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The Role of U.S. Monetary Policy in Banking Crises across the World*

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Abstract

We examine the role of U.S. monetary policy in banking crises across the world by using a cross-country database spanning 69 countries over the 1870–2010 period. U.S. monetary policy tightening increases the probability of a banking crisis for those countries with direct linkages to the United States, either in the form of trade links or significant share of USD-denominated liabilities. Conversely, if a country is integrated globally, rather than having a direct exposure, the effect is ambiguous. These findings suggest that the effect of U.S. monetary policy in global banking crises is not uniform and is largely dependent on the nature of linkages with the United States.

JEL Classification: E44, E52, F42, G15

Keywords: banking crises, financial stability, monetary policy shocks, sudden stops, global financial cycles

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1 Introduction

Do U.S. monetary policy actions affect financial stability in foreign economies? Past experience suggests that they do, as in the early 1980s international debt crises preceded by the 1980–82 Volcker tightening and the Mexican Peso Crisis preceded by the 1994 Greenspan tightening. Additionally, during the last five years, since the current U.S. monetary policy easing cycle started we have seen the “taper tantrum” in the spring of 2013, the strengthening of the dollar and the fall in commodity prices in mid-2014, the RMB shock in mid-2015, and the turbulence in Argentina and Turkey in mid-2018. Motivated by these observations on earlier international financial crises and the recent attention in academic and policy circles on the topic, we raise the following questions in this paper: Do U.S. monetary policy decisions affect the probability of banking crises across the world? Are there differential effects depending on country characteristics and the nature of linkages with the United States and the rest of the world?

To answer these questions, we examine how the interaction of U.S. monetary policy with a country’s exposure to the United States and the rest of the world affects the probability of a banking crisis in those countries by using various macroeconomic, financial, and trade indicators. To this end, we construct a historical cross-country database covering 69 countries over the 1870–2010 period.

On one hand, extant literature shows that local monetary policy decisions affect financial stability. Financial markets may react to monetary policy changes as they influence the pricing of risky assets, including equity and bonds. Bernanke and Kuttner (2005) and Gilchrist et al. (2015), among others, show that monetary policy decisions affect equity and corporate bond risk premiums, respectively. Moreover, an accommodative monetary policy can increase financial instability by leading to buildups of financial vulnerabilities, such as credit booms or excessive financial leverage (Adrian and Liang, 2018). Such booms are generally associated with over-optimistic investors and lower loan quality. When booms reverse, the increasing number of defaults may stress the financial system and increase the likelihood of a banking crisis (see Schularick and Taylor, 2012; Baron and Xiong, 2017; Danielsson et al., 2018). However, this literature does not address how
external monetary policy decisions (e.g., monetary policy decisions in a hegemon country) could affect domestic financial stability.

On the other hand, in a recent influential paper, Rey (2015) argues that there is a global financial cycle which is driven by U.S. monetary policy decisions. Gourinchas (2017) shows in the context of an estimated DSGE model that the degree of financial spillovers between the United States and emerging market economies matters for the transmission of U.S. monetary policy, a potential transmission mechanism of Rey’s (2015) global financial cycles. Jorda et al. (2018) outline another potential linkage by showing that U.S. monetary policy plays an important role in shaping risk appetite across global equity markets.

Our paper fills the gap between the two aforementioned strands of literature. From a historical view, we study whether U.S. monetary policy is a uniform driver of financial vulnerabilities abroad or its effects are dependent on the country’s integration with the United States and the rest of the world.

Examining logit regressions in our panel of countries, we find that U.S. monetary policy tightening has a significant and positive contemporaneous effect on the probability of a banking crisis for those countries with direct exposures to the United States. The impact is statistically significant and economically meaningful. A 1% tightening in U.S. monetary policy increases the default probability by about 1% to 7%, for a given level of exposure to the United States. However, if a county is integrated globally rather than having a primary direct exposure to the United States, U.S. monetary policy has an ambiguous effect on that country’s probability of crisis. The results are robust to alternative definitions of monetary policy stance and monetary policy shocks as well as country specific macroeconomic and financial indicators such as GDP growth, inflation, and institutional quality of a country.

We capture banking sector stress using the systemic banking crisis database of Reinhart and Rogoff (2009). Since crises are rare events—a typical OECD country suffers a banking crisis once every 37 years—focusing on long time-series panel data helps to

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1We check the sensitivity of our findings by employing other systemic crisis databases of Bordo et al. (2001); Laeven and Valencia (2012); Gourinchas and Obstfeld (2012); Schularick and Taylor (2012). The results discussed in section 3.4 are qualitatively similar to those using Reinhart and Rogoff’s (2009) definition.
derive statistically meaningful relationships. However, using such historical data comes at the expense of limited data availability. The biggest challenge for this time period is to proxy U.S. monetary policy decisions. In the baseline specifications, we proxy U.S. monetary policy stance by using the changes in the U.S. 3-month Treasury rates. In alternative specifications, for the robustness analysis, we first disentangle the unexpected component of monetary policy changes by computing Taylor-rule residuals. Second, for the more recent period starting in 1990s, we use monetary policy shocks based on three-month-ahead fed funds futures rate (Gertler and Karadi, 2015) or six-month Eurodollar contracts (Rogers et al., 2014), and the FED Greenbook forecasts of output growth and inflation along with the fed funds rates to estimate shocks (Romer and Romer, 2004), and we reach similar conclusions.

To identify the implications of a country’s integration with the United States and globally, we interact U.S. monetary policy proxies with various measures of integration. In our baseline regressions, following Frankel and Rose (1998); Calderon et al. (2007), we use a country’s bilateral trade intensity with the United States as a proxy for direct economic integration. In contrast, we measure the economic integration of a country with the rest of the world by using a trade openness ratio (exports plus imports as a percentage of GDP) such as in Yanikkaya (2003); Rodrik (2008). In addition to those two measures, we also use the gravity instrument of trade intensity and openness ratio proposed by Frankel and Romer (1999) because, as discussed in their paper, the effects of trade on income or crises are expected to be endogenous. Gravity instruments, however, are derived via countries’ geographic characteristics. Such characteristics are expected to be correlated with trade as they have important effects on trade and are plausibly uncorrelated with other determinants of economic and financial stability measures.

In our analysis of the more recent time period, in addition to the exposure measures introduced above, we use each country’s debt liabilities in USD, in net of assets, as a percent of GDP (liability dollarization, henceforth) (Lane and Shambaugh, 2010; Benetrix et al., 2015), and de-jure and de-facto measures of financial account integration. Liability dollarization is used as another proxy to measure the direct spillovers from the United States, since changes in U.S. monetary policy directly affects the debt servicing costs. As thoroughly discussed in the literature (i.e., Calvo (2002), Choi and Cook (2004),
Mendoza (2002), among others), liability dollarization is a significant source of financial stability risk in foreign economies. When U.S. monetary policy tightens, the cost of holding dollar-denominated debt for foreign economies rises as the rate at which the borrowers roll over their debt would be higher, and the value of the dollar relative to local currencies increases. The other two de-facto and de-jure indexes measure each country’s capital account and financial integration with the rest of the world, such as through regulations to international capital flows, bilateral investment agreements, international income payments, etc., and hence used as indirect exposure measures.

What are the channels through which U.S. monetary policy affects banking crises across the world? We argue that U.S. monetary policy affects banking crises across the world primarily through trade and capital flows channels. The trade channel will operate through changes in U.S. demand for foreign goods driven by changes in U.S. monetary policy. For instance, tightening in U.S. monetary policy reduces incomes and expenditures in the United States, which, in turn, leads to lower demand for both domestically produced and imported goods, and reduces activity and GDP abroad. Overall, the strength of this channel depends on the trade intensity with the United States.

U.S. monetary policy affects foreign economies through capital flows channel as well. Since U.S. monetary policy rates affect relative return on investment in foreign economies, it would also affect capital flows and, in turn, credit cycles and financial sector leverage in foreign economies. A negative monetary policy shock can lead to a credit boom in foreign economies since it is likely that capital would flow out of the U.S. due to an increase in reach-for-yield incentives. During a credit boom, loan quality decreases (Greenwood and Hanson, 2013), which eventually increases the likelihood of a banking crisis. Schularick and Taylor (2012) and Baron and Xiong (2017) find that excessive lending adversely affects the likelihood of a banking crisis and bank equity crash risk, respectively. Avdjiev et al. (2018) also show that capital flows are linked to boom–bust cycles and how such flows could in turn affect the banking sector. Hence, the findings of this literature suggest that a tight U.S. monetary policy could help rein in excesses and reduce the probability of a crisis (e.g., leaning-against-the wind channel, Adrian and Liang, 2018). Another line of literature finds that a tightening U.S. monetary policy might increase vulnerabilities, especially in emerging economies, since it might lead to a sudden reversal of capital flows.
(see Neumeyer and Perri, 2005; Uribe and Yue, 2006, etc.). Overall results would depend on which one of these effects is dominant.

We find evidence that the latter effect dominates. In particular, an increase in U.S. monetary policy rates significantly reduces capital flows to foreign economies for those countries with direct exposure to the United States. When the adjustment becomes disorderly, the crisis probability indeed increases. By splitting our sample into emerging market and developed countries, we find that the increase in the probability of a crisis due to disorderly adjustments in capital flows or sudden stops is an emerging market phenomenon.

This paper is related to three strands of literature: The first one is the literature on the spillovers of monetary policy. Rey (2015) builds on the empirical framework in Bekaert et al. (2013) and shows that U.S. monetary policy is a key driver of stock market volatility as measured by the VIX, which, in turn, is an important driver of the global financial cycle. Bruno and Shin (2015) study the relationship between capital flows and monetary policy. Jorda et al. (2018) study the synchronization of global markets and its relationship to a global financial cycle. They find that global financial cycles are closely related to changes in risk premiums, with changes in U.S. monetary policy driving risk appetite and thus serving as a transmission mechanism. In a recent paper, Avdjiev and Hale (2019) explore how U.S. monetary policy could affect foreign economies through capital flows, specifically through cross-border bank lending flows. We contribute to this literature on global financial cycles by providing empirical evidence in support of the hypothesis that the degree of financial spillovers matters. However, we argue, rather, that U.S. monetary policy affects global financial stability only to the extent that foreign countries have direct exposure to the United States. Those countries with indirect exposure do not always face an increase in their financial stability risks.

The second strand is the literature on the determinants of financial crises. Prominent early examples include Demirguc-Kunt and Detragiache (1998) and Kaminsky and Reinhart (1999a). Demirguc-Kunt and Detragiache (1998) consider the factors affecting the probability of a banking crisis for 65 countries for the period of 1980 to 1994. By constructing a data set of banking and currency crises spanning 120 years, Bordo et al. (2001) document that capital controls affect the probability of a crisis. Broner et al. (2013) look
at the behavior of capital flows during business cycles and economic crises. Forbes and Warnock (2012) build a large database to identify determinants of capital flow volatility and whether global or domestic factors play a larger role in determining extreme events. Several authors have made use of the Reinhart and Rogoff (2009) database, focusing on banking crises and relevant variables affecting their likelihood. Finally, Danielsson et al. (2018) show that domestic risk appetite—proxied by low financial volatility—is an important predictor of banking crises. We contribute to this literature by providing evidence that U.S. monetary policy decisions play a significant role in foreign banking crises. Moreover, we identify the domestic factors that play a role in determining how U.S. monetary policy affects financial stability risks of foreign countries.

The third strand is the literature on the role of integration in probability of crises. In this literature, there are two opposing views on the relationship between a country’s exposure to the world and whether such integration makes the country more or less prone to crises. On one hand, high integration may increase the probability of a crisis through propagation, as the country is more exposed to shocks from abroad, as in Stiglitz (2010). In a multi-country model, Azzimonti et al. (2014) argue that government debt increases with economic integration. Therefore, a policy implication of the model is that integration increases the vulnerability to a crisis. On the other hand, countries that are open to international financial and trade markets could be less vulnerable to shocks, per Kose et al. (2006); Cavallo and Frankel (2008). Cavallo and Frankel (2008) point out that a number of channels could reduce vulnerability to a crisis for countries with higher trade integration. First, countries that rely more on trade would be less prone to default, as they are heavily incentivized to maintain trade. Hence, international investors would be less likely to pull out of countries with high trade integration. In addition, trade integration helps countries better absorb shocks. We contribute to this literature by distinguishing the integration with the center country versus global integration.

The rest of the paper is organized as follows. Section 2 details the data we use and describes the empirical methodology. Section 3 summarizes our results. Section 4 offers concluding remarks.
2 Data, Descriptive Analysis and Empirical Methodology

In this section, we describe our data on banking crises, U.S. monetary policy decisions, exposure variables, and control variables. We highlight a set of stylized facts and also explain our rationale in using these data. Finally, we introduce the empirical methodology for our analysis.

2.1 Banking crises data

For our analysis, we create an annual panel data set for 69 countries spanning 1870–2010, as available. The sample includes 24 developed and 45 emerging countries (based on the IMF’s classification). Appendix B lists the countries included in our sample with their coverage. For banking crises data, we use the systemic banking crises of Reinhart and Rogoff (2009). Accordingly, a crisis is defined as an event with a closure, merger, or public takeover of one or more financial institutions or large scale government assistance of a systemically important financial institution. The unbalanced panel contains a binary indicator of whether a banking crisis starts in a given year and country and includes 239 distinct banking crises.

Figure 1 plots the unconditional probability of banking crises for each country in our sample, defined as the number of crises divided by the available sample period. Within the developed countries, Italy has the highest annual crisis probability at 6.38%; New Zealand has the lowest, 0.96%. For emerging countries, the annual unconditional crisis probability ranges from 0% for Mauritius to 7.8% for Brazil. Given the differences in the probability of banking crises for emerging and developed countries, it is important to explore how our analysis on the likelihood of banking crises differs for these two groups of countries.
Figure 1: Unconditional annual probability of banking crises
The figure presents the probability of banking crises for emerging and developed countries. For a given country, the probability of a banking crisis is calculated as the number of crises divided by the available sample period.

2.2 U.S. Monetary policy decisions

We proxy U.S. monetary policy decisions as the change in short-term interest rates from the Jorda et al. (2017) Macrohistory database. For the early period, until the establishment of the Federal Reserve in 1913, Macrohistory database obtains short-term rates for the U.S. from Lawrence H. Officer, “What Was the Interest Rate Then?” MeasuringWorth. The short-term rates series are from the Surplus Funds data and involves the short-term lending or borrowing of surplus funds, that is, funds that are considered excess by the lending institution and are required for immediate temporary use by the borrowing entity.\(^2\) An aspect that is worth clarifying is changes in short-term U.S. interest rates under the Gold Standard were a function of rate changes of the Bank of England and gold supplies. Hence, during the early part of our sample, the main driver of the short-term interest rates was the Bank of England’s monetary policy decisions, rather than the U.S. rates. In other words, it can be argued that the United Kingdom was indeed the

\(^2\)These data are available online at www.measuringworth.com/datasets/interestrates/
center country, rather than the U.S., until the end of the First World War. To test the robustness of our analysis, we alternatively use U.K. short-term interest rates until 1913 and U.S. interest rates in post-1914. We find that our main findings are unaltered (see section 3.4).

The changes in the monetary policy rate is subject to endogeneity because the monetary policy changes could reflect a response to domestic and global macroeconomic developments. The literature has used various approaches to identify the unexpected component of monetary policy decisions. One approach is to use Taylor rule residuals. Following the literature we postulate an outcome-based inertial Taylor rule and compute residuals of the estimated Taylor rule. We consider one of the widely-used specifications as surveyed in Knotek et al. (2016), Taylor and Williams (2010), among others.

\[
mpst_t = i_t - [0.85i_{t-1} + (1 - 0.85)(\pi_t + 0.5(\pi_t - \pi^*_t) + gap_t)]
\] (1)

where \(mpst_t\) is the Taylor residuals, \(i_t\) is the interest rate, \(\pi_t\) is inflation, \(\pi^*_t\) is the inflation target, and \(gap\) is the output gap. We compute the output gap as the deviation from an HP trend with a smoothing parameter of 6.25, following Ravn and Uhlig (2002). For the inflation target, we used the last 20 years’ inflation averages so that we allow the target to change throughout the historical sample we cover. Note that the results are qualitatively similar if a constant target rate, such as 2 percent, is used.

The advantage of using Taylor residuals is we can compute the unexpected component of monetary policy decisions for our historical sample. However, the literature has pointed to various problems with using Taylor rule residuals. For instance, to the extent that central banks and the private sector have information not reflected in the Taylor rule, the measurement of policy innovations is likely to be contaminated. Additionally, the choice of a specific data series to represent a general economic concept such as “real activity” is often arbitrary to some degree (see, for instance, Bernanke et al., 2005).

An alternative approach to identify the unexpected component of monetary policy decisions is to use the monetary policy surprises. We pursue this approach as a robustness in section 3.2. In particular, we use surprise series constructed by Gertler and Karadi (2015), Romer and Romer (2004) and Rogers et al. (2014). Romer and Romer (2004)
narratively identify changes in the federal funds rate targets surrounding FOMC meetings. By regressing these target changes on the current rate and the Greenbook forecasts for output growth and inflation in the following two quarters, they are able to separate the natural policy response of the economy from the exogenous monetary policy surprise. The residuals from this estimation can be used as a proxy for monetary policy shocks in regression analysis. Gertler and Karadi (2015) construct a measure of monetary policy surprise using the change in high-frequency interest-rate futures, limited to a 30-minute period surrounding the publication of a monetary policy decision. They then compute a measure of monetary policy shocks by taking the monthly average of these monetary policy surprises. Rogers et al. (2014) use a similar method to Gertler and Karadi (2015) but applied to the Eurodollar contracts, where monetary policy surprises are calculated using the fourth Eurodollar futures contract in a more limited time period, defined as 15 minutes prior to an FOMC announcement to 1 hour and 45 minutes after.

Table 1, panel A presents the descriptive statistics for the monetary policy proxies. The Taylor residuals (column II) have the most dispersion, followed by the Romer and Romer (2004) shocks (RR, column V), while the Gertler and Karadi (2015) shocks (GK, column III) and Rogers et al. (2014) shocks (RSM, column IV) have similar and relatively small standard deviations, in addition to similar means. This is not surprising given the similarity in the way the latter two shocks are constructed. We also find that all five measures of U.S. monetary policy proxies are significantly correlated with each other (not shown), with correlation ranging from 0.52 to 0.95. Taylor residuals are also very highly correlated with the monetary policy changes (MP, column I). As shown in the last row in panel A, the Taylor residuals have the longest history (covering nearly our full sample) followed by RR shocks.\(^3\) GK shocks have a relatively shorter sample.

### 2.3 Exposure variables

We include different exposure proxies that can be grouped into direct exposure and indirect exposure measures. Trade openness—a country’s total exports and imports as a share of GDP—is used by many (see for instance, Yanikkaya, 2003; Rodrik, 2008, among others)

\(^3\)RR shocks are available since late-1960s. Using the full sample of RR shocks or a shorter sample consistent with GK shocks, available from early 1990s, does not affect our results.
and could be argued as a proxy of economic integration of a country with the rest of the world (e.g., “global integration” or trade openness). In the historical sample, we use it as the main indirect exposure measure.

We expect the U.S. monetary policy transmission to be stronger for countries that are highly economically linked with the U.S. And, bilateral trade intensity is expected to be highly correlated with the country’s capital account. Moreover, there are studies that show that higher trade integration leads to higher business cycle synchronization (Frankel and Rose, 1998; Calderon et al., 2007). As a direct exposure measure, following Frankel and Rose (1998), we measure a country’s trade intensity with the United States as the ratio of a country’s bilateral trade with the United States to its total trade with the rest of the world.

Figure 2, panels A and B visualize trade intensity and openness measures throughout the sample period for different group of countries. Countries in Americas (Latin American, Caribbean, and North American) have particularly high trade links with the United States. This finding supports the anecdotal evidence that we see strong transmission of U.S. monetary policy decisions to Latin American countries. For instance, following rate hikes in 1994, the Mexican peso crisis unfolded. Additionally, following Fed tightening in the early 1980s (a.k.a. Volcker tightening), the Latin-American debt crises unfolded.

East Asia and Pacific region countries, including China, are both directly integrated with the United States (the second highest group after Americas) and also have the highest overall trade openness. Developed countries, overall, have significantly higher trade openness compared to the emerging ones. European countries have significantly high trade openness.

Besides trade intensity and openness measures used in the historical sample, in the recent sample (post-1990s), we include a country’s debt liabilities in USD (% of GDP) as a proxy of direct exposure with the United States (Lane and Shambaugh, 2010; Benetrix et al., 2015). As we mentioned previously, U.S. monetary policy directly affects the debt servicing costs for liabilities denominated in the US dollar. When U.S. monetary policy tightens, the cost of holding dollar-denominated debt for foreign economies rises as the rate at which the borrowers roll over their debt would be higher, and the value of the dollar relative to local currencies increases.
Finally, capital account openness is expected to play a major role in the transmission of U.S. monetary policy to foreign economies. Because of data restrictions, only for the recent sample period (post-1970s) do we include both de-jure and de-facto measures of capital account openness, as indirect exposure measures, both extracted from the KOF globalization index (Dreher, 2006; Gygli et al., 2019). De-jure measure aggregates regulations to international capital flows, Chinn-Ito index of capital account openness and bilateral investment agreements. De-facto measure aggregates foreign direct investments, portfolio investments, international income payments, debt and reserves. Finally, we add de-jure trade openness measure of KOF, which considers trade regulations, tariffs, and trade agreements.

Table 1, panel B, columns I to VI list the summary statistics of the exposure variables for the whole sample as well as for the developed and emerging economies. Developed countries, on average, are more globally integrated than emerging countries, irrespective of the way we measure. In contrast, emerging economies, on average, hold higher USD-denominated debt and have higher trade intensity with the U.S. compared to developed economies. De-facto and de-jure financial openness are highly correlated.

2.4 Exogenous trade relations: Gravity measures

Both trade intensity and trade openness can affect the macroeconomic outlook and financial stability of a country, suggesting a possible endogeneity problem. To address this issue, we use gravity estimates to construct instrumental variables for trade intensity and openness, following the methodology first introduced by Frankel and Romer (1999). The gravity estimates would serve as a robust instrument as argued by the authors. To this end, we instrument a country’s bilateral trade by means of its distance (to its partners), population, common language, land-border, land-area, landlocked status, and their colonial relationship. Gravity estimates are expected to be good instrumental variables because they are based on variables that are plausibly exogenous and yet highly correlated with a country’s overall trade.
To estimate gravity instruments for the trade intensity of a country with the United States for each year $t$, we first run the following regressions:

$$\log\left(\frac{T_{i,US}}{T_i}\right) = c + \beta_1 \log \text{dist}_{i,US} + \beta_2 \text{pop}_{US} + \beta_3 \text{comlang}_{i,US} + \beta_4 \text{border}_{i,US}$$

$$+ \beta_5 \text{areap}_{i,US} + \beta_6 \text{landlocked}_i + \beta_7 \text{colony}_{i,US} + \varepsilon_{i,US} \quad (2)$$

$T_{i,US}$ is the total trade of country $i$ with the United States, $T_i$ is the total trade with the whole trading partners. $\text{pop}_{US}$ is the population of the United States, $\log \text{dist}_{i,US}$ is the log of the weighted distance between the economic centers of the two countries, $\text{comlang}_{i,US}$ is a dummy variable that takes value 1 if country $i$ and the United States share the same common language and is 0 otherwise; $\text{border}_{i,US}$ is a dummy variable that takes value 1 if the two countries share a border and is 0 otherwise; $\text{areap}_{i,US}$ is the log of the product of the areas (in km$^2$) of countries $i$ and U.S., $\text{landlocked}_i$ equals to 1 if country $i$ is landlocked (i.e., entirely enclosed by land) and 0 otherwise, and finally $\text{colony}_{i,US}$ takes the value 1 if the country has ever had a colonial link with the United States and 0 otherwise. The intensity gravity estimates are the exponential of the fitted values of (2).

Similarly, following Cavallo and Frankel (2008), we run the following regression to estimate the gravity of trade openness:

$$\log\left(\frac{T_{i,j}}{\text{GDP}_i}\right) = c + \beta_1 \log \text{dist}_{i,j} + \beta_2 \text{pop}_j + \beta_3 \text{comlang}_{i,j} + \beta_4 \text{border}_{i,j}$$

$$+ \beta_5 \text{areap}_{i,j} + \beta_6 \text{landlocked}_{i,j} + \beta_7 \text{colony}_{i,j} + \varepsilon_{i,j} \quad (3)$$

where, $T_{i,j}$ is the bilateral trade value between countries $i$ and $j$ and $\text{GDP}_i$ is the real GDP level of country $i$. $\text{landlocked}_{i,j}$ equals to 2 if both $i$ and $j$ are landlocked (i.e., entirely enclosed by land), 1 if either $i$ or $j$ are landlocked, and 0 otherwise. The rest of the variables are constructed as above.

The gravity estimates (or predicted trade to GDP ratios used in the regressions) are then calculated as the exponential of the fitted values, summing across bilateral trading partners $j$. For the sake of brevity, we do not present the estimates for the gravity equations (2) and (3).
2.5 Control variables

While testing the effects of monetary policy decisions on crises, we include a number of variables known to be predictors of crises as control variables. We first include per-capita gross domestic product growth. Second, inflation affects the likelihood of a financial crisis (see e.g., Demirguc-Kunt and Detragiache, 1998). We calculate inflation as the annual percentage change in the consumer price index. Lastly, to control for institutional quality, which can affect political and macroeconomic stability (see, e.g., Cerra and Saxena, 2008), we use the POLCOMP variable from the Polity IV Project database as a proxy for institutional quality. Details of the variables constructed can be found in Appendix A.

Table 1, panel C, columns I through VI detail selected descriptive statistics for the control variables. Most notably, developed countries have much higher institutional quality and much lower inflation than their emerging counterparts. In addition, the variability of GDP growth and the variability of inflation are also low for developed countries relative to emerging ones.

2.6 Empirical Methodology

We hypothesize that U.S. monetary policy affects a country’s financial stability only to the extent that the country has direct linkages with the United States. To test this hypothesis, for country \( i \) and year \( t \), we estimate the following logit-panel regressions:

\[
\text{logit}(C_{i,t}) = \beta_1 \text{Exposure}_{i,t} + \beta_2 \text{Exposure}_{i,t} \times MP_t + \beta_3 \text{Exposure}_{i,t-1} \times MP_{t-1} + \gamma_1 \times X_{i,t} + \gamma_2 \times X_{i,t-1} + \eta_i + \nu_t + \varepsilon_{i,t},
\]

where \( \text{logit}(C) = \log(C/(1-C)) \) is the log of the odds ratio of the binary banking crisis indicator \( C_{i,t} \). Exposure is the measure of a country’s exposure to the United States and the world, introduced in section (2), and \( MP \) is the change in the U.S. monetary policy decisions, defined as the change in U.S. 3-month Treasury yields. \( X \) are the control

\[4\] Local monetary policy decisions and changes in the exchange rates are also expected to affect the economic and financial conditions. However, historical coverage for both series for many of the countries are poor. When we include changes in the short-term interest rates and exchange rate in our baseline specification, the sample size shrinks by three quarters; hence we do not include these local variables in our baseline regressions and instead present them as part of robustness analysis in section 3.4.
variables, namely: inflation rate, GDP growth rate, and political competition. $\eta_i$ and $\nu_t$ are cross-sectional and time-series fixed effects, respectively. Throughout the analysis, we dually cluster standard errors both at the country and year levels to address possible time-series and cross-country correlation of residuals.

Note that using an interaction term of exposure and monetary policy changes is necessary to test our hypothesis that the effects of policy decisions are not uniform. Moreover, it is also necessary from an econometric standpoint. Because U.S. monetary policy shocks do not vary by country, so including it as a stand-alone variable in a panel regression would, otherwise, be akin to adding time-series fixed effects.

3 Results

This section first establishes how U.S. monetary policy affects banking crises and how the nature of linkages affects these results. Subsequently, we provide some evidence on the transmission mechanisms, and explore the effects on other financial crises. Finally, we discuss the robustness of our results in various dimensions.

3.1 Effects of U.S. Monetary Policy in Banking Crises

Table 2 shows our baseline panel-logit regression results with the historical data. In columns I through IV, we first report the results in which each exposure variable enters the regression as a stand-alone variable (without interaction with the monetary policy changes). We find that the exposure variables alone generally have a weak statistical relationship with the probability of banking crises. Only in the case of using the gravity instrument for the trade intensity to correct potential endogeneity (column II), we have a negative estimated coefficient with a 10% significance, suggesting that integration through trade makes countries less vulnerable to crises, once the endogeneity of trade is corrected. This result is in line with the main finding of Cavallo and Frankel (2008).

Then in column V, we show the effect of the interaction of monetary policy with direct exposure measures of trade intensity. U.S. monetary policy tightening has a positive and statistically significant effect on the probability of a banking crisis for those countries
that have direct trade linkages with the United States. In column VI, using the gravity instrument for the trade intensity, the contemporaneous interaction term for U.S. monetary policy with the exposure variable remains positive and becomes more significant both statistically and economically. The estimated marginal effects (MEs) show that the impact of U.S. monetary policy on the probability of a crisis is economically meaningful: a 1% tightening in monetary policy increases the probability of a crisis by 1.0-6.8% contemporaneously for a given level of direct exposure to the United States.

As we discuss further in section 3.3, a U.S. monetary policy tightening could transmit through the trade channel by lowering the U.S. demand for both domestically produced and imported goods and services, leading to contraction of activity in foreign economies. Additionally, when U.S. monetary policy tightens, foreign countries could experience capital outflows, leading to an adjustment in external accounts and domestic vulnerabilities. If this correction is sudden and sizable, it might lead to a sudden stop. Indeed, the countries that have direct exposure to the United States appear to be more prone to sudden stops; hence for these countries, the probability of a banking crisis increases.

Columns VII and VIII explore the role of U.S. monetary policy for those countries that are open and globally integrated but do not necessarily have direct, primary exposure to the United States. We measure such integration using the trade openness indicator (in column VII) and its gravity instrument (in column VIII). For those countries without direct exposure to the United States, the role of U.S. monetary policy is ambiguous. In column VII, the coefficient for the contemporaneous interaction term is negative and statistically significant, suggesting that the contemporaneous rate changes for these countries might decrease the probability of a banking crisis. Our interpretation of this result is that, for these countries, openness helps with diversification, and these countries might be the immediate beneficiaries of the funds flowing from those other countries which have direct exposure to the United States. In addition, even if these countries are not the direct beneficiaries of capital flowing out of countries that have direct exposure to the United States, a more orderly reversal of capital flows might help correct imbalances that might have accumulated in the run-up period. With an orderly correction of imbalances, the probability of a banking crisis drops, as indicated by the negative marginal effects. However, the impact diminishes when we correct for the endogeneity.
Our control variables have expected signs. Higher GDP growth has a negative coefficient, suggesting higher growth reduces the probability of a banking crisis. Higher institutional quality of a country (POLCOMP) lowers the probability of a banking crisis (albeit not significant). It could be that governance is better for countries with better quality scores where it is more difficult for politicians to distort bank lending decisions.

### 3.2 Monetary policy surprises and crises

In our baseline results, we used changes in monetary policy rates to capture the monetary policy stance. However, the changes in monetary policy rates include expected and unexpected components, potentially leading to endogeneity. To isolate the effects of unexpected component of U.S. monetary policy, we explore the robustness of our results to two alternative specifications. First, we use Taylor rule residuals as computed in section 2.2. Second, we use monetary policy surprise series constructed by Gertler and Karadi (2015), Romer and Romer (2004) and Rogers et al. (2014).

Because the indicators of monetary policy surprises are available only for the more recent period, in this part of the analysis, we have to restrict our sample in our regressions to the 1990–2010 period.5 In these regressions, we use additional exposure variables, which are available only at the shorter sample: dollar denominated liabilities, as a proxy for direct exposure, de-jure and de-facto financial integration measures, and finally de-jure trade integration measure, all from the KOF globalization index, as proxies for indirect exposure.

In table 3, we report the marginal effects from the logit regressions. We include all of the control variables introduced in (4). In addition, we control for the change in domestic interest rates to account for the local monetary policy decisions. However, in the interest of space, we report only the coefficients of interest.

We find that our main findings still hold with exogenous component of monetary policy captured through Taylor-rule residuals or three variants of monetary policy shocks. In particular, a tightening in U.S. monetary policy increases the probability of a banking crisis.

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5 As we mentioned previously, Romer and Romer shocks are available since late-1960s. We examine our results with the Romer and Romer shocks for this period as well and find that our results remain generally similar.
crisis for countries with direct trade links with the United States (columns I to VIII) or countries that hold more dollar-denominated liabilities (columns IX to XII). For countries integrated globally, results are again ambiguous but statistically stronger compared with using monetary policy stances. U.S. monetary policy shocks decrease the probability of a banking crisis for countries that have strong trade links globally, even controlled for the endogeneity (columns XIII to XX). However, a robust relationship between the policy surprises and banking crises probability does not exist when we use the rest of the de-jure and de-facto financial openness measures.

To sum up, our results in this section reinforces our earlier finding that U.S. monetary policy shocks lead to a contemporaneous increase in probability of a banking crisis only for those countries with a direct exposure to the United States. For other countries with indirect exposure, the effect of monetary policy shocks is ambiguous. The results in these cases point to a reduction in probability of a banking crisis with some exposure measures and point to an ambiguous effect with some other exposure measures.

3.3 Transmission Mechanisms

Our results so far show that U.S. monetary policy rates contemporaneously affect the likelihood of banking crises in foreign countries to the extent that these countries have direct links to the U.S. economy. In this section, we discuss possible mechanisms through which U.S. monetary policy might affect foreign economies. We argue that U.S. monetary policy could spill over to other countries through trade and capital flows channels. For the capital flows channel, the presence of liability dollarization could exacerbate the overall effects. We use the existing literature to explain how the trade channel could operate. We provide our own analysis to establish the relationship between U.S. monetary policy and capital flows and then rely on the existing literature to link how the effects on capital flows, coupled with liability dollarization, could then lead to an increase in banking crises.

The U.S. monetary policy could transmit to foreign economies through the trade channel by reducing incomes and expenditures in the United States, which, in turn,
leaves to lower demand for both domestically produced and imported goods, and reducing activity and GDP abroad. Overall, the strength of this channel depends on the trade intensity with the United States. Indeed a recent paper by Iacoviello and Navarro (2019), which uses a panel of 50 countries for over 50 years, finds significant transmission of U.S. monetary policy to foreign economies through the trade channel. The paper finds that a 100 basis points rise in U.S. rates reduces GDP in advanced economies and in emerging economies by 0.5% and 0.8%, respectively.

U.S. monetary policy could transmit to foreign economies through capital flows, as well. Changes in U.S. monetary policy affect relative return on investment in foreign economies. Consequently, it might affect credit flows across countries. For instance, a loosening stance of U.S. monetary policy can lead to a credit boom in foreign economies because of an increase in reach-for-yield incentives and increase in capital flows to foreign economies; when dollar rates fall, investors in the U.S. reach for yield by investing in high-yield foreign debt, triggering a debt build-up and vulnerability in foreign economies. The literature has found that large capital inflows to foreign countries lead to a decline in the quality of loans (Greenwood and Hanson, 2013), which eventually increases the likelihood of a banking crisis. Schularick and Taylor (2012) and Baron and Xiong (2017) find that excessive lending adversely affects the likelihood of a banking crisis and the bank equity crash risk, respectively.

In the transmission of U.S. monetary policy through capital flows, liability dollarization could pose additional risks (see Calvo, 2002; Choi and Cook, 2004; Mendoza, 2002, among others). Indeed, we explore the role of liability dollarization on likelihood of banking crises in the previous section and document significant effects. We further test the effects of liability dollarization on capital flows in this section. We do not take a stance as to why countries choose to borrow in dollars. But the mechanism is intimately linked to the capital flows channel: When U.S. monetary policy loosens for borrowers, it appears cheaper to borrow through dollar-denominated liabilities than through local currency when the borrowers ignore the currency risk involved. Hence, during the periods of easy U.S monetary policy, when the yield spreads are highest, dollar debt growth is encouraged. The lenders contribute to the debt build-up with reach-for-yield incentives:
When dollar rates fall, investors in the U.S. reach for yield by investing in high-yield foreign debt, triggering a debt build-up and vulnerability.

When the period of easy U.S. monetary policy reverses, the tightening in U.S. rates than could lead to reversals of capital flows; e.g., the capital would flow out of the foreign economies to the United States and from foreign currency denominated assets to dollar-denominated assets. There is a large literature that discusses how sudden reversals of capital inflows coupled with liability dollarization could increase financial crisis risk. For instance, Calvo (2002) and Calvo et al. (2002) show how higher borrowing rates led to reversals of capital flows in emerging market countries and how these reversals, coupled with high levels of liability dollarization, led to significant financial crises in 1990s and early 2000s in Latin American countries and other emerging market economies. Caballero and Simsek (2018a,b) also show that asymmetric capital flows can be destabilizing during periods of capital flow surges due to increased reach-for-yield episodes.\(^7\)

Jiang et al. (2019) proposes a new mechanism through which tightening in U.S. monetary policy could affect capital flows, and, coupled with liability dollarization, how this could in turn lead to an increase in financial crisis risk. These authors argue that investors around the globe have a special demand for safe dollar claims, which drives up the prices and lowers the yields on such claims; that is, investors assign a “convenience yield” to safe dollar claims. Hence, borrowers have incentive to tilt their liabilities towards issuing dollar claims to satisfy the convenience demand of investors. To illustrate, a multinational firm in Brazil may issue some local currency real bonds but will also have an incentive to tilt its liabilities towards dollar bonds. U.S. borrowers will also issue dollar claims, but such claims will be backed largely by dollar revenues, so the U.S. borrowers would not face a mismatch in their liabilities and assets. In this environment, a U.S. monetary policy tightening would lead to an appreciation of the dollar not only because of the increase in relative return in dollar-denominated assets, but also because of the reduction in the supply of dollar bonds. This latter effects makes the dollar bonds scarcer and raises its convenience yield, further raising the exchange value of the dollar. Borrowers around the world with currency mismatch on their balance sheets will suffer losses, and given financial constraints, these losses will impact production and hiring decisions.

\(^7\)See also Neumeyer and Perri (2005); Uribe and Yue (2006) on how countercyclicality of world interest rate could affect emerging market economies.
and lead to declines in foreign output. U.S. output will also fall, but the effect on U.S. firms will be an increase in the low cost of credit, while for foreign firms the impact will be through a revaluation effect on the stock of their dollar debt. This latter effect can generate significant financial spillovers for other countries.

Using a comprehensive bilateral data on international bank lending, Avdjiev and Hale (2019) find that the correlation between federal funds rate and international bank lending fluctuates dramatically from highly negative to highly positive, over time, during a “boom regime,” characterized by high growth rates of lending from advanced to emerging economies and a “stagnation regime,” characterized by low or negative growth rates of lending from advanced to emerging economies. During the boom regime, the paper identifies a positive relationship between the macro fundamentals component of federal funds rate and bank flows to both advanced and emerging economies. In the stagnation regime, the impact of the federal funds rate is negative on bank lending to emerging economies (driven by the monetary policy stance component of the federal funds rate) and positive or insignificant on bank lending to advanced economies. In other words, during international lending booms, improvement in macro fundamentals that leads to an increase in the federal funds rate is associated with further increase in bank lending to all economies, including emerging markets. During stagnation regimes, improvements in fundamentals have a similar, albeit weaker effect, whereas a tightening of the monetary policy stance (proxied by Taylor residuals) leads to a decline in bank lending to emerging markets, sometimes accompanied by an increase in lending to advanced economies. The run-up to financial crises are characterized by weakening in fundamentals that Avdjiev and Hale (2019) identify as stagnation regime. Our estimation picks up the negative effects of U.S. monetary policy in bank lending during those stagnation regimes, which then results in crises.

Motivated by the aforementioned studies, we formally test if U.S. monetary policy tightening could cause a reversal of capital flows in foreign economies and, if so, whether
the effects are dependent on the nature of linkages between the United States and other countries. In particular, we run the following regression

\[ \Delta \text{CF}_{i,t} = \beta_1 \text{Exposure}_{i,t} + \beta_2 \text{Exposure}_{i,t} \times MP_t + \beta_3 \text{Exposure}_{i,t-1} \times MP_{t-1} \]

\[ + \gamma_1 \Delta \text{CF}_{i,t-1} + \gamma_2 \times X_{i,t} + \gamma_3 \times X_{i,t-1} + \eta_i + \nu_t + \varepsilon_{i,t}, \]  

(5)

where \( \Delta \text{CF}_{i,t} \) is the change in total portfolio investment flows (% of GDP) for country \( i \) in year \( t \). We include all of the control variables introduced in (4). In addition, we control for the change in domestic interest rates to account for the local monetary policy decisions. In addition, similar to section 3.2, as the sample coverage starts in the 1970s, we use additional exposure measures: de-facto and de-jure capital account openness measure, de-jure trade integration measure, and the difference between the debt liabilities and debt assets denominated in U.S. dollar. We consider countries with dollar-denominated liabilities as having direct exposures to U.S. monetary policy, since changes in U.S. monetary policy directly affect the debt servicing costs.

Table 4 shows that the interaction term is negative and significant for the direct exposure measures but insignificant for indirect exposure measures. That is, a positive shock to or a tightening stance in the U.S. monetary policy is followed by reduction in capital flows to these countries only if the country has direct economic exposure to the U.S. However, if the country is globally integrated, then the effect of U.S. monetary policy is ambiguous. This finding suggests that when U.S. monetary policy tightens, countries with direct exposure to the United States will face capital outflows. As we thoroughly discussed earlier in this section, an abrupt and sudden reversal of capital flows could be a significant contributor to an increase in the likelihood of financial crises.\(^8\)

### 3.4 Robustness

We examine the robustness of our findings in two main dimensions. First, we look at sub-samples. Second, we examine alternative econometric specifications and alternative data. In the interest of space, we exclusively present robustness results for our regressions for

\(^8\)If the capital outflows are orderly, they can help rein in financial excesses and lean against the wind (Adrian and Liang, 2018). However our results indicate that the adverse effects of capital outflows dominate the leaning-against-the wind effects.
the gravity instrument for trade intensity, e.g., our main direct exposure variable shown in column II of table 2.

Our data covers almost 200 years of history, and hence, throughout the sample period, many different economic and market structures evolved. In the very early period (“pre-modern history”), we have data on few countries, without any electronic communication and modern trade links, while towards the end of the sample, we have advanced financial systems, high synchronization between the countries, with developed e-trade and commerce. Moreover, the structure of the banking system, capital restrictions, and currency systems have changed dramatically. Our sample starts with the gold standard, followed by the fixed exchange rate regimes adopted by the majority of the countries, followed by the Bretton Woods era, in which high capital restrictions were in place. Post-World War II could be argued as the period that is close to the modern finance era.

Table 5 shows our results with different sub-samples. In particular, we look at post-WWII period (column II), a sample that excludes the Great Depression, the Great Recession, and both WWI and WWII periods (column III), a sample with emerging markets only (column IV), a sample with developed countries only (column V), and a sample controlling for countries that anchor their exchange rates to the U.S. dollar (column VI). In all these sub-samples, the interaction variable for U.S. monetary policy and exposure variable remains positive and statistically significant with the exception of the sample for developed countries. This finding suggests that the effect of U.S. monetary policy on the probability of a banking crisis (due to increased risk of a sudden stop) is mainly an emerging market phenomenon.

It is also worth highlighting the results with exchange rate anchors, or countries who directly anchor their exchange rate to the U.S. dollar. In this exercise, we add the contemporaneous and lagged interaction of U.S. monetary policy with a dummy for exchange rate anchor countries, which takes a value of 1 if the country anchors its exchange rate to the U.S. dollar and 0 otherwise. We find that U.S. monetary policy has a positive effect on the probability of a banking crisis for those countries with direct exposure to the United States, regardless of their anchor policy. However, the impact is economically higher for the countries that anchor their exchange rate to the dollar.
In table 6, we present additional robustness analyses with alternative econometric specifications and alternative data. In column I, we report the baseline specification. Arguably, the United Kingdom was the main financial center in the world, especially until the end of World War I. Hence, to see the effects of a central country’s monetary policy decisions, we use change in U.K. short-term rates until 1913 and U.S. rates post-1914 and report the results in column II.

In columns III and IV, we examine the robustness of our findings with the use of simple OLS and probit regressions, respectively. In column V, we investigate whether our results are sensitive to the inclusion of local monetary policy changes and changes in the exchange rates. Local monetary policy decisions, not only the U.S. monetary policy ones, are expected to affect the economic conditions. We proxy local monetary policy changes as the changes in the short-term local interest rates.

In column VI, VII, and VIII we test the sensitivity of our findings by including other important determinants of financial crises. First, credit-to-GDP gap is included in column VI, as it is identified as a signaling device for the build-up of excessive leverage for the financial sector (see e.g., Schularick and Taylor, 2012; Alessi and Detken, 2018). In column VII, we control for current account balance of a country in USD, as large current account deficits are associated with increased vulnerability to financial crises. Finally, asset prices may affect the banking crises probability. Besides the interest and exchange rates controls, we consider the real stock market returns and annual realized volatility of the stock market returns in column VIII.

In column IX, we consider alternative crisis databases. Our motivation in doing this is to see if our results are sensitive to the critiques raised in the literature (see, e.g., Romer and Romer, 2015) regarding Reinhart and Rogoff (2009). In particular, following Danielsson et al. (2018) we merged the databases of Bordo et al. (2001); Laeven and Valencia (2012); Gourinchas and Obstfeld (2012); Schularick and Taylor (2012) with that of Reinhart and Rogoff (2009) for banking by using consistent definitions of crises and then use it as the dependent variable. Finally, we re-estimate the baseline equation with non-winsorized variables (column X).

Overall, we find that the results are qualitatively similar under the various robustness checks. There are small changes in different specifications, but the main conclusions hold.
3.5 Impact of U.S. monetary policy decisions on other financial crises

So far in our analysis, we focus on understanding the linkages between U.S. monetary policy and banking crises. In particular, motivated by Rey (2015), our starting point was to assess transmission of U.S. monetary policy to financial stability across the world, especially focusing on the differential effects depending on the different trade and financial links of the countries with the United States. Hence, using banking crises probability to measure the financial stability was a natural choice. In this section, we explore how the nature of linkages with the United States affect the relationship between U.S. monetary policy and other types of financial crises.

We use currency crises and stock market crashes data of the Carmen Reinhart data library. Accordingly, an annual depreciation of 15 percent or more of the local currency with respect to the U.S. dollar, or the relevant anchor currency (such as UK pound, the French franc, or the German DM historically, and Euro recently), is labeled as a currency crisis. In contrast with, following the definition of Barro and Ursua (2009), a cumulative decline of 25% or more in real equity prices marks a stock market crisis. Finally, following the term introduced in Kaminsky and Reinhart (1999b), we also identify the twin crises: simultaneous crises in banking and currency.

Motivated by these observations, in table 7, we present the estimated marginal effects of the logit-panel regressions introduced in (4), with different crises histories as dependent variable. We report only the results in which we focus on the gravity estimates of the direct and indirect trade measures (intensity and openness).

We find that U.S. monetary policy tightening is positively and significantly associated with the probability of stock market crashes (column 2) and twin crises (column 3) for those countries that have direct trade linkages with the United States. Interestingly, we find the opposite impact for the currency crashes alone (column 1).9 The economic impacts are smaller compared to the effects of banking crises alone. Finally, the effects

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9This result is counterintuitive and it might be the result of the definition of currency crisis in the Carmen Reinhart data library. 15 percent or more annual depreciation criteria might not be effective in systematically capturing true crises episodes (for most developing countries, 15 percent annual declines might be frequently observed without leading to abrupt effects on the economy). Hence we argue that banking crises might be more relevant episodes to focus on.
of U.S. monetary policy on all three types of crises (currency, stock market crash, and twin crises) are ambiguous for those countries that are globally open to trade.

4 Conclusion

In this paper, we examine the role of U.S. monetary policy in affecting the likelihood of banking crises across the world. We find that U.S. monetary policy tightening is associated with higher probability of a banking crisis for those countries with direct linkages to the U.S., either in the form of trade links or significant share of USD-denominated liabilities. However, if a country is integrated globally, rather than having a direct exposure to the U.S., the effects of U.S. monetary policy shocks are ambiguous.

Our results shed light on the role of U.S. monetary policy in financial stability across the world. Rey (2015) argues that there is a global financial cycle which is driven by U.S. monetary policy decisions. We find that this argument cannot be generalized to all financial events. We find that from the perspective of financial crises, U.S. monetary policy has a significant correlation with the probability of a banking crisis for those countries with direct exposures to the United States. However, if a country is integrated globally rather than having a primary direct exposure to the United States, the relation between U.S. monetary policy and a country’s probability of crisis is ambiguous.

Taken together, such findings offer useful policy implications. While it is not possible for countries to isolate themselves from the U.S. monetary policy directly, we show that it is possible to reduce its impacts with diversification—both on trade links as well as financial links, such as holding less USD denominated debt. That is particularly important for emerging countries.
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Figure 2: Trade intensity and openness

In panel A, we present the average trade intensity of countries for different groups. Trade intensity is calculated as the ratio of a country’s bilateral trade with the United States to its total trade with the rest of the world. In panel B, we plot the average trade openness—a country’s total exports and imports as a share of GDP. After calculating bilateral trade intensities/openness, we report the cross-sectional averages. The whole sample includes 69 countries. The total number of countries for which we have data and used to calculate averages/correlations in a given time period is reported on top of each bar. Emerging and developed countries’ classifications are adopted from the IMF definition.
Appendix A: Definition of variables

5.1 Monetary policy shocks

- MP: U.S. monetary policy change, defined as the change in US short-term interest rates from the Jorda et al. (2017) macrohistory database.

- GK: U.S. monetary policy shocks introduced in Gertler and Karadi (2015), and defined as the surprises in the three months ahead federal funds rate futures.

- RSW: U.S. monetary policy shocks introduced in Rogers et al. (2014), and constructed through the surprises on the six-month eurodollar contracts.

- RR: U.S. monetary policy shocks introduced in Romer and Romer (2004). The authors use the Fed Greenbook forecasts of output growth and inflation along with the fed-funds rates to estimate shocks.

5.2 Exposure variables

- UStradeIntensity: Trade intensity to U.S., calculated as total trade with the U.S. divided by total trades of the country. Data is from COW trade project.

- Gravity–UStradeIntensity: The instrument of trade intensity, introduced in (2).

- Debt_in_USD: Debt liabilities minus debt assets in USD (% of GDP) in log terms, constructed by using data from the IMF’s Coordinated Portfolio Investment Survey (CPIS) and the BIS locational banking statistics as detailed by Lane and Shambaugh (2010); Benetrix et al. (2015).

- EconInteg: Economic integration, calculated as a country’s total exports and imports as a % of GDP (trade openness). Trade data is from COW trade project and GDP data is from Maddison project.

- Gravity–EconInteg: The instrument of trade openness, introduced in (3).

- FOPEN_dejure: De-jure financial openness index. The index is from KOF globalization index (KOFFiGIdj), introduced by Dreher (2006) and developed by Gygli
et al. (2019). The index aggregates regulations to international capital flows, Chinn-Ito index of capital account openness and bilateral investment agreements.

- FOPEN_defacto: De-facto financial openness index. The index is from KOF globalization index (KOFFiGIdf), introduced by Dreher (2006) and developed by Gygli et al. (2019). It aggregates foreign direct investments, portfolio investments, international income payments, debt and reserves.

- TOPEN_dejure: De-jure trade openness index. The index is from KOF globalization index (KOFFiGIdf), introduced by Dreher (2006) and developed by Gygli et al. (2019). It considers trade regulations, tariffs, and trade agreements.

5.3 Capital flows

- $\Delta CF$: The change in total portfolio flows as a percentage of the local country’s GDP, taken from the IMF Balance of Payments statistics (BPM5).

5.4 Control variables

- GDPgrowth: Real GDP per capita growth rate. Data from the Maddison project.

- INF: Inflation rate calculated as the annual percentage change of the CPI index. Data from the Global Financial Data.

- POLCOMP: Political competition as a proxy for institutional quality. Data is from the Polity IV Project database. POLCOMP is the combination of the degree of institutionalization or regulation of political competition and the extent of government restriction on political competition. The higher the value of the POLCOMP, the better the institution quality of a given country.

- $\Delta INT\_RATES$: Change in local three-month Treasury yields. Used as a proxy for the local monetary policy surprises. Data from the Global Financial Data.

- $\Delta XR$: The change in the exchange rate of the local currency to the dollar, from Global Financial Data.
• ANCHOR: A dummy variable equal to 1 if a country’s currency is pegged to the U.S. dollar in year $t$ and 0 otherwise. Data from Ilzetzki et al. (2017).

• Gravity variables
  
  – $areap$ is the log of the product of the areas in km$^2$ of two countries. Data is from the GeoDist database–CEPII (Mayer and Zignago, 2011)
  
  – $T_{i,j}$ is the bilateral trade value between countries $i$ and $j$. Data is from the COW project
  
  – $pop$ is the population of a country. Data from the Maddison project
  
  – $distw$ is the bilateral distances between the biggest cities of two countries, those inter-city distances being weighted by the share of the city in the overall country’s population (see Mayer and Zignago, 2011, for details).
  
  – $areap$ is the log of the product of the areas (in squared kilometers) of countries $i$ and U.S.
  
  – $comlang$ is equals to 1 if the countries share the same official language and 0 otherwise
  
  – $border$ if equals to 1 if the countries share a border and 0 otherwise
  
  – $landlocked$ equals to 1 if the local country is landlocked (i.e., entirely enclosed by land) and 0 otherwise
  
  – $colony$ equals 1 if the countries have ever had a colonial link with the U.S
## 6 Appendix B: Sample details

Table B1: This table lists the countries in our sample and sample coverage, divided into panels by IMF Classification.

| Panel A: Developed Countries | Country       | Coverage  | Country       | Coverage  | Country       | Coverage  |
|------------------------------|---------------|-----------|---------------|-----------|---------------|-----------|
| Australia                    | 1901-2010     | France    | 1870-2010     | Norway    | 1870-2010     |
| Austria                      | 1870-2010     | Greece    | 1870-2010     | New Zealand | 1907-2010     |
| Belgium                      | 1870-2010     | Ireland   | 1922-2010     | Portugal  | 1870-2010     |
| Canada                       | 1870-2010     | Iceland   | 1918-2010     | Singapore | 1965-2010     |
| Switzerland                  | 1870-2010     | Italy     | 1870-2010     | Spain     | 1870-2010     |
| Germany                      | 1870-2010     | Japan     | 1870-2010     | Sweden    | 1870-2010     |
| Denmark                      | 1870-2010     | Korea     | 1945-2010     | Taiwan    | 1945-2010     |
| Finland                      | 1917-2010     | Netherlands | 1870-2010 | United Kingdom | 1870-2010 |

| Panel B: Emerging Countries | Country         | Coverage  | Country         | Coverage  | Country         | Coverage  |
|------------------------------|-----------------|-----------|-----------------|-----------|-----------------|-----------|
| Algeria                      | 1962-2010       | Guatemala | 1870-2010       | Philippines | 1946-2010       |
| Angola                       | 1975-2010       | Honduras  | 1870-2010       | Poland     | 1918-2010       |
| Argentina                    | 1870-2010       | Hungary   | 1918-2010       | Paraguay   | 1870-2010       |
| Bolivia                      | 1870-2010       | Indonesia | 1949-2010       | Romania    | 1878-2010       |
| Brazil                       | 1870-2010       | India     | 1947-2010       | Russia     | 1870-2010       |
| Central African Republic     | 1960-2010       | Kenya     | 1963-2010       | El Salvador | 1870-2010       |
| Chile                        | 1870-2010       | Morocco   | 1956-2010       | South Africa | 1910-2010       |
| China                        | 1870-2010       | Mexico    | 1870-2010       | Sri Lanka  | 1948-2010       |
| Cote d’Ivoire                | 1960-2010       | Myanmar   | 1948-2010       | Thailand   | 1870-2010       |
| Colombia                     | 1870-2010       | Mauritius | 1968-2010       | Tunisia    | 1956-2010       |
| Costa Rica                   | 1870-2010       | Malaysia  | 1963-2010       | Turkey     | 1870-2010       |
| Dominican Republic           | 1870-2010       | Nigeria   | 1960-2010       | Uruguay    | 1870-2010       |
| Ecuador                      | 1870-2010       | Nicaragua | 1870-2010       | Venezuela  | 1870-2010       |
| Egypt, Arab Rep.             | 1870-2010       | Panama    | 1903-2010       | Zambia     | 1966-2010       |
| Ghana                        | 1957-2010       | Peru      | 1870-2010       | Zimbabwe   | 1965-2010       |
### Table 1: Selected Descriptive Statistics

**Panel A**

| Monetary Policy Shocks | I | II | III | IV | V  |
|------------------------|---|----|-----|----|----|
|                        | MP | Taylor | GK | RSW | RR |
| Average                | 0.000 | 0.538 | -0.174 | -0.105 | -0.030 |
| Std. Dev.              | 0.0130 | 1.185 | 0.297 | 0.248 | 1.102 |
| Obs.                   | 8,280 | 5,727 | 1,449 | 1,863 | 2,691 |

**Panel B**

|                          | I | II | III | IV | V | VI |
|--------------------------|---|----|-----|----|---|----|
|                          | UStradeIntensity | EconInteg | Debt in USD | FOPEN_defacto | FOPEN_defjure | TOPEN_defjure |
| Whole Average            | 0.200 | 1.852 | 2.339 | 49.930 | 55.500 | 51.57 |
| Std. Dev.                | 0.193 | 3.055 | 1.337 | 20.940 | 21.550 | 24.54 |
| Obs.                     | 5,862 | 5,790 | 635 | 2,753 | 2,753 | 2,753 |
| Emerging Average         | 0.247 | 1.387 | 2.515 | 44.280 | 47.920 | 38.390 |
| Std. Dev.                | 0.213 | 1.986 | 1.317 | 16.740 | 19.530 | 16.650 |
| Obs.                     | 3,512 | 3,362 | 522 | 1,810 | 1,810 | 1,810 |
| Developed Average        | 0.129 | 2.495 | 1.529 | 60.750 | 70.040 | 76.860 |
| Std. Dev.                | 0.127 | 4.010 | 1.115 | 23.76 | 17.41 | 15.89 |
| Obs.                     | 2,350 | 2,428 | 113 | 943 | 943 | 943 |

**Panel C**

|                          | I | II | III | IV | V  | VI  |
|--------------------------|---|----|-----|----|----|-----|
|                          | CapFlows | GDPgrowth | POLCOMP | INF | ΔIntRates | ΔXR |
| Whole Average            | 0.108 | 0.020 | 6.121 | 8.280 | -0.331 | 1.315 |
| Std. Dev.                | 1.162 | 0.051 | 3.345 | 15.240 | 4.495 | 9.180 |
| Obs.                     | 765 | 7.063 | 7.222 | 5.849 | 1.824 | 8.036 |
| Emerging Average         | 0.117 | 0.018 | 5.109 | 11.700 | -0.574 | 1.860 |
| Std. Dev.                | 1.481 | 0.0526 | 3.015 | 18.630 | 6.568 | 10.79 |
| Obs.                     | 224 | 3.967 | 4.504 | 3.030 | 790 | 4.857 |
| Developed Average        | 0.105 | 0.022 | 7.797 | 4.603 | -0.146 | 0.484 |
| Std. Dev.                | 1.003 | 0.049 | 3.188 | 9.118 | 1.624 | 5.828 |
| Obs.                     | 541 | 3.096 | 2.718 | 2.819 | 1.034 | 3.179 |

This table shows the average, standard deviation, and number of observations for the data we use in the regressions. Panel A highlights monetary policy change or surprise measures, which represent U.S. monetary policy and do not vary by country. MP is the change in 3-month federal funds rates, Taylor is the Taylor residuals introduced in Equation (2.2), GK is the measure of monetary surprise in three-month federal funds rates as in Gertler and Karadi (2015), RSW is the measure of monetary policy surprise in the fourth eurodollar contract as in Rogers et al. (2014), and RR is the measure of monetary surprise as in Romer and Romer (2015). Panel B and C give descriptive statistics for variables used as measures of exposure and controls, respectively. Variable definitions are given in Appendix A.
Table 2: Role of US Monetary Policy in Banking Crises: Historical Sample

| Y: \(C_{i,t}\) | I | II | III | IV | V | VI | VII | VIII |
|-------|----|----|-----|----|---|-----|-----|------|
| Exp  | UStradeIntesity | Gravity–UStradeIntesity | EconInteg | Gravity | UStradeIntesity | Gravity–UStradeIntesity | EconInteg | Gravity |
| Exp_{i,t} | 0.02 | 0.10* | 0.01 | -0.20 | 0.01 | -0.14** | -0.01 | -0.22* |
| (0.295) | (1.159) | (0.350) | (2.794) | (0.329) | (1.351) | (0.259) | (2.816) |
| (Exp*MP)_{i,t} | 1.00** | 6.82*** | -1.16*** | -4.26 |
| (Exp*MP)_{i,t-1} | -1.45 | -0.17 | 1.18 | 1.74 |
| GDPgrowth_{i,t} | -0.43*** | -0.38*** | -0.41*** | -0.39*** | -0.46*** | -0.40*** | -0.39*** | -0.42*** |
| (2.541) | (2.701) | (2.651) | (2.710) | (2.682) | (2.705) | (2.659) | (2.832) |
| POLCOMP_{i,t} | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (0.067) | (0.086) | (0.066) | (0.089) | (0.075) | (0.091) | (0.073) | (0.092) |
| INF_{i,t} | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| (0.009) | (0.009) | (0.009) | (0.010) | (0.010) | (0.009) | 0.009 | 0.009 | 0.009 |
| GDPgrowth_{i,t-1} | -0.01 | 0.00 | 0.00 | -0.01 | 0.03 | 0.00 | 0.01 | 0.01 |
| (2.022) | (1.803) | (1.959) | (1.880) | (2.306) | (2.141) | (2.023) | (2.238) |
| POLCOMP_{i,t-1} | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (0.064) | (0.073) | (0.061) | (0.077) | (0.065) | (0.078) | (0.067) | (0.079) |
| INF_{i,t-1} | 0.04 | 0.05 | 0.03 | 0.04 | 0.03 | 0.02 | 0.02 | 0.02 |
| (0.009) | (0.009) | (0.010) | (0.009) | (0.010) | (0.010) | (0.010) | (0.009) | (0.009) |
| Obs. | 2,064 | 2,213 | 2,190 | 2,214 | 1,965 | 2,068 | 2,093 | 2,068 |
| Pseudo R2 | 0.159 | 0.174 | 0.158 | 0.176 | 0.203 | 0.203 |

The table shows the estimated marginal effects (at the mean) of the panel-logit regressions introduced in Equation (4). The dependent variable is a dummy variable that equals to 1 at the beginning year of a systemic banking crises, defined in Reinhart and Rogoff (2009). MP is the U.S. monetary policy decisions, defined as the change in US 3-month Treasury yields. The exposure variable used (Exp) is listed at the column header. UStradeIntesity is a country’s total trade to U.S. divided by its total trades. Gravity–UStradeIntesity is the instrument of trade intensity, introduced in Equation (2). EconInteg is economic integration proxied by the trade openness (exports+imports as a ratio of GDP). Gravity is the instrumented trade measure as introduced in Equation (3). GDPgrowth is the GDP growth rate, POLCOMP is the degree of political competition, and INF is the annual inflation rate. All of the specifications include country and year fixed effects, where the estimated coefficients are omitted for the sake of brevity. The panel covers 69 countries and spans 1870–2010. The standard errors, reported in parentheses, are robust and dually clustered at the year and country level.
Table 3: Role of US Monetary Policy in Banking Crises: MP surprises

| Y : $C_{i,t}$ | I       | II      | III     | IV      | V       | VI      | VII     | VIII     |
|---------------|---------|---------|---------|---------|---------|---------|---------|----------|
| Exp:          |         |         |         |         |         |         |         |          |
| MP:           | Taylor  | GK      | RSW     | RR      | Taylor  | GK      | RSW     | RR       |
| $Exp_{i,t}$   | 0.05    | 0.34**  | 0.22**  | 0.21    | -0.24   | 0.13    | -0.08   | -0.89**  |
|              | (1.345) | (5.747) | (6.744) | (3.679) | (3.003) | (.)     | (8.785) | (7.175)  |
| $(Exp*MP)_{i,t}$ | 0.19    | 0.21*** | 0.23*** | 0.07**  | 1.14**  | 0.73    | 1.26**  | 0.42***  |
|              | (0.258) | (2.302) | (5.003) | (0.490) | (1.072) | (9.586) | (7.957) | (2.738)  |
| $(Exp*MP)_{i,t-1}$ | -0.15*  | -0.15***| -0.10***| -0.05   | -0.56   | 0.02    | 0.38    | -0.15    |
|              | (0.154) | (1.796) | (2.342) | (0.638) | (1.136) | (7.840) | (7.522) | (3.586)  |
| Obs.          | 543     | 235     | 235     | 235     | 559     | 220     | 220     | 220      |
| Pseudo R2     | 0.192   | 0.381   | 0.398   | 0.269   | 0.211   | 0.284   | 0.293   | 0.307    |

| Y : $C_{i,t}$ | IX      | X       | XI      | XII     | XIII    | XIV     | XV      | XVI     |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Exp:          |         |         |         |         |         |         |         |          |
| MP:           | Taylor  | GK      | RSW     | RR      | Taylor  | GK      | RSW     | RR       |
| $Exp_{i,t}$   | 0       | -0.1    | 0       | 0       | 0.01    | 0.10**  | 0.05**  | 0.02     |
|              | (3.670) | (2.226) | (4.352) | (2.455) | (0.172) | (0.617) | (0.462) | (1.265)  |
| $(Exp*MP)_{i,t}$ | 0.05*** | 0.24    | 0.03*** | 0.03*** | -0.16***| -0.06*  | -0.13*  | -0.04*   |
|              | (1.157) | (4.442) | (2.520) | (1.260) | (0.120) | (0.466) | (1.235) | (0.361)  |
| $(Exp*MP)_{i,t-1}$ | -0.09***| -0.31   | 0       | -0.01   | 0.02    | 0.09    | 0.09    | 0.02     |
|              | (2.661) | (5.566) | (7.075) | (3.951) | (0.314) | (1.426) | (2.533) | (0.389)  |
| Obs.          | 68      | 68      | 68      | 68      | 567     | 235     | 235     | 235      |
| Pseudo R2     | 0.627   | 0.539   | 0.641   | 0.551   | 0.204   | 0.269   | 0.287   | 0.289    |

The table shows estimated marginal effects (at the mean) of the panel-logit regressions introduced in Equation (4), using different definitions of monetary policy stances and their corresponding restricted samples. The dependent variable is a dummy variable that equals to 1 at the beginning year of a systemic banking crisis, defined in Reinhart and Rogoff (2009). The exposure variable used (Exp) is listed at the column header as well as the definition of the monetary policy shocks. Taylor is the Taylor residuals introduced in Equation (2.2) and GK, RSW, and RR are the shocks defined by Gertler and Karadi (2015); Rogers et al. (2014); Romer and Romer (2004), respectively. Debt_in_USD is countries’ debt liabilities minus debt assets in USD (% of GDP), introduced in Lane and Shambaugh (2010). FOPEN_defacto, FOPEN_dejure are de-facto and de-jure measures of capital account openness, and TOPEN_dejure is the de-jure trade openness measure (Dreher, 2006; Gygli et al., 2019). The rest of the variables are introduced in Table 2. Sample includes 69 countries. All of the specifications include country and year fixed effects and the GDP growth rate, the degree of political competition, the annual inflation rate, change in local interest rates as control variables. However in the interest of space, the estimated coefficients are omitted. The standard errors, reported in parentheses, are robust and dually clustered at the year and country level.
Table 3: Role of US Monetary Policy in Banking Crises: MP surprises (Cont.)

| Y : C_{i,t} | XVII | XVIII | XIX | XX | XXI | XXII | XXIII | XXIV |
|-------------|------|-------|-----|----|-----|------|-------|------|
| Exp:        |      |       |     |    |     |      |       |      |
| MP:         | Taylor | GK   | RSW | RR | Taylor | GK | RSW | RR |
| Exp_{i,t}   | -0.27 | -1.41*** | -1.15*** | -1.12* | 0.03 | 0.06 | 0 | 0.02 |
|             | (5.825) | (8.859) | (8.241) | (8.416) | (0.626) | (1.111) | (0.991) | (1.251) |
| (Exp*MP)_{i,t} | -0.89 | -1.56*** | -2.26** | -0.22 | -0.14 | -0.02 | -0.20* | -0.07*** |
|             | (1.796) | (10.589) | (19.113) | (5.744) | (0.224) | (0.993) | (1.647) | (0.358) |
| (Exp*MP)_{i,t-1} | 0.59 | 1.41*** | 1.56** | 0.16 | 0 | 0.07 | 0 | 0.07*** |
|             | (1.226) | (8.644) | (14.120) | (3.456) | (0.169) | (0.799) | (1.669) | (0.542) |
| Obs.        | 559 | 220 | 220 | 220 | 586 | 236 | 236 | 236 |
| Pseudo R2   | 0.199 | 0.345 | 0.353 | 0.290 | 0.188 | 0.223 | 0.254 | 0.332 |

| Y : C_{i,t} | XXV | XXVI | XXVII | XXVIII | XXIX | XXX | XXXI | XXXII |
|-------------|-----|------|-------|--------|------|-----|------|-------|
| Exp:        |      |      |       |        |      |     |      |       |
| MP:         | Taylor | GK | RSW | RR | Taylor | GK | RSW | RR |
| Exp_{i,t}   | -0.01 | -0.05 | -0.08 | -0.04 | -0.06* | -0.17*** | -0.15*** | -0.12* |
|             | (0.794) | (1.050) | (1.030) | (0.832) | (0.757) | (1.076) | (0.961) | (0.848) |
| (Exp*MP)_{i,t} | -0.1 | -0.04 | -0.19*** | -0.05* | -0.11 | -0.14*** | -0.22*** | -0.04 |
|             | (0.192) | (0.769) | (0.882) | (0.342) | (0.197) | (0.821) | (0.970) | (0.365) |
| (Exp*MP)_{i,t-1} | -0.05 | 0.04 | -0.05 | -0.01 | -0.09 | 0.15*** | 0.14 | 0.01 |
|             | (0.155) | (1.175) | (1.662) | (0.708) | (0.228) | (0.880) | (1.718) | (0.512) |
| Obs.        | 586 | 236 | 236 | 236 | 586 | 236 | 236 | 236 |
| Pseudo R2   | 0.184 | 0.219 | 0.245 | 0.251 | 0.209 | 0.278 | 0.306 | 0.247 |

This table is continued from the previous page.
Table 4: The Role of U.S. Monetary Policy in Capital Flows to Foreign Countries

The table shows estimated coefficients of the OLS regressions introduced in Equation (5). The dependent variable is the change in total portfolio flows as a percentage of the local country’s GDP, taken from the IMF Balance of Payments statistics (BPM5). The exposure variable used (Exp) is listed at the column header, and are as introduced in Table 3. Sample includes 69 countries and spans from 1951 to 2010, as available. ∆IntRates, which is the change in a country’s short-term interest rate from Global Financial Data. All of the other control variables are introduced in Table 2. All specifications include country and year fixed effects. The standard errors, reported in parentheses, are robust and dually clustered at the year and country level.

| Exp | I | II | III | IV | V | VI | VII | VIII |
|-----|---|----|-----|----|---|----|-----|------|
| EXP*MP | -5.62** | -28.96*** | -9.68* | -0.12 | -8.53 | -0.35 | -6.16 | -1.36 |
| (2.458) | (6.316) | (4.773) | (3.137) | (22.256) | (2.685) | (4.029) | (3.452) |
| EXP*MP | -5.62 | -16.51 | -1.59 | 1.47 | -26.94 | 0.17 | 1.40 | -0.93 |
| (1.712) | (17.243) | (6.163) | (1.858) | (22.290) | (4.519) | (4.214) | (3.443) |
| CapFlows | -0.46*** | -0.46*** | -0.50*** | -0.44*** | -0.44*** | -0.43*** | -0.43*** | -0.43*** |
| (0.075) | (0.059) | (0.083) | (0.072) | (0.065) | (0.074) | (0.071) | (0.074) |
| GDPgrowth | 3.86 | 2.96 | 6.51 | 3.30 | 2.65 | 3.40 | 3.29 | 3.33 |
| (3.195) | (2.839) | (4.065) | (3.027) | (2.734) | (2.808) | (2.772) | (2.755) |
| POLCOMP | -0.18* | -0.18** | -0.02 | -0.17** | -0.17** | -0.18** | -0.17** | -0.17** |
| (0.090) | (0.079) | (0.193) | (0.078) | (0.080) | (0.075) | (0.077) | (0.075) |
| INF | 0.02 | 0.02 | -0.04** | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| (0.017) | (0.018) | (0.018) | (0.018) | (0.018) | (0.016) | (0.017) | (0.016) |
| ∆IntRates | -0.02 | -0.01 | -0.00 | -0.03 | -0.02 | -0.02 | -0.02 | -0.02 |
| (0.027) | (0.026) | (0.026) | (0.025) | (0.026) | (0.028) | (0.029) | (0.025) |
| GDPgrowth | 13.41*** | 12.48*** | 14.64*** | 13.95*** | 12.16*** | 12.92*** | 12.83*** | 12.41*** |
| (3.397) | (3.111) | (3.169) | (3.329) | (3.000) | (3.236) | (3.116) | (3.039) |
| POLCOMP | 0.20*** | 0.22** | -0.09 | 0.20*** | 0.23*** | 0.20*** | 0.19** | 0.22*** |
| (0.064) | (0.083) | (0.257) | (0.067) | (0.076) | (0.071) | (0.069) | (0.072) |
| INF | -0.01 | -0.01 | 0.05** | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| (0.021) | (0.019) | (0.019) | (0.018) | (0.020) | (0.018) | (0.018) | (0.019) |
| ∆IntRates | -0.01 | -0.00 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 | -0.01 |
| (0.014) | (0.014) | (0.017) | (0.013) | (0.015) | (0.013) | (0.014) | (0.012) |

Obs. 446 464 229 459 464 466 466 466
R² 0.364 0.365 0.444 0.350 0.355 0.349 0.352 0.356

The table shows estimated coefficients of the OLS regressions introduced in Equation (5). The dependent variable is the change in total portfolio flows as a percentage of the local country’s GDP, taken from the IMF Balance of Payments statistics (BPM5). The exposure variable used (Exp) is listed at the column header, and are as introduced in Table 3. Sample includes 69 countries and spans from 1951 to 2010, as available. ∆IntRates, which is the change in a country’s short-term interest rate from Global Financial Data. All of the other control variables are introduced in Table 2. All specifications include country and year fixed effects. The standard errors, reported in parentheses, are robust and dually clustered at the year and country level.
### Table 5: Robustness: Subsample Analysis

| Y : C_{i,t} | I | II | III | IV | V | VI |
|-------------|---|----|-----|----|---|----|
| Exp: Gravity–UStradeIntensity | Whole Sample | 1946-2010 | Without Major Crises | Emerging Economies | Developed Economies | Control for Anchor Currency |
| Exp_{i,t} | -0.14** | -0.02 | -0.15** | -0.27** | -0.29*** | -0.05 |
| (Exp*MP)_{i,t} | 6.82*** | 1.28** | 5.95** | 12.61*** | 7.25 | 4.94** |
| (Exp*MP)_{i,t-1} | -1.17 | -0.44 | -1.89 | 1.33 | -2.2 | -2.03 |
| GDPgrowth_{i,t} | -0.40*** | -0.57*** | -0.42*** | -0.64*** | -0.31 | -0.57*** |
| GDPgrowth_{i,t-1} | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| POLCOMP_{i,t} | 0.02 | 0.00 | 0.00 | 0.04 | 0.19 | 0.03 |
| INF_{i,t} | (0.091) | (0.095) | (0.094) | (0.093) | (0.298) | (0.114) |
| INF_{i,t-1} | (0.009) | (0.012) | (0.010) | (0.013) | (0.029) | (0.013) |
| Anchor_{i,t} | 0.03 | 0.00 | 0.00 | 0.02 | 0.01 | 0.05 |
| Anchor *_{i,t} | (0.010) | (0.013) | (0.010) | (0.013) | (0.027) | (0.012) |
| Anchor *_{i,t-1} | 0.02 | 0.00 | 0.00 | 0.02 | 0.01 | 0.05 |
| Anchor */{Anchor *}_{i,t} | 1.21* | (23.515) | 0.24 | (4.884) | 0.00 |
| Anchor */{Anchor *}_{i,t-1} | 0.24 | (22.549) | 0.24 | (4.884) | 0.00 |
| Observations | 2,068 | 1,541 | 1,875 | 934 | 620 | 1,513 |
| Pseudo R2 | 0.203 | 0.186 | 0.160 | 0.195 | 0.244 | 0.201 |

The table shows the estimated marginal effects (at the mean) of the panel-logit regressions introduced in Equation (4). Gravity–UStradeIntensity as defined in Table 2. Variables are as defined in Tables 2 and 3, with the addition of Anchor, which is equal to 1 if a country is pegged to the U.S. Dollar in a given year \( t \) and the interaction and lagged interaction of Anchor and MP. Results labeled whole sample are the same as presented in Table 2. Column II presents results for the model estimated post-WWII. Column III estimates the model without the observations dating to the Great Depression, the Great Recession, and two world wars. Columns IV and V present estimates for developing and emerging economies, respectively. Column VI is estimated for the whole sample but with the additional Anchor controls.
### Table 6: Robustness: Alternative specifications

| Y : $C_{i,t}$ | Exposure: Gravity–US trade Intensity | I Baseline | II UK-US | III OLS | IV Probit | V IntRate & XR |
|---------------|--------------------------------------|------------|----------|---------|-----------|---------------|
| Exp$_{i,t}$   |                                      | -0.14**    | -0.11**  | -0.04*  | -0.18***  | -0.18         |
|               |                                      | (1.351)    | (1.073)  | (0.025) | (0.527)   | (2.384)       |
| $(\text{Exp}^*\text{MP})_{i,t}$ |                                      | 6.82***    | 0.07***  | 4.83**  | 7.14***   | 9.27**        |
|               |                                      | (55.724)   | (0.511)  | (1.916) | (23.908)  | (93.560)      |
| $(\text{Exp}^*\text{MP})_{i,t-1}$ |                                      | -0.17      | 0        | 0.43    | -0.97     | -4.62         |
|               |                                      | (56.419)   | (0.464)  | (2.456) | (22.637)  | (72.353)      |
| Obs.          |                                      | 2,068      | 2,212    | 4,251   | 2,068     | 559           |
| R2/pseudo R2  |                                      | 0.203      | 0.188    | 0.154   | 0.205     | 0.217         |

| Y : $C_{i,t}$ | Exposure: Gravity–US trade Intensity | VI cr2gdp gap | VII Current account | VIII stock returns & vola | IX Merged BK Crises | X Without winsorization |
|---------------|--------------------------------------|---------------|---------------------|---------------------------|---------------------|-------------------------|
| Exp$_{i,t}$   |                                      | -0.28**       | -0.08               | -0.26***                  | -0.13***            | -0.15**                |
|               |                                      | (2.944)       | (3.142)             | (2.297)                   | (1.150)             | (1.366)                |
| $(\text{Exp}^*\text{MP})_{i,t}$ |                                      | 6.50**        | 5.50**              | 5.67***                   | 6.47***             | 6.89***                |
|               |                                      | (87.712)      | (76.940)            | (65.055)                  | (56.163)            | (56.100)               |
| $(\text{Exp}^*\text{MP})_{i,t-1}$ |                                      | -2.98         | -2.22               | -1.43                     | -0.55               | 0.01                   |
|               |                                      | (62.789)      | (59.245)            | (69.367)                  | (55.153)            | (56.967)               |
| Obs.          |                                      | 1,090         | 1,513               | 1,159                     | 2,130               | 2,068                  |
| R2/pseudo R2  |                                      | 0.214         | 0.186               | 0.275                     | 0.204               | 0.200                  |

The table shows the estimated marginal effects/coefficients of the panel-logit regressions in terms of modifications to Equation (4). In all of the specifications, control variables as well as time and cross sectional fixed effects are used but for the sake of brevity not presented. Results labeled Baseline are the same as presented in Table 2. In column II, we present the results in which we used the change in U.K. short term rates until 1913 and U.S. rates post-1914. The OLS and Probit columns show the results as estimated with OLS and probit, respectively, instead of logit. In columns V through VIII, we include other determinants of banking crises, as control variables: $\Delta \text{IntRates}$, the change in local 3-month Treasury yields, and $\Delta \text{ExchRates}$, the change in the exchange rate of the local currency to the dollar, credit-to-GDP-gap, current account, stock returns and stock return volatility. In column IX, we use an alternative definition of banking crises formed by merging the systemic crises databases of Bordo et al. (2001); Laeven and Valencia (2012); Gourinchas and Obstfeld (2012); Schularick and Taylor (2012). We also show results for our main model estimated without applying winsorization in column X.
Table 7: Role of US Monetary Policy in Other Financial Crises: Historical Sample

|                      | Exp: Gravity–UStradeIntensity |                      |                      | Exp: Gravity–EconInteg |
|----------------------|-------------------------------|----------------------|----------------------|------------------------|
|                      | Currency                      | Stock                | Twin                 | Currency               | Stock                | Twin                 |
| Exp<sub>i,t</sub>    | 0.00                          | -0.08**              | -0.09                | 0.00                   | -0.11                | -0.02                |
|                      | (0.536)                       | (0.563)              | (2.134)              | (1.465)                | (1.169)              | (2.656)              |
| (Exp*MP)<sub>i,t</sub> | -3.71***                     | 2.50**               | 4.56***              | -0.84                  | -0.29                | -5.20*               |
|                      | (9.672)                       | (14.824)             | (48.065)             | (42.854)               | (46.013)             | (79.280)             |
| (Exp*MP)<sub>i,t–1</sub> | 1.58                          | 0.29                 | 2.95**               | 0.06                   | -4.51*               | 3.80                 |
|                      | (23.170)                      | (24.547)             | (46.575)             | (20.692)               | (38.201)             | (68.650)             |
| GDPgrowth<sub>i,t</sub> | -0.10                         | 0.05                 | -0.41***             | -0.10                  | 0.05                 | -0.43***             |
|                      | (1.800)                       | (1.552)              | (4.464)              | (1.799)                | (1.585)              | (4.258)              |
| POLCOMP<sub>i,t</sub> | 0.00                          | 0.01**               | 0.00                 | 0.00                   | 0.01**               | 0.00                 |
|                      | (0.043)                       | (0.058)              | (0.136)              | (0.045)                | (0.058)              | (0.146)              |
| INF<sub>i,t</sub>    | 0.00***                       | 0.00***              | 0.00                 | 0.00                   | 0.00***              | 0.00                 |
|                      | (0.008)                       | (0.007)              | (0.012)              | (0.008)                | (0.007)              | (0.012)              |
| GDPgrowth<sub>i,t–1</sub> | -0.29**                      | 0.45***              | -0.13                | -0.29**                | 0.44***              | -0.15                |
|                      | (2.031)                       | (1.819)              | (2.973)              | (2.102)                | (1.795)              | (2.828)              |
| POLCOMP<sub>i,t–1</sub> | 0.00                          | -0.01*               | 0.00                 | 0.00                   | -0.01                | 0.00                 |
|                      | (0.038)                       | (0.058)              | (0.123)              | (0.036)                | (0.060)              | (0.131)              |
| INF<sub>i,t–1</sub>  | 0***                          | 0***                 | 0.00                 | 0***                   | 0***                 | 0.00                 |
|                      | (0.011)                       | (0.008)              | (0.012)              | (0.011)                | (0.008)              | (0.011)              |
| Obs.                 | 3,530                         | 2,969                | 1,355                | 3,530                  | 2,969                | 1,355                |
| Pseudo R2            | 0.141                         | 0.180                | 0.209                | 0.139                  | 0.180                | 0.191                |

The table shows the estimated marginal effects (at the mean) of the panel-logit regressions introduced in Equation (4), where the dependent variable is defined based on different financial crises, reported at the column header. Currency and stock are dummy variables that equals to 1 at the beginning year of a currency crisis or stock market crash, respectively, defined in Reinhart and Rogoff (2009). Twin crisis is a financial crisis in which a country experience both banking and currency crises simultaneously. MP is the U.S. monetary policy decisions, defined as the change in US 3-month Treasury yields. The exposure variable used, Gravity–UStradeIntensity, is the instrument of U.S. trade intensity, introduced in Equation (2). Gravity–EconInteg is the instrumented trade openness measure as introduced in Equation (3). GDPgrowth is the GDP growth rate, POLCOMP is the degree of political competition, and INF is the annual inflation rate. All of the specifications include country and year fixed effects, where the estimated coefficients are omitted for the sake of brevity. The panel covers 69 countries and spans 1870–2010. The standard errors, reported in parentheses, are robust and dually clustered at the year and country level.