is that it enables us to investigate potential factors amplifying or dampening the effects of uncertainty by exploiting the cross-sectional dimension of the responses of flows to uncertainty. Thus, our approach allows us to highlight heterogeneity across regions, asset classes and even the individual country level.

3 Data and empirical methodology

Several studies which analyze capital flows dynamics rely on the International Financial Statistics (IFS) database provided by the IMF ([Beckmann et al., 1999](#); [Ahmed and Zlate, 2014](#)). A shortcoming of these series is that only quarterly and annual data are available. This is very restrictive given the topic of our investigation, since financial markets usually show an instant response to events. Therefore, data at a relatively low frequency are not well-suited for analyzing capital flow dynamics in the context of uncertainty shocks.

In this view, we employ fund flow data from EPFR Global. Similarly to [Bettendorf and Karadimitropoulou \(2023\)](#), the dataset distinguishes between equity and bond fund flows into selected advanced and emerging market economies. EPFR data are directly obtained from fund managers or administrators and includes 135,000 individual investment funds and over US\$ 48 trillion in total assets ([Hördahl and Valente, 2022](#)). Nevertheless, the EPFR global database only accounts for a fraction of overall international capital flows. However, several studies have shown that EPFR data provide an adequate measure of overall capital flows for a broad range of countries ([Jotikasthira, Lundblad, and Ramadorai, 2012](#) and [Fratzscher, 2012](#)), displaying a high correlation with official balance of payments statistics ([Kaufmann, 2023](#)). Moreover, the distinction between equity and

bond fund flows enables us to analyze whether the behavior of investors in response to uncertainty shocks differs between these two kinds of flows.

Overall, our study takes into account EPFR Global time series of 25 emerging market and 21 advanced economies from 2005M8 to 2023M12 at monthly frequency. In view of the continuous increase and the high volatility of fund flows, it is important to choose a sensible measure. Given that we are interested in potentially unwinding capital flows on the aftermath of an uncertainty shock, we calculate the country-specific fund flows as a percentage of the estimated ending allocation by EPFR Global. A positive percentage corresponds to inflows and a negative percentage to outflows. This normalization enables us to compare the effect of uncertainty shocks across countries and between equity and fund flows and also prevents an explosive variance over the sample period. Note that EPFR data are not totally equivalent to official balance of payments statistics, as EPFR data also capture investments from agents within the country under investigation.

Due to our focus on financial market dynamics, our VAR model specification deviates slightly from that of [Piffer and Podstawski \(2018\)](#). Our model covers the time period from 1983M1 to 2023M12. The logic behind the smaller sample is to exclude the oil price shocks in the 70s and their consequences on the world economy. Within the SVAR model, we also consider several macroeconomic indicators for the US economy: S&P 500 (in logs), VXO, broad nominal effective exchange rate (in logs), shadow short rate by Wu and Xia, 10-year benchmark yield, industrial production (in logs) and core inflation (in logs). The gold price (in logs) serves as a global variable and is intended to account for endogenous uncertainty. These indicators are obtained from Refinitiv, Haver Analytics, the World Bank and the FRED database of the Federal Reserve Bank of St Louis.

In order to estimate the sensitivity of those flows with respect to unexpected changes in uncertainty, we adopt the uncertainty measure proposed by [Piffer and Podstawski \(2018\)](#). Their framework is based on the idea that variations in the price of gold act as an external instrument to identify exogenous uncertainty shocks. The variation in price is based on a relatively small intra-day window around specific uncertainty events. More precisely, we compute changes in the price of gold between the London gold fixing at 10:30 and 15:00 GMT and between the fixing at 15:00 and 10:30 GMT on the following day. The change in price corresponding to an uncertainty event serves as an observation in the proxy variable. We use the updated list of events provided on Michele Piffers' website and extend it by an observation referring to the beginning of Russia's war of aggression against Ukraine on 22 February 2022 (Δ gold price within corresponding window: +3.29%). This way, it is unlikely that the identified shock is correlated with other structural shocks. One exception might be a news shock. However, such a setting is particularly useful when analyzing the effects of portfolio flows which resemble the high frequency characteristics of financial markets. With the help of further assumptions, it is also possible to disentangle uncertainty from news shocks, which will be explained later.

In a second step, we adopt local projection estimates to analyze the effect of the resulting shocks on capital flows. After this, we regress the size of the response of capital flows on macroeconomic and institutional variables to shed light on potential factors that may amplify or dampen the effects of the shocks. In this exercise, we run cross-sectional regressions of impulse response functions (e.g. the impact) on the averages over the whole period (i.e. 2005-2023). In some cases, data were not available for the whole period. Here, the average is only computed for the available period.

3.1 SVAR Model

Our model employs the identification strategy of [Piffer and Podstawski \(2018\)](#). We estimate the reduced form VAR model

$$y_t = c + \sum_{i=1}^p A_i y_{t-i} + u_t, \quad (1)$$

where y_t is a $N \times 1$ vector of endogenous variables with $p = 6$ lags. As mentioned above, the endogenous variables are: S&P 500, VXO, gold price, nominal effective exchange rate, shadow short rate, 10-year benchmark yield, industrial production and core inflation. c denotes a constant term, A a $N \times N$ loading matrix and $u_t \sim i.i.d.(0, \Sigma)$ a $N \times 1$ vector of residuals. The residuals have a linear relation with the $N \times 1$ vector structural residuals $\epsilon_t \sim i.i.d(0, I_k)$, represented by the $N \times N$ matrix B :

$$u_t = B\epsilon_t \quad (2)$$

We denote the structural uncertainty shock at time t as ϵ_t^u and summarize all $(k - 1) \times 1$ remaining shocks as ϵ_t^* . Substituting both terms in (2) yields:

$$u_t = b^u \epsilon_t^u + B^* \epsilon_t^*. \quad (3)$$

Thus, the identification of the structural uncertainty shock ϵ_t^u requires information about the impulse vector b^u . We obtain this information from a proxy variable m_t , which should be correlated with the structural uncertainty shock ϵ_t^u (see eq. 4) but uncorrelated with the other $k - 1$ structural shocks ϵ_t^* (see eq. 5). Then,

$$E(\epsilon_t^u m_t) = \phi_u \neq 0, \quad (4)$$

$$E(\epsilon_t^* m_t) = 0, \quad (5)$$

holds, where ϕ_u denotes an unknown $k \times 1$ vector. As outlined by [Piffer and Podstawski \(2018\)](#), it may be the case that the identified uncertainty shock is contaminated by news shocks. In our case, it was indeed a problem that the identified shock translated into impulse response functions which were at odds with economic theory. We therefore followed the approach of the authors and identified a news shock as a second shock to avoid a potential contamination of the uncertainty shock. This requires a further assumption, namely that the correlation between the uncertainty instrument and the uncertainty shock is greater than the correlation between the uncertainty instrument and the news shock. The same logic applies to the news instrument and the news shock. The proxy for the news shock is taken from [Piffer and Podstawski \(2018\)](#). It is the first principal component of a number of news shocks, estimated in the economic literature. For a detailed technical explanation of the identification, we refer the reader to Appendix D in [Piffer and Podstawski \(2018\)](#).

The identification of two shocks resulted in well-behaved and economically reasonable impulse response functions (see Figures 3 and 6) which will be discussed later. Hence, we conclude that initially our uncertainty shock was indeed contaminated.

3.2 Local projections

In order to quantify the effects of our structural uncertainty shock on the fund flows data, we follow [Jordà, Schularick, and Taylor \(2013\)](#) and run simple OLS regressions with robust standard errors as follows:

$$flows_{t+h}^{a,c} = \alpha_h^{a,c} + \beta_h^{a,c} shock_t^{MT,unct} + \sum_{i=1}^p \gamma_i^{a,c} shock_{t-p}^{MT,unct} + \sum_{j=1}^q \phi_j^{a,c} flows_{t-q}^{a,c} + \epsilon_{t+h}^{a,c} \quad (6)$$

Here, we regress for each projection period $h = 0, 1, \dots, 12$ a constant (α), the median target of the draws of uncertainty shocks ($shock_t^{MT,unct}$) as well as control variables such as $p = 6$ lags of the structural shock and $q = 6$ lags of the endogenous variable – the fund flows of asset class $a = \{equity\ funds, bond\ funds\}$ into country c . Thus, loading parameter β_h represents the response of the corresponding fund flows to the structural uncertainty shock at horizon h .

4 Results

As a starting point, we compare the structural shocks of our benchmark model with those obtained from [Piffer and Podstawski \(2018\)](#) based on Figure 1. The figure provides the instrument plots, the structural uncertainty shocks and the structural news shocks. While the investigation period of [Piffer and Podstawski \(2018\)](#) starts in 1962 and ends in 2015, we focus on the period from 1983 to 2023. This period excludes the turbulent period of the collapse of the Bretton Woods System and the oil price shocks in the 1970s. The correlation coefficient during the overlapping period is 0.69. For some spikes over this period, our uncertainty shocks are slightly less pronounced. For the most recent period, we identify a major hike in uncertainty in February 2020 – the Covid-19-pandemic – but fairly normal levels thereafter. This is in line with the path of financial markets over the pandemic which have not experienced major disruptions, also as a result of the monetary policy response. The gold price rose to an all time high of US\$ 1,902/toz in July 2020 but cooled down afterwards. The bottom part of Figure 1 illustrates that the structural news shock we obtain also resembles the dynamics obtained by [Piffer and Podstawski \(2018\)](#).

We interpret these findings as evidence for the soundness of our model. The figure shows that the structural uncertainty shock contains much more information than the instrument. In this context, we observe that the instrument shows a negative change in the price of gold (i.e. a reduction in uncertainty) when COVID-19 was declared as a pandemic. Obviously, there was an excess supply, probably because market participants preferred cash holdings at that time. Nevertheless, the SVAR model correctly identifies COVID-19 as causing an increase in uncertainty.

To get a better understanding of our instrument, we analyze whether the variations in the instrument (i.e. changes in the price of gold around selected events) have direct effects on the capital flows under investigation. The corresponding local projections of the portfolio flows, taking the instrument in isolation (see Figure 2a) illustrate that the resulting responses of portfolio flows tend to be negative but are insignificant and characterized by high estimation uncertainty. On the other hand, Figure 2b illustrates that

the response of portfolio flows to our structural shock obtained from the SVAR displays a clearly significant and negative effect on flows. Hence, the results obtained from the structural uncertainty shock are more intuitive. There are several reasons for this finding. First, the structural shock is not contaminated by a potential news component. Second, the additional information provided by the SVAR model could correct potential misspecifications of the instrument (see the discussion on the COVID-19 spike above). Third, the SVAR model provides additional information on uncertainty. The richer and longer dataset might also give a more precise estimate of uncertainty. In other words, the short sample period in which EPFR data were available may not be sufficient for a precise estimation of uncertainty effects. Events that occurred before EPFR data became available might have helped to identify uncertainty that was not captured by our instrument during the short sample of EPFR data availability.

We take this as further assurance regarding our empirical approach and will discuss the effects of capital flows on a more granular level further below.

4.1 Effects of uncertainty shocks

Figure 3 presents the full results from our benchmark model. In a theoretical framework, this shock can be understood as uncertainty regarding future productivity, output or interest rates. Firms may postpone investments and households might reduce their consumption. Other potential channels include increasing risk premia, which could lead banks to reduce their credit supply, ultimately resulting in a decline in economic activity. In any case, an expected decline in economic activity may trigger capital outflows. The results are in line with expectations and display instantaneous and significant increases in the VXO, the nominal exchange rate (e.g. an appreciation) and the gold price. Note here that none of the responses of the variables (including the gold price) are predetermined by our identification strategy. At the same time, we observe clearly negative effects on industrial production and stock prices. The effect on core inflation, however, is insignificant, while the IRFs suggest a mild increase on impact. This is an interesting finding, as uncertainty shocks are often classified as demand shocks (as in [Leduc and Liu \(2016\)](#)). However, uncertainty shocks can also act as supply shocks if firms have an upward pricing bias in times of uncertainty ([Andreasen, Caggiano, Castelnuovo, and Pellegrino, 2024](#)). [Bettendorf \(2025\)](#) provides another interpretation of a positive inflation response. He argues that the uncertainty shock, identified by changes in the price of gold, encompasses supply-side and demand-side shocks. More specifically, events such as armed conflicts or natural disasters can result in supply-chain disruptions and an increased demand for oil, which could have second-round effects on core inflation. This in turn may boost inflation. The fall in yields for government bonds with 10-year maturity may be the result of safe-haven effects on the one hand and a transmission of the significant decline in the shadow short rate on the other. Figure 6 provides the responses of the benchmark models to news shocks.

As a next step, we focus on our main question of investigation and compare the effects of global uncertainty on both bonds and equity flows. We recall that we measure capital flows as outflows in a percentage of the estimated ending allocation by EPFR Global.

Figure 4 compares the effects across countries for both bond fund and equity fund flows. Two main results emerge. For both emerging and advanced economies, bond fund

flows are much more strongly affected by uncertainty shocks compared with equity flows over both the short and medium run. For emerging economies, these results align with the results of [Li et al. \(2018\)](#), who show that bond flows in developing countries react more strongly to real exchange rate appreciations compared with equity flows.

We also observe that uncertainty shocks have much stronger negative effects on capital flows in emerging economies for both bond and equity flows. For bond flows, this difference can be observed over the short and medium run while the differences between the two country groups appear to vanish after 4 months. This suggests a short-term unwinding of equity flows and a more pronounced long-term unwinding of bond flows.

Table 1 compares the initial effect of uncertainty shocks in period 0 on bonds and equity flows of countries by size. Overall, the unwinding effect of uncertainty shocks is about twice as high in emerging economies as in advanced economies. In both country groups, the outflows of bonds are also twice as high as those of equity flows.

Figure 5 visualizes the initial responses for both country groups. The graph illustrates that the response to uncertainty shocks is negative across the board. The graph also illustrates the much stronger response of bond flows in emerging markets. Moreover, it becomes apparent that the response of equity and bond flows does not seem to show a strong correlation in emerging markets, whereas there is a clear positive relationship for advanced economies, implying that countries that experience strong bond outflows also experience strong equity outflows. This hints at similar determinants of portfolio flow responses to uncertainty shocks in advanced, but not emerging, economies. We follow up on this in the next section.

Overall, our results show that global shocks are transmitted to emerging markets via equity and bond markets, a result which aligns with recent results from [Han \(2023\)](#). Our findings also align with recent results from the [IMF \(2020\)](#), stating that equity flows are less sensitive to global factors than debt flows. The strong response of debt flows is interesting, given that a strong increase in emerging market debt is denominated in domestic currency. Moving away from foreign debt-denominated currency eliminates direct risk premia, which can result from a currency mismatch, and the reliance on foreign currency external debt, which has been labeled the “original sin” ([Eichengreen and Hausmann, 1999](#); [Bertaut, Bruno, and Shin, 2024](#)). However, our results show that debt flows are still strongly affected by global uncertainty shocks. International investors who manage dollar portfolios have a strong incentive to reduce their debt positions if they expect the dollar to appreciate after uncertainty shocks. However, while dollar appreciation can lead to stronger sales of local currency bonds compared with dollar-denominated bonds ([Bertaut et al., 2024](#)), dollar-denominated debt is also strongly affected by global factors and is likely to respond strongly to uncertainty shocks. Recent results from [Kaufmann \(2023\)](#) show that a loosening of US monetary policy increases inflows to both equities and bonds and that such effects are particularly strong for debt high-yield bonds. From this perspective, our results point to unwinding capital flows in the aftermath of uncertainty shocks.

4.2 Covariates of uncertainty effects

As a final step, we analyze whether initial responses of portfolio flows to uncertainty shocks are related to macroeconomic or institutional factors. We use a set of established

indicators which include economic growth, inflation, current account openness and financial market dynamics and measures of financial development as well as investment in research and development. Given the heterogeneous responses identified in the previous section, we conduct cross-country regressions for advanced and emerging economies as well as for both bond and equity flows. While we are unable to identify causal effects given the small number of and endogeneity issues, this exercise may help to shed some light on potential determinants of capital outflows in the aftermath of uncertainty shocks.

Table 2 and 3 provide the corresponding results for both country groups. Due to the low number of observations and potential multicollinearity, we conduct separate regressions for each indicator. Note that the initial responses of fund flows are all negative. Hence, a positive coefficient indicates a less negative response of capital flows to uncertainty shocks.

The results provided in Table 2 for emerging economies show that both higher number of ATMs and investments in research and development coincide with lower initial bond outflows in the aftermath of uncertainty shocks. In the case of bond flows, a similar effect is observed for the number of secure servers, a proxy for infrastructure quality.

The results for advanced economies in Table 3 confirm the effect of investment in research and development as well as investments in research and development for both kinds of portfolio flows. Lower portfolio outflows are also observed for internet use for bond flows. Another intuitive result is that stronger outflows are observed in the case of higher long-term yields.

Overall, these findings suggest that domestic policies and macroeconomic developments may be related to the intensity of capital outflows after global uncertainty shocks. As previously discussed, this is significant since the importance of the global financial cycle has led to a discussion of whether domestic policymakers are able to affect international capital movements in the aftermath of global shocks. But, note that this specific exercise provides measures of correlation and not causality. Our results resemble the findings of Choi et al. (2023) for the global uncertainty index, as they too identify a heterogeneous response across countries and identify larger effects for developing economies which are more vulnerable in the case of open capital markets.

5 Conclusion

In this paper, we analyze the effects of uncertainty shocks on portfolio flows for both emerging and advanced economies. Having analyzed 25 emerging market and 21 advanced economies for the period from 2005M8 to 2023M12, our results show that uncertainty shocks have much stronger negative effects on capital flows in emerging economies for both bond and equity flows. Our results also show that bond fund flows are much more strongly affected by uncertainty shocks compared with equity flows over both the short and medium run. Finally, we find that country-specific characteristics and macroeconomic developments covary with the intensity of outflows in the aftermath of uncertainty shocks.

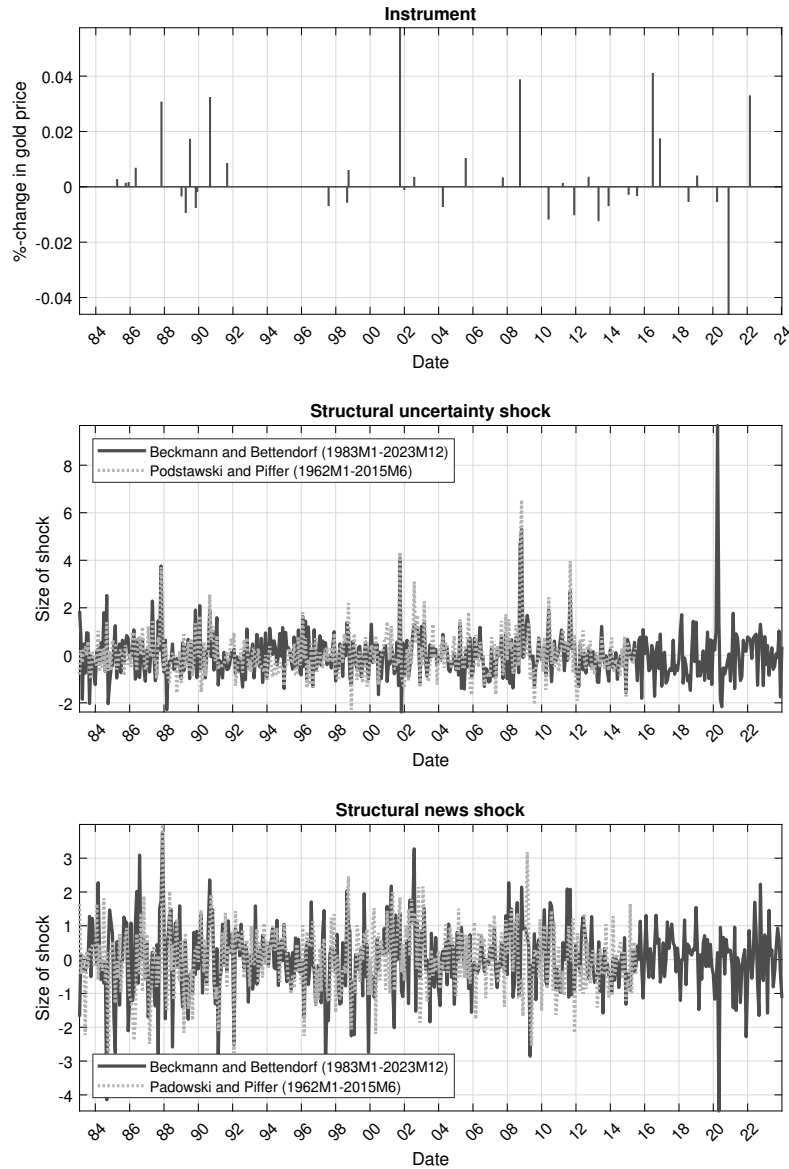
Our results offer several interesting avenues for future research. Analyzing the determinants of the vulnerability of emerging markets to global shocks would certainly be an intriguing subject of future study, and our results suggest that several factors come into play.

Another extension of our work relates to the macroeconomic effects of unwinding capital flows in emerging economies in the aftermath of an uncertainty shock. Sudden stops in capital flows frequently lead to a tightening of financial conditions, and the recent literature has emphasized the role of credit denomination in the context of capital flows. Emerging markets have increasingly turned to issuing government debt in domestic currency which might lead to a stronger effect on capital outflows since dollar-denominated debt can be regarded as a hedge in uncertain times due to its dominance. On the other hand, it is likely that debt denominated in local currency will react more strongly to domestic shocks.

A Appendix

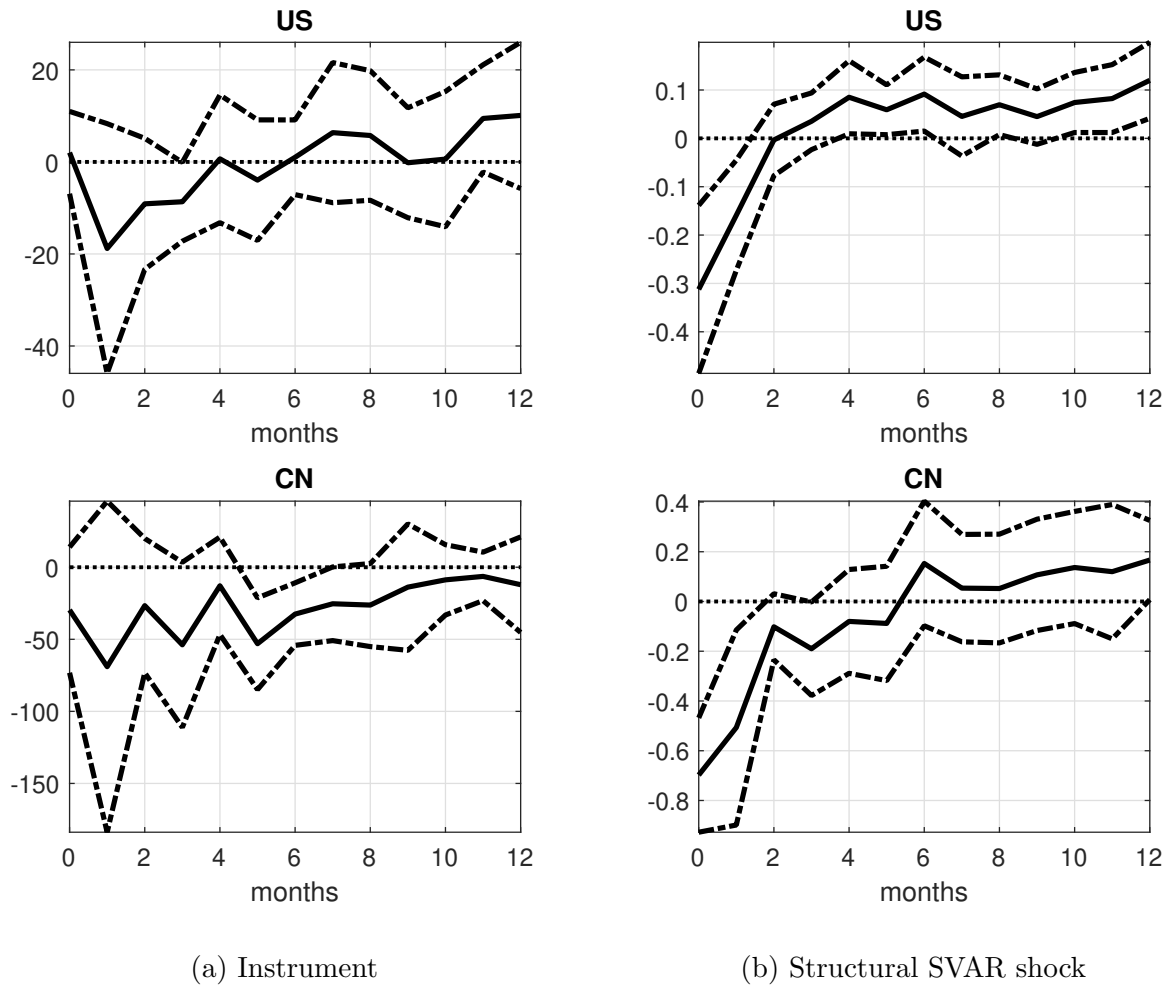
A.1 Figures

Figure 1: Comparison of structural shocks



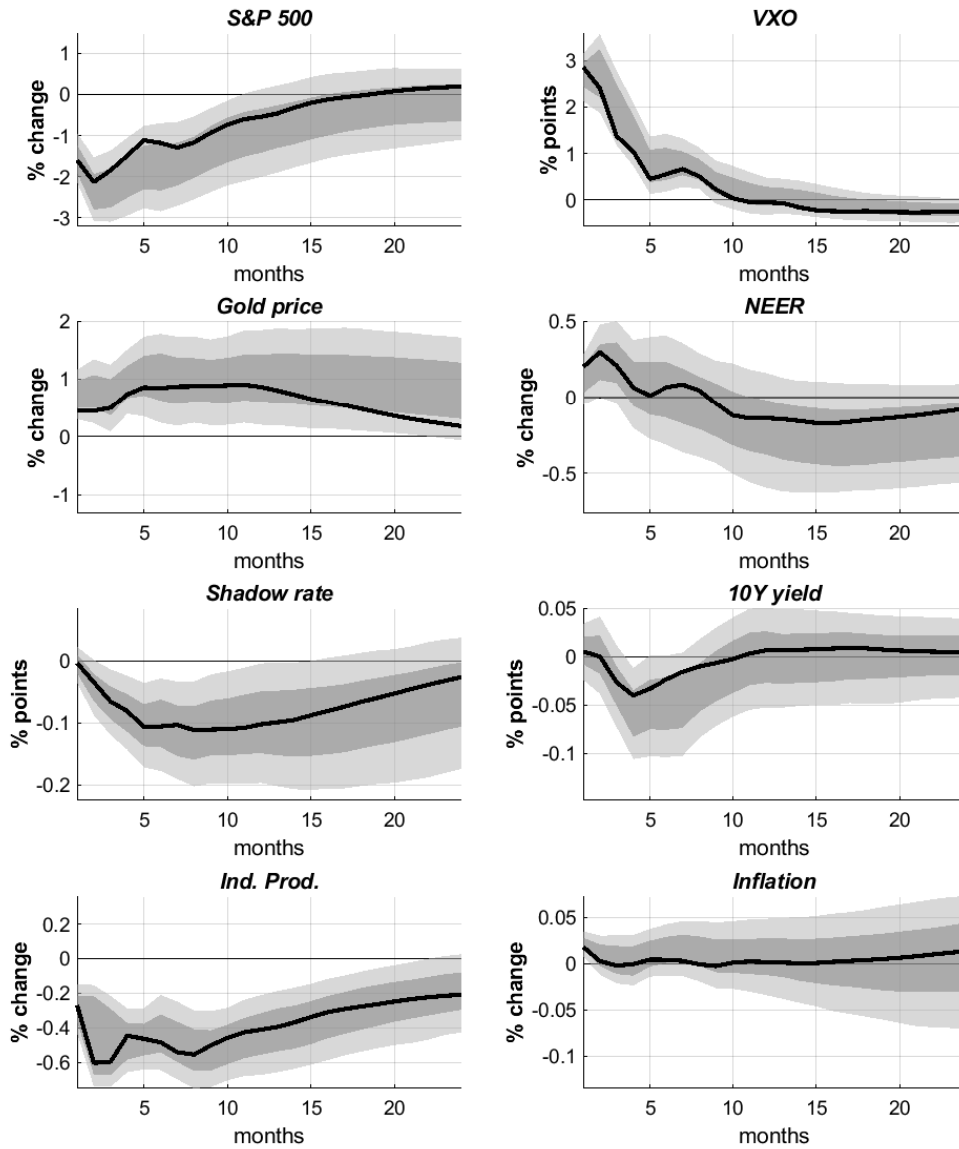
Notes: The figure displays our instrument as well as a comparison between the structural shocks of our benchmark model and the shocks obtained from [Piffer and Podstawski \(2018\)](#). The correlation coefficient during the overlapping period for the uncertainty shock is 0.69, whereas that of the news shock is 0.36.

Figure 2: Local projections of selected bond fund flows given different measures



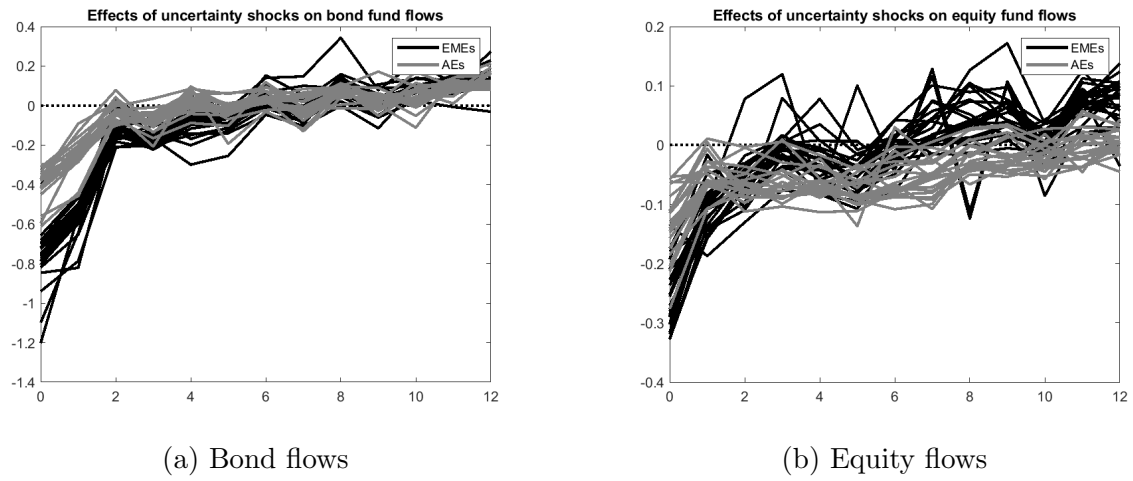
Notes: Panel (a) displays local projections of selected bond fund flows taking the instrument in isolation. Panel (b) shows local projections taking into account the structural VAR shock.

Figure 3: IRFs of the benchmark model on the uncertainty shock



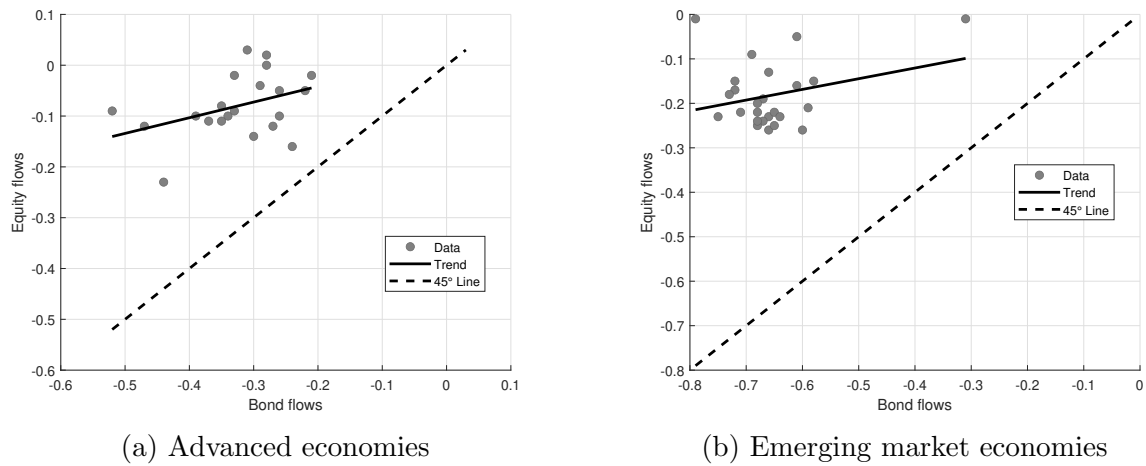
Notes: The figure displays the the IRFs of US macroeconomic variables as well as the gold price following the uncertainty shock. Grey-shaded areas represent the 95% and 68% confidence intervals. The black lines represent the IRFs of the median target model.

Figure 4: Local projections of fund flows following an uncertainty shock grouped by equity class



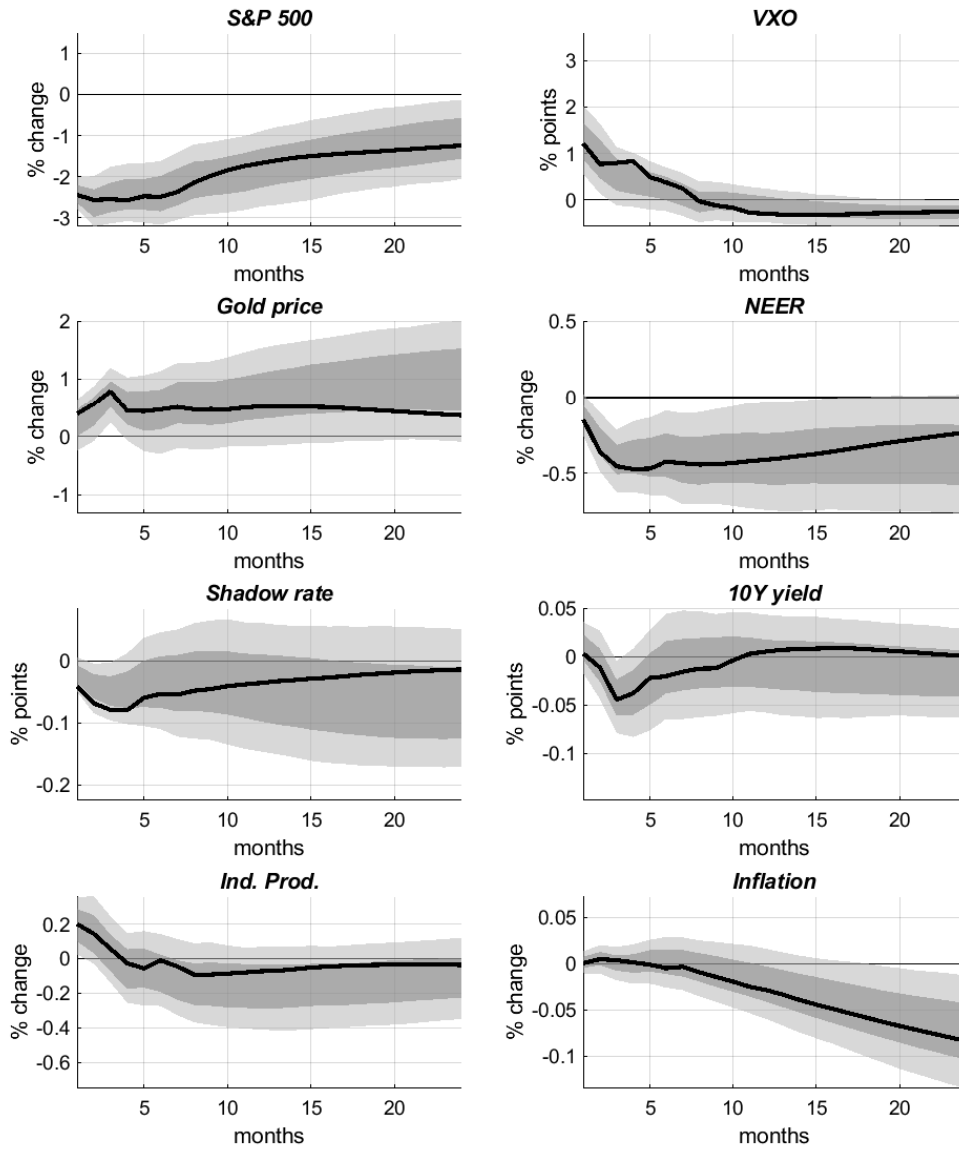
Notes: The figure displays local projections of fund flows following the uncertainty shock. Grey lines correspond to local projections of EME country-specific flows and black lines to AE country-specific flows. Note that the very volatile response of Ukraine has been excluded from the plots for expositional purposes.

Figure 5: Responses of equity and bond flows within regions



Notes: The figures display the impact of an uncertainty shock on equity flows plotted against bond flows within a specific region.

Figure 6: IRFs of the benchmark model on the news shock



Notes: The figure displays the the IRFs of US macroeconomic variables as well as the gold price following the news shock. Grey-shaded areas represent the 95% and 68% confidence intervals. The black lines represent the IRFs of the median target model.

A.2 Tables

Table 1: Effects on impact (local projection at $t = 0$) sorted by size

EMEs				AEs			
Bonds		Equities		Bonds		Equities	
KS	-0.31	KS	-0.01	US	-0.21	JA	0.03
SF	-0.58	CO	-0.01	ST	-0.22	GE	0.02
CZ	-0.59	CN	-0.05	SW	-0.24	CD	0.00
ML	-0.60	UK	-0.09	AT	-0.26	US	-0.02
CN	-0.61	BR	-0.13	NO	-0.26	AU	-0.02
ME	-0.61	RO	-0.15	IR	-0.27	UI	-0.04
RF	-0.64	SF	-0.15	CD	-0.28	AT	-0.05
ID	-0.65	ME	-0.16	GE	-0.28	ST	-0.05
TR	-0.65	TU	-0.17	UI	-0.29	FR	-0.08
HU	-0.66	VI	-0.18	SP	-0.30	SI	-0.09
CH	-0.66	AR	-0.19	JA	-0.31	IT	-0.09
BR	-0.66	PO	-0.20	AU	-0.33	FI	-0.10
AR	-0.67	CZ	-0.21	IT	-0.33	DE	-0.10
KA	-0.67	ID	-0.22	FI	-0.34	NO	-0.10
PO	-0.68	IN	-0.22	NE	-0.35	BE	-0.11
EG	-0.68	EG	-0.22	FR	-0.35	NE	-0.11
PE	-0.68	TH	-0.23	BE	-0.37	HK	-0.12
PH	-0.68	CH	-0.23	DE	-0.39	IR	-0.12
UK	-0.69	RF	-0.23	GR	-0.44	SP	-0.14
IN	-0.71	KA	-0.24	HK	-0.47	SW	-0.16
RO	-0.72	PH	-0.24	SI	-0.52	GR	-0.23
TU	-0.72	PE	-0.25	—	—	—	—
VI	-0.73	TR	-0.25	—	—	—	—
TH	-0.75	HU	-0.26	—	—	—	—
CO	-0.79	ML	-0.26	—	—	—	—
Std.:	0.09	Std.:	0.07	Std.:	0.08	Std.:	0.06
Mean:	-0.66	Mean:	-0.08	Mean:	-0.32	Mean:	-0.08

Notes: The table displays the (average) effect of an uncertainty shock on the corresponding country flows sorted by size. Almost all responses are statistically significant at the 90% confidence level on impact. The only exceptions are equity flows into Japan, Canada and Germany.

Table 2: Covariates of the uncertainty effects in emerging market economies

Variable (avg.)	Response of bond flows			Response of equity flows			nobs
	Coef.	p-value	R^2	Coef.	p-value	R^2	
# of ATMs	0.0012	0.01	0.44	0.0007	0.00	0.23	24
Inv. in res. and dev.	0.0938	0.00	0.67	0.0536	0.00	0.31	24
# of secure servers	0.0000	0.05	0.03	0.0000	0.23	0.02	24
Internet use	0.0028	0.12	0.26	0.0011	0.28	0.06	24
Growth	-0.0018	0.76	0.00	0.0015	0.89	0.00	24
CA % GDP	0.0064	0.39	0.05	0.0062	0.23	0.07	24
Reserves % ext. debt	0.0001	0.59	0.02	0.0001	0.59	0.02	18
Inflation	-0.0787	0.24	0.06	-0.0393	0.48	0.02	23
Long-term rate	-0.0100	0.27	0.08	-0.0021	0.77	0.01	17
Short-term rate	-0.0029	0.31	0.03	-0.0005	0.80	0.00	24
Import coverage	-0.0010	0.69	0.00	-0.0010	0.69	0.00	22

Notes: The table displays the bi-variate relationships between the responses of fund flows following a structural uncertainty shock and other macroeconomic variables. We regressed the flows on a constant and one of the macroeconomic variables. P-values are derived from robust standard errors.

Table 3: Covariates of the uncertainty effects in advanced economies

Variable (avg.)	Response of bond flows			Response of equity flows			nobs
	Coef.	p-value	R^2	Coef.	p-value	R^2	
# of ATMs	0.0008	0.04	0.20	0.0008	0.00	0.40	21
Inv. in res. and dev.	0.0417	0.05	0.16	0.0402	0.06	0.25	21
# of secure servers	0.0000	0.69	0.01	0.0000	0.65	0.01	21
Internet use	0.0026	0.08	0.09	0.0021	0.24	0.10	21
Growth	-0.0077	0.75	0.01	0.0033	0.83	0.00	21
CA % GDP	-0.0045	0.30	0.11	0.0006	0.82	0.00	21
Inflation	0.0662	0.49	0.01	0.0198	0.80	0.00	21
Long-term rate	-0.0161	0.16	0.06	-0.0314	0.00	0.35	21
Short-term rate	0.0079	0.76	0.00	0.0029	0.88	0.00	21

Notes: The table displays the bi-variate relationships between the responses of fund flows following a structural uncertainty shock and other macroeconomic variables. We regressed the flows on a constant and one of the macroeconomic variables. P-values are derived from robust standard errors.

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