Global Liquidity, Market Sentiment and Financial Stability Indices* †

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Abstract

This paper investigates the determinants of global liquidity, measured using BIS data on cross-border claims of banks (bank flows) in a sample of 149 countries. The main contribution of my paper is in identifying the link between global liquidity and a variety of market sentiment and financial stability indices. Using panel regressions incorporating country fixed effects, I find that the CBOE Volatility Index (VIX), FRED and Bloomberg Financial Stability Indices, the US Conference Board Leading Economic Index, US TIPP Economic Optimism Index, and KBW Indices all appear relevant in capturing the magnitude of changes in cross-border global liquidity. I corroborate previous empirical evidence that bank conditions and monetary policy in important financial centres, in particular the USA remain highly significant in determining cross-border bank flows. Cross-border bank flows relate positively to the Effective Federal Funds rate, US Treasury yield and US prime rate of banks, and are negatively correlated with the slope of the US yield curve, and the US TED spread. Additionally, the UK monetary policy (UK target rate) and financial conditions (slope of the UK yield curve) are also important in determining global liquidity, a finding which contributes to the literature by emphasizing non-US drivers of bank flows. Financial market factors ("push" factors), in particular stock market turnover ratios (value traded/capitalization), and macroeconomic indicators (country-specific "pull" factors) such as the GDP deflator, Inflation, and Government debt also impact on cross-border bank flows. The results are robust to changes in the estimation methodology and varying sets of the control variables.

Keywords: Global Liquidity, Market Sentiment Indices, Financial Stability Indices, Bloomberg Financial Conditions Indices, Push Factors, Pull Factors.

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1. Introduction

Varying institutional conditions, expanding macro and micro-prudential regulations, financial innovations and evolution in market structures, have all contributed to change the mechanism of global liquidity formation and the distribution of capital flows. The main issue for financial analysts and policymakers involved in financial markets surveillance is to detect empirically helpful indicators of global liquidity that have robust conceptual foundations (Landau 2011, 2013; Rey 2013, 2015; Bruno and Shin 2015; Cerutti et al. 2014, 2016). Several indicators suitable for different aspects of global liquidity have been offered with the lapse of time, namely the VIX index, US dealer bank leverage, TED spread and Slope of the yield curve. However, to widely employ these indicators in oversight, further research is needed to better clarify their connection to financial stability and macroeconomic developments.

In this paper, I examine the idea of global liquidity, roughly defined by the Bank for International Settlements (2011) as the ease of financing, with a focus on cross-border and foreign currency financing. Policymakers are concerned about the effect of global liquidity on international financial stability, making it an important issue for academics and policymakers alike. For instance, Landau (2013) argues that global liquidity is a cyclical issue seeking a structural resolution. Global liquidity is interesting for two primary reasons: 1) The notion embraces the belief that there has been a general easing in financing conditions in the world economy (Caruana 2013). In the case when there is a surplus liquidity, then the resulting risk may affect financial stability or asset prices (financial imbalances) or both (Borio 2013). 2) Global Liquidity is a tool creating interplay and spillovers between global financial and local monetary policies. Recent studies also show that credit is an alternative measure of global liquidity and use it in their empirical specifications instead (CGFS 2011; Cerutti 2014; Bruno and Shin 2015).

The paper offers a more detailed analysis of the main determinants of global liquidity and allows to identify reliable indicators for market sentiment and financial stability. To my knowledge, no systematic empirical research exists on the link between global liquidity and a variety of market sentiment and financial stability indices. This paper aims to contribute to the literature on global liquidity by running a series of panel regressions of changes in global liquidity on a series of contemporaneous variables that proxy for macroeconomic and financial conditions, market sentiment, and financial stability. This concept is crucial for understanding contemporaneous global inter-linkages, bank flows and on what indices we can rely for policy decisions. The cross-sectional dimension of the data is due to the use of data from 149 countries. The dependent variable is the change in global liquidity, measured as the percentage change in cross-border claims on banks.

My contribution is two-fold. First, this paper extends previous studies by testing new economic series proxied by a variety of market sentiment and financial stability indices on their relation to changes in

cross-border claims on banks. Second, I corroborate previous empirical evidence on "push" and "pull" factors and uncover new indicators of global liquidity. The primary finding is that a number of variables, including VIX, financial stability indices by FRED and Bloomberg, the Conference Board LEI, and sentiment indices are related to changes in global liquidity.

The design of instruments that are helpful in surveillance of financial market vulnerabilities has become one of the outstanding research disciplines (Hakkio and Keeton 2009, Manamperi 2015). Financial Stress Indices (FSIs), Financial Conditions Indices (FCIs) and Market Sentiment Indices are one of the main instruments for monitoring financial markets in different countries. This paper makes a comparative analysis of various market sentiment and financial stability indices available for different regions of the world in their relation to cross-border claims on banks.

One of the major contributions is to identify the magnitude of the effect of market sentiment and financial stability indices on cross-border bank flows. This paper will be the first in the literature to provide empirical evidence that Bloomberg Financial Conditions Indices (BFCIs) are more powerful in explaining global liquidity than FRED Financial Stress Indices and Euro Area, Systemic Stress Composite Indicator (CISS). This may be due to the fact that Bloomberg Financial Conditions Indices (BFCIs) use the equal weights method while FRED Financial Stress Indices use the principal component or factor analysis as the Index construction methodology. Paries et al. (2014) argue that the method of construction of Financial Stability Indices (FSIs) may affect their performance and it is one of the reasons why one or another Index cannot capture the level of financial stress.

The other important finding is that such market sentiment indices as the US Conference Board Leading Economic Index and US TIPP Economic Optimism Index are both economically and statistically significant on cross-border bank flows. The results show that these indices are truly reliable indicators of financial conditions in the US economy and they can be used to detect changes in global liquidity. More importantly, these market sentiment indices are more powerful than FRED Financial Stress Indices. This carries great implications for policymakers and financial analysts in the US, because they may concentrate mainly on the monitoring of market sentiment indices provided by the US Conference Board.

The paper also contributes to the literature by making an empirical synthesis of global and country-specific factors (“push”/ “pull” factors) into a more general empirical model, based on Cerutti (2014, 2015). The empirical results show that such global “push” factors as the US and UK bank conditions and monetary policy remain highly significant in determining cross-border bank flows. Cross-border bank flows increase in the Effective Federal Funds rate, US Treasury yield, US prime rate of banks and UK Target rate, but decline with the US and UK slope of the yield curve, US TED spread and others. This confirms that global factors prevail over country-specific factors as determinants of banking sector capital flows (Bruno and Shin 2015). Financial market factors (“push” factors), in particular stock market

turnover ratios, the VIX index, and macroeconomic indicators (country-specific "pull" factors) such as the GDP deflator, Inflation, and Government debt also impact on cross-border bank flows.

Overall, my empirical results provide an insight to the financial market investors both domestic as well as international in their choice of a variety of market sentiment, financial conditions indices (FCIs) and financial stress indices (FSIs) for surveillance of global liquidity conditions across the countries. This paper shows that global liquidity conditions can be captured by financial stability indices and are driven by different economic indicators such as the gross domestic product, foreign exchange rates, interest rates, yield curves, market returns and volatility captured by VIX index (Reinhart and Rogoff 2008; Hall 2010; Hamilton and Wu 2012). This means that the empirical results support strong implications for the financial analysts and policymakers in the global financial markets.

I am also using a series of robustness checks and different control variables to confirm the validity of my results estimated in the panel regressions with country fixed effects. Panel regressions are complemented by using the method of Maximum likelihood (MLE) and the Generalized Method of Moments (GMM) to ensure that the potential issue of endogeneity does not undermine the main inferences.

The remainder of the paper is structured as follows: in Section 2, I provide a literature review. Section 3 presents research questions and hypotheses development. Section 4 describes the econometric specification and the empirical approach. The empirical results are presented and discussed in Section 5. Finally, Section 6 presents robustness checks and Section 7 concludes.

2. Literature review

This literature review is devoted to the investigation of the concept of global liquidity and market sentiment and financial stability indices in an international dimension.

2.1 Global liquidity and its main determinants

Global liquidity, capital flows and bank flows are all interconnected in the exploration of financial conditions around the world, and it is important to address unexplored issues within these areas. An explanation of the main determinants of global liquidity conditions in both developed and developing countries and the schemes of global proliferation or related intensification of financial shocks is highly required (Rey 2013, 2015; Cerutti et al. 2014, 2016; Bruno and Shin 2015).

Cerutti et al. (2014, 2016) argue that we need to clarify how we can better gauge the concept of global liquidity and conduct a constant survey of liquidity indicators. The author defines global liquidity as a non-price factor for cross-border credit supply and this is compatible with its definition as the ease of

funding in the global financial markets. More accurately, liquidity can be defined as the ease with which sensation of value can be transformed into buying power (Borio 2009, 2013). Cerutti et al. (2014) point out that global liquidity is measured as a sum of factors, GL, which shear the supply function of main financial centers for cross-border lending out or in:

$$Q^S = Q\,(P, GL),$$

where Q^S is the amount of funding offered across borders, P is the price and GL is a vector for non-price supply factors. Non-price supply factors of liquidity (GL) represent a diversity of economic and financial conditions experienced by the suppliers of funds to markets across borders. For example, these suppliers can be big international banks. Some global liquidity factors occur in the private segment, while others take their origin from monetary policy, macro and microeconomic conditions (risk taking caused by the interest rate composition). Consequently, the concept of global liquidity is widely used to reflect the role of factors in financial center countries that impact on the supply of lending across borders.

Calvo et al. (1993) were among the first researchers to distinguish between 'push' and 'pull' factors of capital flows and highlight on the importance of common 'push' factors. For instance, capital flows can be pushed by low interest rates in the advanced economies and pulled by higher returns in the emerging economies. As such, 'pull' factors are represented by favourable domestic conditions that create new and lucrative investment opportunities in the domestic markets and enhance the creditworthiness of the country.

The turning point in the literature on global liquidity and capital flows is considered to be the report of Landau (2011), which raises the importance of bank flows across countries in transferring of financial conditions. Recently, Bruno and Shin (2013, 2015) prove that global factors generally prevail over country-specific factors in determining cross-border bank flows. The framework of Bruno and Shin (2013) is directed to address such two issues as the countercyclicality of gauged risk and the procyclicality of leverage, therefore, the authors employ these two features to clarify reversals and surges of capital flows. Bruno and Shin (2013, 2015) identify such directions for future research: - Early warning indicators may tell us about the demeanor of the banking system over the cycle; - The inclusion of the banking system in the conventional macroeconomic frameworks is at an early stage, but the design of such frameworks will be a good way to resolve remaining problems in International Finance; - There is an urgent need for further analytical and empirical work to create a credible framework for financial stability (Borio and Drehmann 2008).

Other articles in this sphere also confirm that global factors lead to changes in the pattern of cross-border capital flows (Fratzscher 2011; IMF 2014; Cerutti and Claessens 2014; Cerutti et al. 2014; Rey 2015). The article of Fratzscher (2011) is connected to different strands of the literature and is aimed to investigate capital flows, "push" and "pull" factors using the natural experiment such as the recent financial crisis of 2008 with special attention to the USA. The author clarifies the international pattern

of capital flows throughout the global financial crisis and especially the heterogeneity in cross-border capital flows. Fratzscher (2011) aims to measure to what degree capital flows triggering factors are connected with "push" factors (effects of factors general to all economies) and to what degree triggering factors are connected with "pull" factors (effects particular to certain economies) by taking into account the pattern of capital flows throughout the non-crisis and crisis periods. The author argues that the influence of global factors that triggered the last global financial crisis was extremely heterogeneous in different countries. A big fraction of this heterogeneity can be classified in accordance with distinctions in the quality of internal institutions, country risk and the power of internal macroeconomic fundamentals and policies. As a result, the heterogeneity across-countries to general distresses is connected to country-specific characteristics and this influence has a great economic value. Country-specific factors ("pull" factors) also matter for cross-border capital flows and should be taken into account in further empirical investigations (Fratzscher 2011). Matching and evaluating the influence indicates that global/systematic factors or "push" factors were the key motives at all for capital flows during the crisis. While country-specific factors or "pull" factors have prevailed in the estimation for the movement of capital flows in the world and especially for emerging economies.

Cerutti et al. (2014) also point out that the cyclicality and level of inflows across borders rely on the characteristics of borrowing countries. For instance, macro structures, flexible exchange rate, capital flow control instruments and more severe bank control and oversight can work as shock-absorbers against the cyclicality of bank inflows across borders.

In this context, Rey (2013) looks at the VIX index as an impulse for global liquidity and states that capital regulations are necessary to provide independency of local monetary policy, even for economies with flexible exchange rates. She also stresses the importance of global factors such as the impact of the monetary policy of financial centre countries on the leverage of global banks, capital flows and lending growth (Rey 2013, 2014). These monetary conditions in major financial centres (the US and UK), which are highly correlated with the VIX index, drive a common global financial cycle of cross-border capital flows (Rey 2015). Moreover, Miranda-Agrippino and Rey (2013) points out on the extremely synchronized character of financial conditions across countries and the joint movement in debt flows and lending growth that comes with it.

The determinants of global liquidity that especially recognized in the current empirical and theoretical studies are (Cerutti et al. 2014, 2016; Bremus and Fratzscher 2014; Bruno and Shin 2015): 1) Financing conditions for international banks (TED spread – difference between short-term interbank lending and government bond rates); 2) Risk appetite and Uncertainty (VIX); 3) Monetary aggregates (M2); 4) Monetary policy in the main financial centers (Interest rates and Slope of the yield curve).

2.2 Financial Stability and Market Sentiment Indices

The remaining part of this literature review is devoted to the exploration of studies on Market Sentiment, Financial Stress (FSIs) and Financial Conditions Indices (FCIs). Any financial crisis may lead to considerable destruction in financial conditions and asset prices across different countries (Reinhart and Rogoff 2008; Vermeulen et al. 2015; Manamperi 2015). A certain level of Financial Stress in the countries may cause the failure of Global Systemically Important Financial Institutions (G-SIFIs), leading to adverse implications on monetary policy and macroeconomic indicators such as the GDP, inflation, stock market turnover ratios, economic development and growth in the countries etc. In other words, it raises uncertainty in the financial markets and causes disruptions in the macroeconomic policies (Hatzius et al. 2010; Cardarelli 2011; Manamperi 2015). All of these serves as a motivation for scientists to explore the tendencies in financial crises. As a rule, scientists employ several tools for surveillance of financial stability in different countries, namely Market Sentiment Indices, Financial Conditions Indices (FCIs) and Financial Stress Indices (FSIs).

Market Sentiment Indices are widely known as the attention of investors in the markets and can be defined as the common prevalent investors' attitude to the expected price range in the financial markets (Baker and Wurgler 2007). This investors' attitude represents the stockpiling of a variety of fundamental and mechanical factors, comprising price history, economic records, seasonal indicators, and national and world events (Neal and Wheatley 1998; Brown and Cliff 2004). The concept of Market Sentiment Index can also be divided into two main categories, namely emotions and mood. According to Harding and He (2012, 2016) emotions represent the short-term element of sentiment index, while mood represents the long-term element of sentiment index. Short-term sentiment is connected with forecasting of the developments in the financial markets during the time period from 1 week to 1 month, while long-term sentiment is connected with forecasting time from 3 to 6 months. The authors also show that a deterioration in mood raises the level of risk aversion in male investors, but not female investors. In this light, the article of Tuckett (2009) reveals the importance of Market Sentiment Indices and confirms that the periods of pessimism and optimism are one of the main characteristics of trading on the stock markets. The concept of Market Sentiment Indices includes the following indices from the panel regressions with country-fixed effects: the VIX index, the US Conference Board Leading Economic Index, US TIPP Economic Optimism Index and others.

According to Hatzius et al. (2010), Holló et al. (2012) and Vermeulen et al. (2015) the main purpose of Financial Stress Index (either FCI or FSI) is to gauge the current level of instability such as the current level of attritions, shocks and tensions (if they present in the financial systems of different countries) and to compile it in a separate static. Hatzius et al. (2010) offer a theoretical analysis of Financial Conditions Indices and then test their predictive power. Additionally, the authors construct a new

Financial Conditions Index and this is followed by its empirical evaluation. The articles of Aramonte (2013), Manamperi (2015) and Vermeulen et al. (2015) provide a comparative analysis on various Financial Conditions Indices and serve as a theoretical foundation for selection of these Indices into my empirical analysis. Manamperi (2015) also gives descriptive statistics and correlation Tables of Financial Stress Indices which are useful for detailed analysis of correlations between Financial Stability Indices presented in the paper. In contrast to previous studies, this paper employs a panel regression analysis with country fixed effects, maximum likelihood estimation (MLE) and generalized method of moments (GMM) to identify the contemporaneous impact of Market Sentiment and Financial Stability Indices on cross-border bank flows.

3. Research questions and hypotheses development

Using a sample of 149 countries around the world, the paper investigates the concept and main determinants of global liquidity, I measure global liquidity as cross-border positions of banks. My results support the evidence uncovered in previous studies of Cerutti et al. (2014, 2015, 2016), Bruno and Shin (2013, 2015) and contribute to the existing literature by investigating two main research questions:

1) *What are the key triggering factors of global liquidity, as measured by cross-border claims to banks, and in particular, are they primarily global push factors or country-specific pull factors?*
2) *What Market Sentiment and Financial Stability Indices are significant to the magnitude of changes in cross-border global liquidity?*

From these research questions, I formulate the following empirical hypothesis to test in the panel regressions with country fixed effects:

Empirical Hypothesis 1. *Global and financial market factors affect more on global liquidity across borders than country-specific factors.*

Empirical Hypothesis 2. *Market Sentiment and Financial Stability Indices are significantly connected to the magnitude of changes in global liquidity.*

My model gives an opportunity to incorporate a variety of market sentiment and financial stability indices into panel data analysis and this offers novel results in comparison to previous studies. Firstly, market sentiment and financial stability indices reflect how cross-border bank flows react to the global shocks. As such, both types of financial stability indices, namely Financial Conditions (FCIs) and Financial Stress Indices (FSIs) should be included in the surveillance. Secondly, some indices are more powerful in explaining cross-border global liquidity than others (Bloomberg Financial Conditions Indices, the US Conference Board Leading Economic Index and US TIPP Economic Optimism Index). Thirdly, the method of construction of Financial Stability Indices (FSIs) matters and in particular, the method of equal weights prevails over the principal component approach. Researchers should pay

attention to the method of equal weights, as this method of Index construction can have powerful benefits. Finally, policymakers should conduct a monitoring of a variety of market sentiment indices, because they are helpful in providing information about financial conditions in different countries. For instance, the VIX index, the US Conference Board Leading Economic Index and US TIPP Economic Optimism Index are highly significant in relation to global liquidity across borders.

4. Data and research methodology

I apply quantitative research methodology to explore the main determinants of global liquidity and impact of market sentiment and financial stability indices on cross-border bank flows. It involves the analysis of large panel data sets (also known as longitudinal or cross-sectional time-series data) and employs panel regressions with country fixed effects and clustered standard errors as the main research method.

4.1 Data and summary statistics

The sample covers 149 countries for which statistical data is available during the period from 2000 to 2016. Tables 1 and 2 offer descriptive statistics of variables and the list of countries included in the regression analyses, respectively**.** This Table contains proxies for global factors, financial market factors and country-specific factors.

The empirical analysis is also based on the data on cross-border positions reported by banking offices from BIS Locational statistics (Table A6). The Bank of International Settlements' Locational banking statistics (BIS LBS) reflects the obligations (credits, securities and other claims) of local debtors to overseas banks across different countries. These data are residence-based, namely domestically-incorporated banks in the reporting economy register their positions on an unconsolidated basis, comprising positions vis-à-vis their own affiliates in other economies (Cerutti et al. 2015). This conforms to the conventional balance-of-payments accounting standards. The BIS Locational banking statistics also has such remarkable feature as the exchange rate-adjusted series. These exchange rate-adjusted series better reflect changes in cross-border positions reported by banking offices.

The main data sources are World Economic Outlook (WEO), Bloomberg, Federal Reserve Economic Data (FRED), Federal Reserve Board (Fed) website and Datastream. A thorough process of data cleaning has been undertaken with the majority of variables winsorized at the 2.5% percentile to limit the effect of outliers.

4.2 Empirical specification of Base Model

I explore the main determinants of global liquidity in a sample of 149 countries by using panel data analysis with country fixed effects and clustered standard errors at the country level.

To analyze the exposures of global liquidity to various global factors, financial market and country-specific factors, I estimate the following regression model:

$$\Delta\, GlobalLiquid_{j,t} = \beta_0 + \beta_1\, Stockratio_t + \beta_2\, LnVIX_t + \beta_3\, \Delta\, Inflation_{j,t} + \beta_4\, LnGDPdeflator_{j,t} + \beta_5\, \Delta\, Govdebt_{j,t} + \beta_6\, \Delta\, Govexp_{j,t} + \beta_7\, LnGovrevenue_{j,t} + \beta_8\, \Delta\, M2(US)_t + \beta_9\, GrowthofDomesticUSCredit_t + \beta_{10}\, \Delta USTreasuryBill_t + \gamma_j + \varepsilon_{jt}$$

Dependent variable:

Global Liquidity – percent change in cross-border claims on banks (exchange rate adjusted), BIS Locational Statistics, Table A6. Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore.

Explanatory variables:

Stockratio – stock markets turnover ratio (value traded/capitalization); *VIX* – the CBOE Volatility Index; *Inflation* – annual percentage change of the CPI, end of period; *GDP deflator* – the gross domestic product, deflator (Index) is derived by dividing current price GDP by constant price GDP;[1] *General government net debt* – net debt is calculated as gross debt minus financial assets corresponding to debt instruments. These financial assets are: monetary gold and SDRs, currency and deposits, debt securities, loans, insurance, pension, and standardized guarantee schemes, and other accounts receivable; *General government total expenditure* – total expenditure consists of total expense and the net acquisition of nonfinancial assets; *General government revenue* – revenue consists of taxes, social contributions, grants receivable, and other revenue. Revenue increases government's net worth, which is the difference between its assets and liabilities; *M2(US)* – percent change in the US Money Supply M2; *Growth of Domestic US Credit* – domestic US Credit to the nonfinancial sector; *US Tresury Bill* – US Treasury Bill Rate (3 month); γ_j – are country fixed effects and ε_{jt} – error term.

The choice of variables in the model is suggested by previous theoretical and empirical studies on the main determinants of global liquidity, capital flows and bank flows (Herrmann and Mihaljek 2010; Bruno and Shin 2013; Bremus and Fratzscher 2014; Cerutti et al. 2014, 2016). This paper offers

[1] The basket of goods reflected by the GDP deflator, which is a unit of GDP, is different from the typical basket of goods consumed by households (which is predominated by the C element of GDP). The GDP deflator should be employed to deflate nominal GDP to get real GDP. It is not a measure of household inflation, nor is it assigned to be, and employing to measure the rate of inflation rate experienced by households is not right.

extensions to previous studies by testing a variety of Market Sentiment and Financial Stability Indices on their relation to changes in global liquidity across borders.

4.3 Market Sentiment and Financial Stability Indices

To analyze the impact of a variety of market sentiment and financial stability indices on global liquidity in a sample of 149 countries, a panel regression model with country fixed effects is proposed:

$$\Delta\, GlobalLiquid_{jt} = \beta_0 + \beta_1\, Stockratio_t + \beta_2\, LnVIX_t + \beta_3\, \Delta\, Inflation_{jt} + \beta_4\, LnGDPdeflator_{jt} + \beta_5\, \Delta\, Govdebt_{jt} + \beta_6\, \Delta\, Govexp_{jt} + \beta_7\, LnGovrevenue_{jt} + \beta_8 FinStressIndex_{\,t} + \beta_9\, \Delta\, M2(US)_t + \beta_{10}\, GrowthofDomesticUSCredit_t + \gamma_j + \varepsilon_{jt}$$

where *FinStressIndex* is either – Bloomberg Financial Conditions Indices (US, EU and China), or FRED Financial Stress Indices, or other types of Financial Market Indices.

Panel regressions show the contemporaneous effect of a variety of Market Sentiment Indices, Financial Conditions Indices (FCIs) and Financial Stress Indices (FSIs) on Global liquidity across different countries. I provide empirical evidence that Bloomberg Financial Conditions Indices offered for three regions in the world are by far the most powerful Indices in capturing global liquidity. These Indices have been offered by Rosenberg in 2009 following the global financial crisis. Therefore, they take into account failures and drawbacks of Financial Conditions Indices proposed prior to the global financial crisis. This suggests that policymakers should employ Bloomberg Financial Conditions Indices as they serve as a powerful tool for surveillance and provide insightful information about financial markets.

5. Empirical results

The paper offers useful insights on the connection between global liquidity and market sentiment and financial stability indices by incorporating them into panel data analysis with country fixed effects. I provide empirical evidence that global factors ("push" factors), financial market factors ("push" factors) and country-specific factors ("pull" factors) matter for changes in global liquidity across borders. Although global factors prevail over country-specific factors as determinants of banking sector capital flows (Bruno and Shin 2015).

The main contribution of my paper is in identifying that Bloomberg Financial Conditions Indices are one of the most accurate Indices in detecting global liquidity across borders. Central bankers who are working on the construction of Financial Stress Indices should consider in their work the method of

equal weights and variable composition, which is similar to the Bloomberg Financial Conditions Indices. Additionally, I empirically confirm that the US Conference Board Leading Economic Index (LEI) and US TIPP Economic Optimism Index are the key analytical instruments for surveillance of economic conditions in the USA.

5.1 Results of Base Model

Through a detailed descriptive and econometric analysis, the empirical results suggest that bank conditions and monetary policy in important financial centres, in particular the USA remain highly significant in determining cross-border bank flows. Cross-border bank flows relate positively to the Effective Federal Funds rate, US Treasury yield and US prime rate of banks, and are negatively correlated with the US slope of the yield curve, and the US TED spread.

Additionally, the UK monetary policy (UK target rate) and financial conditions (UK slope of the yield curve) are also important in determining global liquidity, a finding which contributes to the literature by emphasizing non-US drivers of cross-border bank flows (Shin 2012; Rey 2013, 2015; Cerutti et al. 2014, 2016). These findings are consistent with the essential role of the US dollar in cross-border bank flows and the significant role of the UK and European banks in mediating dollar and other currency cross-border lending (Cerutti et al. 2014; Bruno and Shin 2015 and McCauley et al. 2015).

The empirical results show that cross-border bank flows are correlated mostly with: 1) global factors such as the US and UK monetary policies and financial conditions; 2) financial market factors such as stock market turnover ratios and the VIX index; 3) country-specific factors such as the GDP deflator, inflation and government debt.

Table 3 explicitly shows that global factors prevail over country-specific factors in determining cross-border capital flows. In particular, global and financial market factors are statistically significant at 1 %, while country-specific factors are statistically significant only at 5 %.

5.1.1 Global push factors

The economic significance of global factors from Table 3 is consistent with previous studies of Cerutti et al. (2014, 2016) and Correa et al. (2015). The following three estimated elasticities are: a percentage point of the US money supply M2 will induce 0.0129 % larger cross-border bank flows; a percentage point of domestic US credit will induce 0.0128 % larger cross-border bank flows; and a percentage point of the US Treasury Bill rate will increase the flows by 0.0146 %. The results point out that the economic significance of these global factors is quite similar and can be compared to the economic significance of GDP deflator and inflation.

The US money supply M2 is one of the most important global factors that affect cross-border bank flows. The empirical results show that the expansion of the money stock in the US economy is positively connected with capital flows. This expansion means an increase in bank deposits and strong bank balance sheets, leading to larger cross-border bank flows.

The other important global factors are the US and UK Slope of the yield curve, Effective Federal Funds rate, UK Target rate and others. The US and UK Slope of the yield curve are highly significant and have the expected negative signs on cross-border bank flows. This means that a flatter slope of the yield curve shows less lucrative domestic investment opportunities and this motivates a search for yield overseas. For instance, banks that take loans short-term and lend for longer periods, might decide to make investments across-borders when the yield curve becomes flatter.

In contrast, the Effective Federal Funds rate and UK Target rate are highly statistically significant and have the expected positive signs on cross-border bank flows. This may suggest that during less auspicious economic conditions in the US and UK, for example economic recession, when interest rates are lower global banks lend less cross-border.

I also provide empirical evidence that the US TED spread has a statistically significant negative association with cross-border bank flows. This means that higher liquidity risk in the USA indicates a decrease in cross-border bank flows.

Panel regressions with country fixed effects allow to uncover new determinants of global liquidity such as the US Treasury yield, US Treasury bill rate (3 month) and U.S. prime rate of banks. The US Treasury yield and US Treasury bill rate are highly statistically significant and have the expected positive signs on cross-border bank flows. This means that the larger the yields generated on the US 10, 20 and 30-year Treasury securities the better the prospects and economic conditions in the USA. Similarly, the US Treasury bills are considered to be secure short-term financial instruments, because these debt commitments do not have a default risk. The low interest rates of the US Treasury bills lead to a fall in yields and eventually push investors to seek riskier returns in the financial markets. Therefore, the higher the US Treasury bill rate the better it is for the economy.

The U.S. prime rate of banks also has a statistically significant positive association with cross-border bank flows in the panel regressions with country fixed effects. The U.S. prime rate of banks is defined as the US short-term interest rate, which is widely employed in the banking sector of the country. This rate is set in accordance with three largest banks in the USA, namely Citibank, Bank of America Corp. and JPMorgan Chase Bank. Starting from about 1994 the Banks Prime Rate in the USA has been established using the following formula: U.S. Prime Rate = (The Fed Funds Target Rate + 3). Notably, this global factor has not been tested previously in relation to global liquidity, capital flows, and bank flows.

5.1.2 Financial market factors

The economic significance of financial market factors from Table 3 in relation to cross-border bank flows can be explained as follows. If stock market turnover ratio increases by 10 % in a given year, the countries receive on average 0.045 % more cross-border bank flows. This result holds in different model specifications, with estimated parameters varying from 0.0012 to 0.0083 (Cerutti et al. 2015). In contrast, cross-border bank flows decrease by about 0.057 % for a 10 % increase in the VIX index. The estimated parameters of the VIX index are in the range from -0.0015 to -0.0175 (Herrmann and Mihaljek 2010, 2013). The empirical evidence confirms that both financial market factors, namely stock market turnover ratios, and the VIX index have similar economic and statistical significance. Despite the fact that these financial market factors have quite small estimated coefficients, they show a substantial level of variation over time and create an important channel through which changes in global liquidity take place.

This paper extends the literature by showing that stock market turnover ratios are important financial market factors, which have the expected positive impact on cross-border bank flows. The finding that global liquidity is empirically linked to the size of market capitalization serves as an evidence of commonality in liquidity. The research on different financial markets also shows that global liquidity declines in downward markets, during global financial crisis and recessions in the economy (Garleanu and Pedersen 2007; Hameed et al. 2010). Huge downturns in the market or high market volatility have a negative impact on the funding liquidity of financial institutions that perform as liquidity providers on financial markets. As a result, these financial institutions cut the offering of liquidity across many securities, which leads to a decline in market liquidity and raise in commonality in liquidity. Brunnermeier and Pedersen (2009) also provide theoretical evidence that funding liquidity of traders' influence on market liquidity. In the case when funding liquidity is scarce, traders are averse to take on positions, leading to smaller market liquidity and higher market volatility. Tight market liquidity and high market volatility raise the risk and edges of trades and reduce funding liquidity even more. The authors argue that funding liquidity and market liquidity are reciprocally reinforcing each other, causing liquidity spirals.

5.1.3 Domestic pull factors or country-specific factors

The estimated elasticity for country-specific factors from Table 3 implies that a 10 % higher GDP deflator will decrease cross-border bank flows by 0.404 %. While a 10 % increase in Government debt reduces cross-border bank flows by only 0.019% on average (Eichler et al. 2016). The estimated parameters varying from -0.0010 to 0.0025 across model specifications. Inflation also tends to be

economically important, so that a percentage point higher inflation is on average associated with a 0.0139 % reduction in cross-border bank flows across countries.

These empirical results suggest that Government debt is highly statistically significant and has the expected negative sign on cross-border bank flows. Government debt variable serves as a control measure for a fiscal ability of the countries to pay. Banks can be less attracted to grant money to a country with a superfluously indebted government (Acharya et al. 2014; Eichler et al. 2016). Moreover, risks which impact on the sovereignty of the government can impair the stability of the banking system by decreasing the worth of government bonds held by banks or the worth of public warranties for banks.

Similarly, Inflation variable has the expected negative sign on global liquidity and restrains capital flows to financial institutions. This may be due to the fact that some creditors are scared of this type of risk and do not want to provide loans to countries with high level of inflation. The CPI (or the PCE) reflects how the prices of a usual market basket of goods changes over time. This means that the CPI measures the impact of price changes on the consumption bundle of the average household. However, that's not what the GDP deflator measures.

5.1.4 Additional results and Research Implications

The dynamic panel GMM estimation from Table 3 (column 3) largely confirms the economic significance of global factors, financial market factors and country-specific factors included in panel data analysis, although there are some small differences. The empirical evidence from GMM estimation suggests that lagged dependent variable percent change in cross-border claims on banks even on its second lag is statistically significant at 1 %. This indicates a certain degree of persistence in bank lending flows. The finding is also consistent with Figuet et al. (2015) who explore the impacts of Basel III increases in capital and liquidity requirements on cross-border claims from BIS reporting banks to emerging market economies. Similar to Figuet et al. (2015), I find that lagged percent change in cross-border claims on banks has the expected positive sign and is statistically significant in a sample of 149 countries.

Moreover, lagged stock market turnover ratio on its second lag has the expected positive sign on cross-border capital flows and is statistically significant at 5 %. This means that stock market turnover ratio is one of the main determinants of global liquidity and has similar effects with the VIX index. This finding is one of my contributions, because I empirically confirm that stock market turnover ratio even on its second lag matters for cross-border bank flows. I would like to emphasize the fact that nobody has previously explored the lagged effect of stock market turnover ratios in a broad range of countries.

Overall, the empirical results on the main determinants of global liquidity are in line with previous research on push and pull factors (Calvo et al. 1996; Rey 2013; Cerutti et al. 2014, and Bruno and Shin

2015). This expands on the previous research by highlighting the importance of stock market turnover ratios and significance of non-Us drivers of global liquidity. I also uncover new global push factors, namely the U.S. prime rate of banks, US Treasury bill rate and US Treasury yields in the panel regressions with country fixed effects. The above-mentioned factors can be referred now to the main determinants of global liquidity and require constant surveillance.

The evidence that funding conditions and monetary policy in the financial centre countries impact on global liquidity has major consequences for other countries in the world. The main influence is that the capability of borrowing countries (non-financial centre) to draw funding is defined not only by their domestic factors and monetary policies, but also by global and financial market factors. That's why it is quite important to understand what specific factors (indicators) are relevant to the supply of funding across borders for further policymaking.

Otherwise, one feature of liquidity distress is that the net need for liquidity may become almost endless. So that buffers and reserves can not fully ensure the protection of financially open country against a systemic distress. The enlargement of balance sheets internationally will raise the prospective demand for liquidity maintenance in the case of distress. This tendency should be accepted as a normal result of open capital economies and global banking, together with the prevalence of a very limited choice of currencies in global finance (Landau 2013). That's why in the coming period the main requirement will be to control the aftermath of monetary policy implications and their developments on liquidity movements across borders. For long period, policy decisions about liquidity in the world will define the form of global capital markets as they can serve as a direct stimulus to countries in starting and deepening or not their financial frameworks.

5.2 Results on Market Sentiment and Financial Stability Indices

The main innovation of the paper is that it provides a framework for testing and uncovering new Market Sentiment and Financial Stability Indices, that will be relevant to changes in cross-border global liquidity.

5.2.1 Bloomberg Financial Conditions Indices

Tables 3 and 5 show that Bloomberg China Financial Stability Index is statistically significant at 1 % and has the expected negative sign on cross-border bank flows in a sample of 149 countries. High Nomura China Stress Index indicates a higher level of financial stress in the Chinese economy and leads to the lower cross-border bank flows. The construction of this Index is quite different from the construction of the US & EU Bloomberg Financial Conditions Indices, leading to the fact that these

Indices have different signs on their coefficients. The economic interpretation of this Financial Conditions Index sounds as follows: cross-border bank flows decrease by about 1.116% for a 10% increase in Nomura China Stress Index. Moving from the 25 th to the 75 th percentile on Nomura China Stress Index reduces cross-border bank flows by about 2.8 - 8.37 percent, respectively. Consequently, FinStressChina Index is relevant to capturing global liquidity in a sample of 149 countries.

Table 5 shows that the US & EU Bloomberg Financial Conditions Indices are both statistically significant at 1 % and have the expected positive signs on cross-border bank flows. The main interpretation of the US & EU Bloomberg Financial Conditions Indices is that positive values of the Indices reflect favourable financial situation in the countries, while negative values reflect tough financial situation comparative to pre-crisis levels.

The estimated elasticity implies that a 10% higher Bloomberg US Financial Conditions Index will increase cross-border bank flows by 1.297%. Moving from the 25 th to the 75 th percentile on Bloomberg US Financial Conditions Index increases cross-border bank flows by about 3.25 - 9.73 percent, respectively.

Similarly, a 10 % increase in Bloomberg EU Financial Conditions Index increases banks' cross-border lending by 6.882% on average. Moving from the 25 th to the 75 th percentile of Bloomberg EU Financial Conditions Index is associated with about 17.2 percent higher cross-border bank flows. This significant finding is consistent with empirical evidence of Cerutti et al. (2014, 2016) on the importance of European bank conditions across borders. The considerable influence of Bloomberg EU Financial Conditions Index is explained by an essential role of European banks in mediating cross-border lending, comprising the US dollar capital flows. According to Cerutti et al. (2016) and Shin (2012) cross-border lending offered by the UK and Euro Area financial institutions is vital for many different countries in the world – not just for recipient countries in the European Union and Eastern Europe. More specifically, starting from 2000 there was a significant increase in bank flows from European financial institutions to borrowers in Asian and Western countries.

The previous literature points out that both Bloomberg United States Financial Conditions Index and Bloomberg Euro-Zone Financial Conditions Index are quite similar in their construction and employ almost the same data series (Rosenberg 2009). That's why in the panel regressions with country fixed effects they have a positive sign on cross-border bank flows. In contrast, Bloomberg China Financial Stability Index employs quite distant data series and has the expected negative sign on cross-border bank flows. Overall, Bloomberg Financial Conditions Indices (FCIs) are the most accurate Indices for capturing changes in global liquidity across borders.

5.2.2 FRED Financial Stress Indices

This subsection provides an overview of the main effects of FRED Financial Stress Indices on cross-border bank flows in a sample of 149 countries. In general, all three FRED Financial Stress Indices such as Chicago Fed's National Financial Conditions Index (NFCI), Kansas City Financial Stress Index (KCFSI) and Saint Louis Financial Stress Index (STLFSI) are statistically significant only at 10 % on cross-border bank flows.

The empirical results from Tables 6 and 7 show that Kansas City Financial Stress Index (KCFSI) is statistically significant at 10 % and has the expected negative sign on cross-border bank flows. High Kansas City Financial Stress Index indicates a higher level of financial stress in the US economy and leads to the lower cross-border bank flows. A positive value of this Index indicates that financial stress is above the long-run average, while a negative value signifies that financial stress is below the long-run average. The Index also tends to be economically important for changes in global liquidity across borders. A percentage point higher Kansas City Financial Stress Index is on average associated with a -0.0561% reduction in cross-border lending. Moving from the 25 th to the 75 th percentile on Kansas City Financial Stress Index reduces cross-border bank flows by about 1.4 - 4.21 percent, respectively. Consequently, Kansas City Financial Stress Index (KCFSI) is still a relevant measure to capturing changes in global liquidity.

The St. Louis Fed Financial Stress Index (STLFSI) is the other Financial Stress Index (FSI) that appears to be relevant to cross-border bank flows in a sample of 149 countries. Similar to the construction of Kansas City Financial Stress Index (KCFSI), the Saint Louis Financial Stress Index (STLFSI) employs the principal component analysis (PCA) to its own composition. The economic interpretation of Saint Louis Financial Stress Index is almost the same as the interpretation of Kansas City Financial Stress Index. For instance, if Saint Louis Financial Stress Index increases by 10% in a given year, the countries receive on average 0.420% less cross-border bank loans. Moving from the 25 th to the 75 th percentile on Saint Louis Financial Stress Index reduces cross-border bank flows by about 1.05 - 3.15 percent, respectively.

In contrast, a percentage point higher the Chicago Fed's National Financial Conditions Index (NFCI) is on average associated with a 0.0063% reduction in cross-border lending. Moving from the 25 th to the 75 th percentile on Chicago Fed's National Financial Conditions Index reduces cross-border bank flows by only about 0.16 - 0.48 percent, respectively. By far this is the smallest economic significance reported among all three FRED Financial Stress Indices.

5.2.3 Market Sentiment and Financial Market Indices

The empirical analysis on Market Sentiment Indices suggests that the US Conference Board Leading Economic Index (LEI) and US TIPP Economic Optimism Index can be considered as the main determinants of global liquidity in a sample of 149 countries. Table 8 shows that these two Market Sentiment Indices are statistically significant and have the expected positive signs on cross-border bank flows. The US Conference Board Leading Economic Index (LEI) is statistically significant at 1% on cross-border bank flows, while US TIPP Economic Optimism Index is statistically significant at 5 %. Both Market Sentiment Indices have the following elasticities: a percentage point the US TIPP Economic Optimism Index will induce 0.0132% larger capital flows; while a percentage point the US Conference Board Leading Economic Index will induce 0.0068% larger cross-border capital flows. Moving from the 25 th to the 75 th percentile on US TIPP Economic Optimism Index increases cross-border bank flows by some 0.33 - 0.99 percent, respectively. In contrast, moving from the 25 th to the 75 th percentile on the US Conference Board Leading Economic Index increases cross-border bank flows by only 0.17 - 0.51 percent, respectively. This means that both Market Sentiment Indices are quite important instruments for financial markets surveillance.

The other important Financial Market Index, which is included into panel regression analysis is KBW Bank Index. The KBW Bank Index is an economic index consisting of the stocks of top 24 banking companies and it is considered to be a benchmark of the banking sector. Table 4 shows that KBW Bank Index is statistically significant at 1 % and has a positive sign on cross-border bank flows in a sample of 149 countries. Consequently, this Index can serve as one of the main determinants of global liquidity, reflecting the health conditions of the banking sector. In contrast, Vanguard Emerging Markets Stock Index is not relevant to capturing global liquidity in a sample of 149 countries.

6. Robustness checks

I use a series of robustness checks and different control variables to confirm the validity of my results estimated in the panel regressions. The dynamic panel GMM confirms that my results are robust and that issues of endogeneity do not undermine the main inferences. Notably, signs for main variables in all my models remain the same and this serves as an evidence that the Base model is well developed and is not distorted when I add additional control variables.

Theoretically, the usage of country fixed effects mitigates the potential endogeneity issues in my panel estimates (Herrmann and Mihaljek 2010; and Cerutti et al. 2014, 2015). However, as an extended panel regression analysis I employ two lagged variables from country-specific factors, namely I lag the current account and government revenue variables by one period.

This is a modified version of my Base model, which include two country-specific lagged explanatory variables:

$$\Delta\, GlobalLiquid_{jt} = \beta_0 + \beta_1\, Stockratio_t + \beta_2\, LnVIX_t + \beta_3\, \Delta\, Inflation_{jt} + \beta_4\, LnGDPdeflator_{jt} + \beta_5\, \Delta Govdebt_{jt} + \beta_6\, \Delta\, Govexp_{jt} + \beta_7\, Govrevenue_{jt-1} + \beta_8 Current\ account_{\ jt-1} + \beta_9\, \Delta\, M2(US)_t + \beta_{10}\, GrowthofDomesticUSCredit_t + \beta_{11}\, \Delta US\ Treasury\ Yield_t + \gamma_j + \varepsilon_{jt}$$

where *Current account* - current account balance in percent of GDP (all transactions other than those in financial and capital items). The main classifications are goods and services, income and current transfers. This variable shows the impact of foreign trade on current conditions in the countries.

Table 12 summarizes the results of panel data regressions with country-fixed effects and two lagged country-specific variables. The empirical evidence largely confirms that all variables have the expected signs and the results are similar to the results of Base model. Table 12 (column 1) also shows that Current account balance variable is statistically significant at 10 % and has the expected negative sign on cross-border bank flows in a sample of 152 countries. The economic interpretation of Current account variable sounds as follows: a percentage point depreciation in Current account will reduce the flows by 0.0067 % (Herrmann and Mihaljek 2013; Sung and Kim 2016). Current account balance variable has a negative sign on global liquidity, because I expect that a higher current account deficit will cut foreign bank inflows, as it signals that domestic consumption is higher than domestic saving (this is especially true for developing countries). As a result, the borrowing country may experience external sustainability problems in the longer period (Herrmann and Mihaljek 2010, 2013).

The results in Table 12 (columns 2 and 3) show panel data regressions with country fixed effects for Euro area, Systemic Stress Composite Index (CISS) and US TIPP Economic Optimism Index in a sample of 149 countries, respectively. The Euro area, Systemic Stress Composite Index (CISS) is statistically significant only at 10 % and has the expected negative sign on cross-border bank flows. The economic interpretation of this Index sounds as follows: a percentage point higher Euro area, Systemic Stress Composite Index (CISS) is on average associated with a 0.0062 reduction in cross-border lending. Moving from the 25 th to the 75 th percentile on Euro area, Systemic Stress Composite Index reduces cross-border bank flows by about 0.155 percent while median of the Index is associated with only 0.31 percent reduction. This coefficient is exactly the same as in the contemporaneous model presented in Table 7 (column 1). In contrast, US TIPP Economic Optimism Index is statistically significant at 5 % and has the expected positive sign on cross-border bank flows. For instance, if the US TIPP Economic Optimism Index increases by 10 % in a given year, the countries receive on average 0.136 % more cross-border bank flows. Moving from the 25 th to the 75 th percentile on US TIPP Economic Optimism Index

increases cross-border bank flows by about 0.34 - 1.02 percent, respectively. This coefficient also corresponds to the contemporaneous model presented in Tables 8 and 10 (columns 1 and 3).

7. Conclusion

With the advancement in trade, financial flows and globalization across the countries, the financial analysts around the world are not independent in deciding on macroeconomic policy initiatives. This paper aims to quantify and capture interlinkages among market sentiment and financial stability indices and the concept of global liquidity. This information should help financial analysts to pick the right indices for financial markets surveillance and subsequent policy decisions about the regulation of capital flows.

There are two primary reasons why the surveillance of global liquidity is highly required in the financial markets. Firstly, financial markets are interconnected, so that global factors ("push" factors) are important for local policymaking, while local factors ("pull" factors) also impact on global conditions. Secondly, the endogenous accumulation of vulnerabilities in the financial sector does not happen immediately, as they grow over time and are hard to anticipate. However, vulnerabilities can be stockpiled to some certain point in time after which liquidity distress can happen very quickly and pose a threat to the financial stability in the world.

I provide empirical evidence that global factors, financial market factors and country-specific factors matter for changes in global liquidity across countries, although global factors prevail over local factors as determinants of banking sector capital flows. Cross-border bank flows increase in stock market turnover ratios, US money stock, growth of domestic US credit, US Treasury yield and UK target rate but decline with the VIX index, GDP deflator, inflation, the US slope of the yield curve and others. This suggests that global market liquidity conditions cannot be evaluated basing on a single determinant in all economies.

I also corroborate previous empirical evidence that bank conditions and monetary policy in important financial centres, in particular the USA and UK remain highly significant in determining cross-border bank flows. In general, alternative sources of funding such as foreign capital is good for economic development and growth in the recipient countries. This means that favourable financial conditions in the financial centres are quite important for the rest of the world (Cerutti et al. 2016). There are also risks connected to the build-up of credit in some countries, due to superfluous financial conditions in the financial centres. However, when financial conditions in the financial centres are shrinking this may lead to outflows or sudden stops in capital flows, testing the limits of monetary and fiscal policy instruments. Currently, it is quite hard to balance both positive and negative effects of global factors on the recipient countries as the QE policy cycle is shifting in the financial centres.

The global financial crisis has once again emphasized on the multidimensional interlinkages that reside between global business and financial cycles, and the necessity to understand these interlinkages more clearly (Claessens et al. 2011). The main contribution of my paper is in identifying the link between a variety of market sentiment and financial stability indices and global liquidity.

I provide empirical evidence that market sentiment and financial stability indices may tell us about the behaviour of cross-border bank flows over the cycle. The empirical results show that Bloomberg Financial Conditions Indices are more powerful in explaining global liquidity than FRED Financial Stress Indices and Euro Area, Systemic Stress Composite Indicator (CISS). Additionally, the US Conference Board Leading Economic Index and US TIPP Economic Optimism Index are also significantly connected to changes in global liquidity across the countries. This means that policymakers and financial analysts should use Bloomberg Financial Conditions Indices and the US Conference Board Indices as a matter of first priority for a better surveillance of changes in global liquidity.

Overall, detailed surveillance of various market sentiment and financial stability indices is highly required, because financial markets are changing very rapidly nowadays. Claessens (2009) argues that we need to employ financial stability indices aimed at identifying not just stress but also risks. Market sentiment and financial stability indices may provide all the necessary information required for policymakers and financial analysts to adopt appropriate regulatory mechanisms.

A: Descriptive Statistics and Benchmark Regression results

Table 1 Descriptive statistics

This table summarizes the key variables grouped into global factors, financial market factors and country-specific factors. I provide their names, number of observations, mean, standard deviation, minimum and maximum. Additionally, the Table provides summary of Market Sentiment, Financial Stress and Financial Conditions Indices.

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent Change in cross-border Claims on banks (Xafter - Xbefore)/Xbefore)	**2533**	-0.7640348	0.688131	-1.592289	0.07
VIX CBOE (logged VIX_t)	**2533**	21.10941	8.165958	11.04	44.68
Percent Change in Government Expenditure (data calculated by an author by using the formula)	**2533**	0.0097956	0.0405908	-0.0407889	0.0676812
Change in Government debt (data provided)	**2533**	48.61016	25.45275	14.732	95.561
Log GDP Deflator	**2533**	6.805786	0.8734698	5.02388	7.720462
Log Government revenue	**2533**	3.304895	0.3563753	2.749448	3.813771
Change in US Money Supply M2 (y/y – data provided)	**2533**	6.333529	1.512265	2.513	8.622
US Treasury Bill Rate 3m	**2533**	1.462941	1.864069	0.02	5.89
Growth of Domestic US Credit to the nonfin. sector	**2533**	5.707353	1.723987	3.45	8.675
Percent Change in Domestic US Credit to the nonfin. Sector (data calculated by an author)	**2533**	0.0526349	0.0434504	-0.0252227	0.1167821
Change in Inflation (data provided)	**2533**	4.84701	3.837008	0.325	12.184
Stock markets turnover ratio (value traded/capitalization)	**2533**	32.86588	9.866256	12.81	53.98
Effective Federal Funds Rate	**2533**	1.901765	2.120611	0.07	5.98
US TED	**2533**	0.3941176	0.2940354	0.15	1.21
UK Target rate	**2533**	2.558824	2.09824	0.5	6
US Treasury Yield	**2533**	4.25	1.0856	2.54	6.23
US Prime Rate of Banks	**2533**	4.872941	1.967126	3.25	9.23

Table 1 Descriptive statistics

This table summarizes the key variables grouped into global factors, financial market factors and country-specific factors. I provide their names, number of observations, mean, standard deviation, minimum and maximum. Additionally, the Table provides summary of Market Sentiment, Financial Stress and Financial Conditions Indices.

Variable	Obs	Mean	Std. Dev.	Min	Max
US slope of the yield curve	**2533**	2.761765	1.333457	0.1	4.25
UK slope of the yield curve	**2533**	1.514118	1.589525	-0.99	3.76
Current account	**2533**	-2.059927	6.801619	-12.309	9.97
US TIPP Economic Optimism Index	**2533**	48.92941	4.48031	42.8	58.8
Chicago Fed National Financial Conditions Index (NFCI)	**2533**	-0.2623529	0.7134163	-0.89	2.25
The US Conference Board Leading Economic Index	**2533**	111.6261	9.192884	93.125	124.342
FinStressChina, Bloomberg China Financial Stability Index (Nomura)	**2533**	100.5871	0.5808166	99.68	101.37
FinStressEU, Bloomberg Euro-Zone Financial Conditions Index	**2533**	0.1346353	0.1228505	0.0313	0.4299
FinStressUS, Bloomberg United States Financial Conditions Index	**2533**	0.2017647	1.344335	-1.01	5.01
KBW Index	**2533**	224.1647	108.898	95.4	446.93
Vanguard Emerg Market Stock Index	**2533**	20.25647	7.714984	7.63	33.12
US Kansas City Financial Stress Index (KCFSI)	**2533**	0.1192941	0.9589322	-0.824	2.638
St. Louis Fed Financial Stress Index (STLFSI)	**2533**	-0.2831176	0.8453289	-1.61	1.341
Euro area, Systemic Stress Composite Index (CISS)	**2533**	0.1832412	0.1562016	0.0481	0.5523

Table 2 List of Countries

This table summarizes the list of countries included in panel regression analysis with country fixed effects.

Albania	Finland	New Zealand
Algeria	France	Nicaragua
Angola	Georgia	Niger
Argentina	Germany	Nigeria
Armenia	Ghana	Norway
Australia	Greece	Oman
Austria	Guatemala	Pakistan
Azerbaijan	Guinea	Panama
Bahamas	Guyana	Paraguay
Bahrain	Haiti	Peru
Bangladesh	Honduras	Philippines
Barbados	Hong Kong SAR	Poland
Belarus	Hungary	Portugal
Belgium	Iceland	Qatar
Belize	India	Romania
Benin	Indonesia	Russia
Bhutan	Ireland	Rwanda
Bolivia	Islamic Republic of Iran	Saudi Arabia
Bosnia and Herzegovina	Israel	Senegal
Botswana	Italy	Serbia
Brazil	Jamaica	Singapore
Brunei Darussalam	Japan	Slovak Republic
Bulgaria	Jordan	Slovenia
Burkina Faso	Kazakhstan	South Africa
Burundi	Kenya	Spain
Cabo Verde	Korea	Sri Lanka
Cambodia	Kuwait	Sudan
Cameroon	Kyrgyz Republic	Sweden
Canada	Latvia	Switzerland
Chad	Lebanon	Taiwan Province of China
Chile	Lesotho	Tajikistan
China	Libya	Tanzania
Colombia	Lithuania	Thailand
Comoros	Luxembourg	The Gambia
Costa Rica	Malawi	Trinidad and Tobago
Croatia	Malaysia	Tunisia
Cyprus	Maldives	Turkey
Czech Republic	Mali	Turkmenistan
Cфte d'Ivoire	Malta	Uganda
Democratic Republic of the Congo	Mauritius	Ukraine
Denmark	Mexico	United Arab Emirates
Dominican Republic	Moldova	***United Kingdom***
Ecuador	Mongolia	***United States***
Egypt	Montenegro	Uruguay
El Salvador	Morocco	Uzbekistan
Estonia	Mozambique	Venezuela
Ethiopia	Namibia	Vietnam
FYR Macedonia	Nepal	Yemen
Fiji	Netherlands	Zambia
		Zimbabwe

Benchmark Regression results

Table 3: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively. Notes: FinStressChina is Bloomberg Financial Conditions Index.

	(1)	(2)	(3)	(4)
Variables	**Panel Regression**	**Maximum Likelihood**	**Dynamic panel GMM**	**Dynamic panel GMM**
Stockturnover	0.0045***	0.0043**		
	(0.0017)	(0.0017)		
FinStressChina				-0.0067***
				(0.0021)
VIX CBOE	-0.0057***	-0.0057***	-0.0103***	-0.0087***
	(0.0020)	(0.0020)	(0.0030)	(0.0031)
Δ Govexp	-0.2366	-0.2116	-0.4548	-0.4689
	(0.3505)	(0.3418)	(0.3780)	(0.3761)
Δ GovDEBT	-0.0019**	-0.0008	-0.0046***	-0.0021
	(0.0009)	(0.0006)	(0.0013)	(0.0015)
Ln GDPdeflator	-0.0404**	-0.0368**	-0.0797***	-0.0499**
	(0.0172)	(0.0165)	(0.0185)	(0.0209)
Ln Govrevenue	-0.0067	0.0516	0.0026	0.0117***
	(0.1119)	(0.0461)	(0.0029)	(0.0044)
Δ M2 (US)	0.0129***	0.0125***	0.0047	0.0055
	(0.0037)	(0.0037)	(0.0040)	(0.0041)
Δ Inflation	-0.0139**	-0.0091**	-0.0175*	-0.0059
	(0.0055)	(0.0040)	(0.0090)	(0.0094)
Growth of Domestic US Credit	0.0128**	0.0123**	0.0202***	0.0174**
	(0.0052)	(0.0052)	(0.0068)	(0.0068)
Δ Bank Claims L1. lag (2 2)			0.1286***	0.1165***
			(0.0297)	(0.0296)
Stockturnover L1. lag (2 2)			0.0022**	0.0019*
			(0.0011)	(0.0010)
Δ US Treasury Bill 3m	0.0146***	0.0140***	-0.0062	-0.0037
	(0.0047)	(0.0046)	(0.0082)	(0.0082)
Constant	-0.6741	-0.9538***		
	(0.4102)	(0.2064)		
Country Fixed Effect	**Y**			
Observations	**2,533**	**2,533**	**2,384**	**2,384**
R-squared/Hansen/ Sargan	**0.0182**		**1**	**1**
Number of countries	**149**	**149**	**149**	**149**

Table 4: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Variables	(1) **Panel Regression**	(2) **Maximum Likelihood**	(3) **Panel Regression**	(4) **Maximum Likelihood**	(5) **Panel Regression**	(6) **Maximum Likelihood**
Stockturnover	0.0054***	0.0051***	0.0048***	0.0045***	0.0028*	0.0027*
	(0.0017)	(0.0017)	(0.0017)	(0.0016)	(0.0015)	(0.0015)
KBW			0.0004***	0.0004***		
			(0.0001)	(0.0001)		
Vanguard Emerg Market Stock Index					-0.0017	0.0025
					(0.0025)	(0.0025)
VIX CBOE	-0.0065***	-0.0065***	-0.0047**	-0.0046**	-0.0064***	-0.0062***
	(0.0020)	(0.0020)	(0.0020)	(0.0019)	(0.0023)	(0.0023)
Δ Govexp	-0.2143	-0.1820	-0.2248	-0.2124	-0.2347	-0.2118
	(0.3490)	(0.3404)	(0.3507)	(0.3422)	(0.3504)	(0.3418)
Δ GovDEBT	-0.0017*	-0.0007	-0.0013	-0.0005	-0.0019*	-0.0007
	(0.0009)	(0.0006)	(0.0009)	(0.0006)	(0.0010)	(0.0006)
Ln GDPdeflator	-0.0420**	-0.0383**	-0.0366**	-0.0340**	-0.0402**	-0.0366**
	(0.0171)	(0.0164)	(0.0170)	(0.0164)	(0.0172)	(0.0165)
Ln Govrevenue	0.0018	0.0516	-0.0406	0.0429	-0.0009	0.0517
	(0.1118)	(0.0461)	(0.1113)	(0.0460)	(0.1126)	(0.0461)
Δ M2 (US)	0.0081**	0.0079**	0.0097***	0.0095***	0.0058*	0.0058*
	(0.0032)	(0.0032)	(0.0033)	(0.0033)	(0.0032)	(0.0032)
Δ Inflation	-0.0165***	-0.01046***	-0.0148***	-0.0095**	-0.0140**	-0.0092**
	(0.0055)	(0.0040)	(0.0055)	(0.0040)	(0.0055)	(0.0040)
Growth of Domestic US Credit	0.0163***	0.0155***	0.0167***	0.0158***		
	(0.0044)	(0.0044)	(0.0047)	(0.0046)		
Δ Real US Credit					0.0089**	0.0088**
					(0.0036)	(0.0035)
Δ US Treasury Yield	0.0136***	0.0129***			0.0137***	0.0134***
	(0.0036)	(0.0035)			(0.0042)	(0.0041)
Constant	-0.6770*	-0.9234***	-0.6203	-0.9632***	-0.5013	-0.7864***
	(0.4092)	(0.2058)	(0.4092)	(0.2068)	(0.4151)	(0.2224)
Country Fixed Effect	**Y**		**Y**		**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**	**2,533**	**2,533**
R-squared	**0.0198**		**0.0175**		**0.0178**	
Number of countries	**149**	**149**	**149**	**149**	**149**	**149**

Table 5: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively. Notes: FinStressUS, FinStressEU and FinStressChina are Bloomberg Financial Conditions Indices.

Variables	(1) **Panel Regression**	(2) **Panel Regression**	(3) **Maximum Likelihood**	(5) **Panel Regression**	(6) **Dynamic panel GMM**
Stockturnover	0.0017***	0.0021***	0.0019***	0.0083***	
	(0.0005)	(0.0006)	(0.0006)	(0.0024)	
FinStressUS	0.1297***				
	(0.0404)				
FinStressChina				-0.1116***	-0.0067***
				(0.0363)	(0.0021)
FinStressEU		0.6882***	0.6743***		
		(0.2568)	(0.2554)		
VIX CBOE	-0.0175***	-0.0068**	-0.0066**	-0.0052**	-0.0087***
	(0.0059)	(0.0031)	(0.0031)	(0.0023)	(0.0031)
Δ Govexp	-0.2950	-0.1202	-0.0982	-0.3212	-0.4689
	(0.3487)	(0.3481)	(0.3402)	(0.3489)	(0.3761)
Δ GovDEBT	-0.0021**	-0.0025**	-0.0010*	-0.0018*	-0.0021
	(0.0010)	(0.0010)	(0.0006)	(0.0010)	(0.0015)
Ln GDPdeflator	-0.0468***	-0.0463***	-0.0417**	-0.0436**	-0.0499**
	(0.0169)	(0.0169)	(0.0163)	(0.0171)	(0.0209)
Ln Govrevenue	0.0215	0.0533	0.0662	0.0160	0.0117***
	(0.1104)	(0.1101)	(0.0460)	(0.1114)	(0.0044)
Δ M2 (US)	0.0104***	0.0054*	0.0049	0.0073**	0.0055
	(0.0037)	(0.0032)	(0.0032)	(0.0036)	(0.0041)
Δ Inflation	-0.0111**	-0.0111**	-0.0077*	-0.0134**	-0.0059
	(0.0056)	(0.0056)	(0.0040)	(0.0055)	(0.0094)
Growth of US Credit	0.0253***	0.0311***	0.0297***	0.0206***	0.0174**
	(0.0041)	(0.0049)	(0.0048)	(0.0047)	(0.0068)
Δ Bank Claims L1. lag (2 2)					0.1165***
					(0.0296)
Stockturn L1. lag (2 2)					0.0019*
					(0.0010)
Δ USTED	-0.0070**				
	(0.0035)				
Δ US Treasury Bill 3m					-0.0037
					(0.0082)
Constant	-0.4718	-0.9666**	-1.0951***	10.4814***	
	(0.4156)	(0.4118)	(0.2095)	(3.6666)	
Country Fixed Effect	**Y**	**Y**		**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**	**2,384**
R-squared	**0.0172**	**0.0151**		**0.0174**	
Number of countries	**149**	**149**	**149**	**149**	**149**

Table 6: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Notes: CHICAGOFCI, STLOUISSTRESS, USKANSASFED FINSTRESS are FRED Financial Stress Indices.

Variables	(1) **Panel Regression**	(2) **Maximum Likelihood**	(3) **Panel Regression**	(4) **Maximum Likelihood**	(5) **Dynamic panel GMM**	(6) **Panel Regression**	(7) **Maximum Likelihood**
Stockturnover	0.0018***	0.0017***	0.0058***	0.0058***		0.0057**	0.0054**
	(0.0006)	(0.0006)	(0.0021)	(0.0021)		(0.0022)	(0.0022)
CHICAGOFCI	-0.0063*	-0.0059*					
	(0.0033)	(0.0032)					
STLOUISSTRESS			-0.0420*	-0.0409*	-0.0594**		
			(0.0239)	(0.0238)	(0.0247)		
USKANSASFED FINSTRESS						-0.0561*	-0.0527*
						(0.0326)	(0.0318)
VIX CBOE	-0.0073***	-0.0071***	-0.0015	-0.0019	0.0023	-0.0018	-0.0019
	(0.0025)	(0.0025)	(0.0033)	(0.0033)	(0.0021)	(0.0033)	(0.0032)
Δ Govexp	-0.1502	-0.1387	-0.2391	-0.2116	-0.4251	-0.2040	-0.1851
	(0.3498)	(0.3415)	(0.3500)	(0.3412)	(0.3886)	(0.3508)	(0.3420)
Δ GovDEBT	-0.0016*	-0.0006	-0.0019**	-0.0008	-0.0030*	-0.0020**	-0.0008
	(0.0009)	(0.0006)	(0.0009)	(0.0006)	(0.0016)	(0.0009)	(0.0006)
Ln GDPdeflator	-0.0328*	-0.0303*	-0.0453***	-0.0414**	-0.0552***	-0.0411**	-0.0374**
	(0.0169)	(0.0163)	(0.0171)	(0.0164)	(0.0202)	(0.0172)	(0.0165)
Ln Govrevenue	-0.0265	0.0464	0.0095	0.0549	-0.1039*	0.0023	0.0541
	(0.1115)	(0.0460)	(0.1111)	(0.0459)	(0.0588)	(0.1121)	(0.0461)
Δ M2 (US)	0.0083**	0.0081**	0.0082**	0.0083**	-0.0004	0.0080**	0.0078**
	(0.0035)	(0.0034)	(0.0037)	(0.0037)	(0.0050)	(0.0033)	(0.0033)
Δ Inflation	-0.0146***	-0.0095**	-0.0141**	-0.0091**	-0.0149	-0.0126**	-0.0085**
	(0.0055)	(0.0040)	(0.0055)	(0.0040)	(0.0116)	(0.0056)	(0.0040)
Growth of Domestic US Credit	0.0139***	0.0134***	0.0086	0.0083	0.0107		
	(0.0036)	(0.0036)	(0.0056)	(0.0055)	(0.0085)		
Δ Real US Credit						0.0108***	0.0106***
						(0.0037)	(0.0036)
Δ UKTargetrate			0.0534***	0.0520***	0.0618**		
			(0.0120)	(0.0119)	(0.0262)		
Δ Bank Claims L1. lag (2 2)					0.1144***		
					(0.0293)		
Stockturnover L1. lag (2 2)					0.0023		
					(0.0027)		
Δ US Treasury Yield						0.0192***	0.0183***
						(0.0043)	(0.0042)
Δ US Treasury Bill					-0.0132		
					(0.0103)		
Constant	-0.3776	-0.7062***	-0.7684*	-1.0130***		-0.8120*	-1.0665***
	(0.4078)	(0.1957)	(0.4005)	(0.2052)		(0.4342)	(0.2469)
Country Fixed Effect	**Y**		**Y**			**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**	**2,384**	**2,533**	**2,533**
R-squared	**0.0158**		**0.0202**			**0.0186**	
Number of countries	**149**	**149**	**149**	**149**	**149**	**149**	**149**

Table 7: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Variables	(1) **Panel Regression**	(2) **Maximum Likelihood**	(3) **Panel Regression**	(4) **Maximum Likelihood**	(5) **Dynamic panel GMM**	(6) **Panel Regression**	(7) **Maximum Likelihood**
Stockturnover	0.0063***	0.0064***	0.0058***	0.0058***		0.0057**	0.0054**
	(0.0020)	(0.0020)	(0.0021)	(0.0021)		(0.0023)	(0.0022)
EUROAREASYS	-0.0062*	-0.0059*					
	(0.0034)	(0.0034)					
STLOUISSTRESS			-0.0420*	-0.0409*	-0.0594**		
			(0.0239)	(0.0238)	(0.0247)		
USKANSASFED FINSTRESS						-0.0561*	-0.0527*
						(0.0326)	(0.0318)
VIX CBOE	-0.0024	-0.0028	-0.0015	-0.0019	0.0023	-0.0018	-0.0019
	(0.0030)	(0.0030)	(0.0033)	(0.0033)	(0.0021)	(0.0033)	(0.0032)
Δ Govexp	-0.2994	-0.2670	-0.2391	-0.2116	-0.4251	-0.2040	-0.1851
	(0.3473)	(0.3389)	(0.3500)	(0.3412)	(0.3886)	(0.3508)	(0.3420)
Δ GovDEBT	-0.0021**	-0.0008	-0.0019**	-0.0008	-0.0030*	-0.0020**	-0.0008
	(0.0009)	(0.0006)	(0.0009)	(0.0006)	(0.0016)	(0.0009)	(0.0006)
Ln GDPdeflator	-0.0484***	-0.0440***	-0.0453***	-0.0414**	-0.0552***	-0.0411**	-0.0374**
	(0.0170)	(0.0164)	(0.0171)	(0.0164)	(0.0202)	(0.0172)	(0.0165)
Ln Govrevenue	0.0300	0.0594	0.0095	0.0549	-0.1039*	0.0023	0.0541
	(0.1108)	(0.0460)	(0.1111)	(0.0459)	(0.0588)	(0.1121)	(0.0461)
Δ M2 (US)	0.0089**	0.0089**	0.0082**	0.0083**	-0.0004	0.0080**	0.0078**
	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0050)	(0.0033)	(0.0033)
Δ Inflation	-0.0131**	-0.0086**	-0.0141**	-0.0091**	-0.0149	-0.0126**	-0.0085**
	(0.0056)	(0.0040)	(0.0055)	(0.0040)	(0.0116)	(0.0056)	(0.0040)
Growth of Domestic US Credit	0.0115**	0.0113**	0.0086	0.0083	0.0107		
	(0.0052)	(0.0051)	(0.0056)	(0.0055)	(0.0085)		
Δ Real US Credit						0.0108***	0.0106***
						(0.0037)	(0.0036)
Δ UKTargetrate	0.0414***	0.0404***	0.0534***	0.0520***	0.0618**		
	(0.0109)	(0.0108)	(0.0120)	(0.0119)	(0.0262)		
ΔBankClaims L1.lag (2 2)					0.1144***		
					(0.0293)		
Stockturn. L1. lag (2 2)					0.0023		
					(0.0027)		
Δ US Treasury Yield						0.0192***	0.0183***
						(0.0043)	(0.0042)
Δ US Treasury Bill 3m					-0.0132		
					(0.0103)		
Constant	-0.7405*	-0.9436***	-0.7684*	-1.0130***		-0.8120*	-1.0665***
	(0.4008)	(0.2041)	(0.4005)	(0.2052)		(0.4342)	(0.2469)
Country Fixed Effect	**Y**		**Y**			**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**	**2,384**	**2,533**	**2,533**
R-squared	**0.0204**		**0.0202**			**0.0186**	
Number of countries	**149**	**149**	**149**	**149**	**149**	**149**	**149**

Table 8: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Variables	(1) **Panel Regression**	(2) **Maximum Likelihood**	(3) **Panel Regression**	(4) **Maximum Likelihood**
Stockturnover	0.0059***	0.0057***	0.0029*	0.0029*
	(0.0021)	(0.0021)	(0.0015)	(0.0015)
VIX CBOE	-0.0105***	-0.0103***	-0.0046*	-0.0047**
	(0.0021)	(0.0021)	(0.0024)	(0.0024)
Δ Govexp	-0.1622	-0.1429	-0.2445	-0.2170
	(0.3495)	(0.3410)	(0.3500)	(0.3413)
Δ GovDEBT	-0.0022**	-0.0009	-0.0021**	-0.0008
	(0.0009)	(0.0006)	(0.0009)	(0.0006)
Ln GDPdeflator	-0.0380**	-0.0342**	-0.0430**	-0.0389**
	(0.0171)	(0.0164)	(0.0173)	(0.0166)
Ln Govrevenue	0.0091	0.0561	0.0112	0.0561
	(0.1120)	(0.0460)	(0.1119)	(0.0460)
Δ M2 (US)	0.0084**	0.0081**	0.0101***	0.0098***
	(0.0034)	(0.0034)	(0.0035)	(0.0035)
Δ Inflation	-0.0122**	-0.0083**	-0.0126**	-0.0084**
	(0.0054)	(0.0040)	(0.0054)	(0.0040)
USTIPP Economic OptimIndex	0.0132**	0.0121**		
	(0.0059)	(0.0058)		
USConf.BoardLeadingEconInd			0.0068***	0.0066***
			(0.0023)	(0.0023)
Δ US Treasury Yield	0.0140***	0.0137***	0.0202***	0.0194***
	(0.0039)	(0.0038)	(0.0034)	(0.0033)
Constant	-1.1877**	-1.3919**	-1.3814***	-1.5954***
	(0.5076)	(0.3620)	(0.5024)	(0.3538)
Country Fixed Effect	**Y**		**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**
R-squared	**0.0167**		**0.0182**	
Number of countries	**149**	**149**	**149**	**149**

Table 9: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Variables	(1) **Panel Regression**	(2) **Maximum Likelihood**	(3) **Panel Regression**	(4) **Maximum Likelihood**
Stockturnover	0.0013*	0.0013*	0.0045***	0.0044***
	(0.0007)	(0.0007)	(0.0016)	(0.0016)
VIX CBOE	-0.0080***	-0.0079***	-0.0051**	-0.0051**
	(0.0022)	(0.0022)	(0.0022)	(0.0022)
Δ Govexp	-0.2676	-0.2440	-0.2515	-0.2214
	(0.3514)	(0.3422)	(0.3497)	(0.3411)
Δ GovDEBT	-0.0019*	-0.0008*	-0.0021**	-0.0008
	(0.0010)	(0.00046)	(0.0009)	(0.0006)
Ln GDPdeflator	-0.0428**	-0.0384**	-0.0431**	-0.0391**
	(0.0172)	(0.0165)	(0.0172)	(0.0165)
Ln Govrevenue	0.0005	0.0528	0.0175	0.0569
	(0.1118)	(0.0459)	(0.1119)	(0.0460)
Δ M2 (US)	0.0092***	0.0091**	0.0076**	0.0074**
	(0.0035)	(0.0036)	(0.0032)	(0.0032)
Δ Inflation	-0.0137**	-0.0090**	-0.0131**	-0.0087**
	(0.0055)	(0.0040)	(0.0054)	(0.0040)
USTIPP Economic OptimIndex	0.0086**	0.0083**		
	(0.0040)	(0.0040)		
Δ US Prime Rate of Banks	0.0148***	0.01416***		
	(0.0051)	(0.0050)		
Δ US Treasury Yield			0.0118***	0.0113***
			(0.0039)	(0.0038)
UKSlope			-0.0147***	-0.0142***
			(0.0044)	(0.0043)
Constant	-0.8009*	-1.0588***	-0.4400	-0.6751***
	(0.4497)	(0.2623)	(0.4074)	(0.2027)
Country Fixed Effect	**Y**		**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**
R-squared	**0.0188**		**0.0192**	
Number of countries	149	149	149	149

Table 10: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Variables	(1) **Panel Regression**	(2) **Maximum Likelihood**	(3) **Panel Regression**	(4) **Maximum Likelihood**
Stockturnover	0.0028*	0.0027*	0.0062***	0.0059***
	(0.0015)	(0.0015)	(0.0021)	(0.0021)
USTIPP Economic OptimIndex			0.0133**	0.0122**
			(0.0057)	(0.0056)
VIX CBOE	-0.0064***	-0.0062***	-0.0093***	-0.0092***
	(0.0023)	(0.0023)	(0.0021)	(0.0021)
Δ Govexp	-0.2347	-0.2118	-0.2258	-0.2031
	(0.3504)	(0.3418)	(0.3506)	(0.3420)
Δ GovDEBT	-0.0019*	-0.0007	-0.0024**	-0.0009
	(0.0010)	(0.0006)	(0.0010)	(0.0006)
Ln GDPdeflator	-0.0402**	-0.0366**	-0.0418**	-0.0374**
	(0.0172)	(0.0165)	(0.0172)	(0.0165)
Ln Govrevenue	-0.0009	0.0517	0.0105	0.0574
	(0.1126)	(0.0461)	(0.1119)	(0.0461)
Δ M2 (US)	0.0058*	0.0058*	0.0150***	0.0145***
	(0.0032)	(0.0032)	(0.0037)	(0.0037)
Δ Inflation	-0.0140**	-0.0092**	-0.0112**	-0.0078**
	(0.0055)	(0.0040)	(0.0054)	(0.0039)
Δ RealUSCredit	0.0089**	0.0088**		
	(0.0036)	(0.0035)		
Δ US Treasury Yield	0.0137***	0.0134***		
	(0.0042)	(0.0041)		
Δ US Treasury Bill 3m			0.0169***	0.0165***
			(0.0042)	(0.0041)
Constant	-0.5013	-0.7864***	-1.2844**	-1.4900***
	(0.4151)	(0.2224)	(0.5009)	(0.3494)
Country Fixed Effect	**Y**		**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**
R-squared	**0.0178**		**0.0175**	
Number of countries	**149**	**149**	**149**	**149**

Table 11: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Variables	(1) **Panel Regression**	(2) **Maximum Likelihood**	(3) **Panel Regression**	(4) **Maximum Likelihood**
Stockturnover	0.0012*	0.0013*	0.0062***	0.0059***
	(0.0007)	(0.0007)	(0.0021)	(0.0021)
USTIPP Economic OptimIndex	0.0085**	0.0081**	0.0133**	0.0122**
	(0.0040)	(0.0040)	(0.0057)	(0.0056)
VIX CBOE	-0.0089***	-0.0088***	-0.0093***	-0.0092***
	(0.0021)	(0.0021)	(0.0021)	(0.0021)
Δ Govexp	-0.2273	-0.2022	-0.2258	-0.2031
	(0.3501)	(0.3414)	(0.3506)	(0.3420)
Δ GovDEBT	-0.0019**	-0.0007	-0.0024**	-0.0009
	(0.0009)	(0.0006)	(0.0010)	(0.0006)
Ln GDPdeflator	-0.0426**	-0.0387**	-0.0418**	-0.0374**
	(0.0172)	(0.0165)	(0.0172)	(0.0165)
Ln Govrevenue	0.0048	0.0533	0.0105	0.0574
	(0.1119)	(0.0461)	(0.1119)	(0.0461)
Δ M2 (US)	0.0078**	0.0077**	0.0150***	0.0145***
	(0.0037)	(0.0037)	(0.0037)	(0.0037)
Δ Inflation	-0.0140**	-0.0092**	-0.0112**	-0.0078**
	(0.0055)	(0.0040)	(0.0054)	(0.0039)
Δ Effective Federal Funds Rate	0.0124***	0.0118***		
	(0.0041)	(0.0041)		
Δ US Treasury Bill 3m			0.0169***	0.0165***
			(0.0042)	(0.0041)
Constant	-0.7977*	-1.0425***	-1.2844**	-1.4900***
	(0.4495)	(0.2635)	(0.5009)	(0.3494)
Country Fixed Effect	**Y**		**Y**	
Observations	**2,533**	**2,533**	**2,533**	**2,533**
R-squared	**0.0190**		**0.0175**	
Number of countries	**149**	**149**	**149**	**149**

Table 12: Regression Results for Cross-Border Claims to Banks

The table reports the regression results of cross-border claims for period 2000-2016. Dependent Variable: Percent Change in cross-border claims on banks (Percent Change in BIS Locational Cross-Border Claims on Banks, exchange rate adjusted, Table A6). Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore. Robust standard errors in parentheses. *, **, *** indicate significance at the 10, 5, and 1% level, respectively.

Variables	(1)	(2)	(3)
	Panel Regression	**Panel Regression**	**Panel Regression**
Stockturnover	0.0051***	0.0067***	0.0067**
	(0.0019)	(0.0023)	(0.0026)
EuroareaSYS		-0.0062*	
		(0.0034)	
USTIPP Economic OptimIndex			0.0136**
			(0.0061)
VIX CBOE	-0.0071***	-0.0025	-0.0108***
	(0.0020)	(0.0031)	(0.0021)
Δ Govexp	-0.2124	-0.3340	-0.1829
	(0.3539)	(0.3579)	(0.3603)
Δ GovDEBT	-0.0016*	-0.0019*	-0.0018*
	(0.0009)	(0.0011)	(0.0010)
Ln GDPdeflator	-0.0433**	-0.0505***	-0.0388**
	(0.0174)	(0.0176)	(0.0176)
Δ M2 (US)	0.0092***	0.0091**	0.0084**
	(0.0033)	(0.0038)	(0.0034)
Δ Inflation	-0.0148**	-0.0125**	-0.0118**
	(0.0058)	(0.0060)	(0.0059)
Growth of Domestic US Credit	0.0179***	0.0117*	
	(0.0046)	(0.0069)	
Δ UKTargetrate		0.0420**	0.0534***
		(0.0180)	(0.0120)
Current account Lag 1	-0.0067*	-0.0046	-0.0048
	(0.0037)	(0.0038)	(0.0038)
Govrevenue Lag 1	-0.0009	-0.0036	-0.0025
	(0.0041)	(0.0045)	(0.0045)
Δ US Treasury Yield	0.0114**		0.0152***
	(0.0046)		(0.0044)
Constant	-0.7225***	-0.5570**	-1.1538***
	(0.1879)	(0.2202)	(0.4000)
Country Fixed Effect	**Y**	**Y**	**Y**
Observations	**2,432**	**2,384**	**2,384**
R-squared	**0.0155**	**0.0117**	**0.0104**
Number of countries	**152**	**149**	**149**

Table 13 Variable Definitions and Sources

Fundamental Variables	Definition	Data Source	Predicted sign
Dependent variables			
Percent Change in cross-border Claims on banks	Percent Change in BIS Locational Cross-Border Claims on Banks (exchange rate adjusted). Table A6 shows Cross-border positions reported by banking offices located in the BIS reporting area, in millions of US dollars. Percent Change (%ΔX) in Claims on banks is calculated by using the formula (Xafter - Xbefore)/Xbefore	BIS Locational statistics (Table 6)	+
Explanatory variables			
VIX (logged VIX_t)	Chicago Board Options Exchange Market Volatility Index, the implied volatility of S&P 500 index options	Bloomberg	-
Stock markets turnover ratio	Value traded/Capitalization	S&P Global Stock Markets Factbook data	+
Percent Change in General government total expenditure	Total expenditure consists of total expense and the net acquisition of nonfinancial assets	World Economic Outlook (WEO), IMF	-
General government net debt	Net debt is calculated as gross debt minus financial assets corresponding to debt instruments. These financial assets are: monetary gold and SDRs, currency and deposits, debt securities, loans, insurance, pension, and standardized guarantee schemes, and other accounts receivable	World Economic Outlook (WEO), IMF	-
Log GDP Deflator	Gross domestic product, deflator (Index) - the GDP deflator is derived by dividing current price GDP by constant price GDP and is considered to be an alternate measure of inflation. Inflation - annual percentage change of the CPI, end of period	World Economic Outlook (WEO), IMF	-
Log Government revenue	General government revenue - revenue consists of taxes, social contributions, grants receivable, and other revenue	World Economic Outlook (WEO), IMF	+
Percent Change in US Money Supply M2 (y/y)	Percent change in US Money Supply M2 (y/y)	Federal Reserve Board (Fed) website	+
Inflation	Annual percentage change of the CPI, end of period	World Economic Outlook (WEO), IMF	-
Growth of Domestic US Credit	Growth of Domestic US Credit to the nonfinancial Sector	Federal Reserve Board (Fed) website	+
Percent Change in US Prime Rate of Banks	United States, Prime Rates, Major Banks, Average	Federal Reserve Board (Fed) website	+

Table 13 Variable Definitions and Sources

Fundamental Variables	Definition	Data Source	Predicted sign
Percent Change in US Treasury Yield 20 year	US Treasury Yield adjusted to constant maturity (20 year) - the return on investment, expressed as a percentage, on the U.S. government's debt obligations (bonds, notes and bills)	Federal Reserve Board (Fed) website	+
Percent Change in US Effective Federal Funds Rate	The federal funds rate is the interest rate at which depository institutions trade federal funds (balances held at Federal Reserve Banks) with each other overnight	Federal Reserve Board (Fed) website	+
UK slope of the yield curve	10 year/3 month UK government securities yield spread	Datastream	-
Percent Change in US Treasury Bill Rate 3m	United States, Treasury Bill Rate - 3 Month (EP)	Federal Reserve Board (Fed) website	+
Percent Change in UK real policy rate	UK Base Rate (Repo rate)	Datastream	+
FinStressChina	Bloomberg China Financial Stability Index (Nomura)	Bloomberg	-
FinStressEU	Bloomberg Euro-Zone Financial Conditions Index	Bloomberg	+
FinStressUS	Bloomberg United States Financial Conditions Index	Bloomberg	+
USKANSASFED FINSTRESS	US Kansas City Financial Stress Index (KCFSI)	FRED	-
USConf.BoardLeadingEconInd	The US Conference Board Leading Economic Index	Federal Reserve Board (Fed) website	+
USTIPP Economic OptimIndex	US TIPP Economic Optimism Index	Federal Reserve Board (Fed) website	+
KBW Index	KBW Bank Index Options. This is a modified cap-weighted index consisting of 24 exchange-listed National Market System stocks, representing national money center banks and leading regional institutions	Bloomberg	+
STLOUISSTRESS	St. Louis Fed Financial Stress Index (STLFSI)	FRED	-
EUROAREASYS	Euro area, Systemic Stress Composite Index (CISS)	European Central Bank, Statistical Data Warehouse	-
CHICAGOFCI	Chicago Fed National Financial Conditions Index (NFCI)	FRED	-
Current account	Current account is all transactions other than those in financial and capital items. The major classifications are goods and services, income and current transfers. The focus of the BOP is on transactions (between an economy and the rest of the world) in goods, services, and income. This variable is shown as percent of GDP.	World Economic Outlook (WEO), IMF	-
US TED spread	3-month TED spread (LIBOR-Treasury bill)	Datastream	-

Table 14 Correlation Matrix for Financial Market Indexes

	Bloomberg United States Financial Conditions Index	Bloomberg Eurozone Financial Conditions Index	Bloomberg China Financial Stability Index	Kansas City Financial Stress Index	St. Louis Fed Financial Stress Index	Euro area, Systemic Stress Composite Index	US the Conferen. Board Leading Economic Index	US TIPP Econom Optim. Index	Chicago Fed's National Financial Conditions Index
Bloomberg United States Financial Conditions Index	1								
Bloomberg Eurozone Financial Conditions Index	0.7276	1							
Bloomberg China Financial Stability Index	-0.3244	0.0441	1						
Kansas City Financial Stress Index	0.8011	0.6853	-0.3423	1					
St. Louis Fed Financial Stress Index	0.5435	0.3706	-0.6183	0.8547	1				
Euro area, Systemic Stress Composite Index	0.4406	0.5413	0.1366	0.7295	0.562	1			
US the Conference Board Leading Economic Index	-0.1857	-0.4185	0.0745	-0.6175	-0.6412	-0.6487	1		
US TIPP Economic Optimism Index	-0.2324	-0.5227	-0.6635	-0.1306	0.2391	-0.346	0.0778	1	
Chicago Fed's National Financial Conditions Index	0.374	0.4796	-0.0838	0.8346	0.7469	0.8184	-0.711	-0.1425	1

Table 15 Correlation Matrix for variables

	UK Target rate	Gov DEBT	Inflation	Stockturn	VIX	Ln GDP deflator	Δ Gov expend	Ln Gov revenue	Δ M2 (US)	Growth of US Credit	US Prime Rate Banks	US Treasury Yield	UK Slope	US Treasury Bill 3m	Eff.Fed Funds Rate	US TED
Δ UK Target rate	1															
Δ Gov DEBT	0.0351	1														
Inflation	0.1343	-0.0578	1													
Stockturn	-0.443	-0.0905	0.0618	1												
VIX	0.0497	-0.0274	0.1347	0.4033	1											
Ln GDP deflator	0.2902	-0.0173	0.0689	-0.1768	0.0685	1										
Δ Gov exp	0.0041	-0.0599	0.0082	0.0503	0.1517	0.0193	1									
Ln Gov revenue	-0.0542	0.0448	-0.0699	0.059	-0.0157	0.0034	-0.02	1								
Δ M2 (US)	-0.1416	0.0274	-0.0457	-0.0041	0.3855	0.0721	0.1598	-0.0156	1							
Growth of US Credit	0.7779	0.0063	0.1186	-0.5898	-0.2342	0.2254	-0.0777	-0.0258	-0.2923	1						
US Prime Rate Banks	0.8713	-0.0008	0.1397	-0.0862	0.1588	0.2228	0.0571	-0.0292	-0.0876	0.5058	1					
ΔUS Treasury Yield	0.8771	0.0434	0.1301	-0.3875	0.2815	0.2842	0.0548	-0.0729	-0.0621	0.5284	0.7656	1				
UK Slope	-0.9132	-0.0586	-0.071	0.4657	0.2272	-0.251	0.0384	0.0442	0.1796	-0.7648	-0.8134	-0.6484	1			
ΔUS Treasury Bill 3m	0.8758	0.0149	0.1001	-0.2137	-0.1309	0.2121	0.0015	-0.0299	-0.2843	0.5804	0.9128	0.7124	-0.8857	1		
Δ Eff.Federal Funds Rate	0.7838	-0.0047	0.1579	-0.013	0.3771	0.224	0.0932	-0.0314	0.0802	0.4334	0.9332	0.7568	-0.6543	0.7207	1	
US TED	-0.0133	-0.0824	0.095	0.4848	0.6198	0.0739	0.2201	0.0082	0.359	-0.1751	0.1931	0.1487	0.22	-0.0063	0.3509	1

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