Journal of International Economics 109 (2017) 153–166

Contents lists available at ScienceDirect

Journal of International Economics

journal homepage: www.elsevier.com/locate/jie

Global liquidity transmission to emerging market economies, and their policy responses☆

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ARTICLE INFO

Article history:
Received 23 January 2015
Received in revised form 31 March 2017
Accepted 20 August 2017
Available online 01 September 2017

JEL classification:
F32
F42

Keywords:
Global liquidity
Emerging market economies
Panel factor-augmented VAR
Inflation targeting

ABSTRACT

This paper analyzes the transmission of global liquidity (GL) from advanced economies (AEs) to emerging market economies (EMEs). We distill GL momenta from the macro-financial data of AEs through a factor model and identify them with sign restrictions as policy-driven, market-driven, and risk averseness factors. Using a panel factor-augmented VAR analysis, we then investigate EME responses to shocks to GL momenta. A positive shock to policy-driven liquidity boosts growth in EMEs, elevating stock prices and currency values, while a shock to risk averseness has a largely opposite effect. A market-driven GL expansion boosts stock markets and lowers funding costs, increasing competitiveness and current account balance. Inflation targeting EMEs are found to fare better than EMEs under alternative regimes in terms of macro-financial volatility.

1. Introduction

In efforts to ensure international financial system stability and the robust recovery of growth since the global financial crisis (GFC), growing attention is being paid to the role of global liquidity. Changes in global financial conditions have had increasingly larger impacts on not only domestic financial markets but also real economies as global financial markets become more integrated.

Global liquidity (GL) has become an integral concept in cross-border monetary transmission. Studies in this area have focused on particular economic variables such as interest rates (Frankel et al., 2002; Edwards, 2010, 2015; Kim and Yang, 2009; di Giovanni and Shambaugh, 2008; Valente, 2009; and Kim and Shin, 2016), asset prices (Rigobon and Sack, 2004; Bluedorn and Bowdler, 2011; Ehrmann and Fratzscher, 2009; Ammer et al., 2010; and Wongswan, 2009), inflation (Berger and Harjes, 2009) and capital flows (Cerutti et al., 2014; Cerutti et al., 2015; and Kim and Shin, 2016). The policy actions undertaken by the U.S. Federal Reserve (the Fed) after the onset of the GFC are instrumental in gauging the impacts of U.S. monetary policy on emerging-market economies (EMEs) (Glick and Leduc, 2012; and Bauer and Neely, 2014). Compared to existing studies we broaden the scope of cross-border transmission by looking at a wider set of monetary and financial variables as well as real variables in the face of GL waves.

The ample GL generated by quantitative easing in advanced economies (AEs) is observed to have flowed into EMEs (see IMF, 2010; and Bernanke, 2013). The waves of GL have had both positive and negative effects on EMEs. The expanded GL has stimulating effects on output and stock prices in EMEs at the receiving end. Such benign influences, however, are offset by the risks of overheated asset markets and heightened currency appreciation pressures.

Against this backdrop, this study investigates how GL affects macroeconomic variables, financial variables, and policies in EMEs. GL has multifaceted momenta, since liquidity is generated by both government policies and financial markets. These momenta evolve in accordance with market developments such as financial integration, which strengthens the cross-border stream of GL, and financial innovations that intensify the role of endogenous or market-driven liquidity.

Identifying the key drivers of GL is crucial for examining the cross-border spillover effects of GL from a global economy perspective. In this

☆ The first draft version, under the title of "Global Liquidity Momenta and EMEs' Policy Responses," was presented at the BOK International Conference (June 3–4, 2013). The authors are grateful to Ralph Chami, Craig S. Hakkio, Soyoung Kim, Chanho Park, Lev Ratnovski, conference participants, and two anonymous referees for helpful and valuable comments. The views expressed herein are those of the authors and do not represent those of the Bank of Korea or IMF.

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http://dx.doi.org/10.1016/j.jinteco.2017.08.001
0022-1996/

paper, we decompose GL into an exogenous policy-driven momentum, and endogenous market-driven and risk momenta. We then investigate the impacts on EMEs of GL momenta and seek the policy implications on EMEs by means of a comparison between inflation targeting (IT) countries and alternative regimes (non-IT) countries.

Extensive research has been conducted to address a range of issues related to GL—its definition and measures, the main drivers of its cycles, its impacts on financial markets and the real economy, and its policy implications. D'Agostino and Surico (2007) introduce a GL measured by the simple mean of broad money growth in the G7 economies into the prediction of U.S. inflation, finding that, at horizons longer than two years, forecasts based upon GL are more accurate than the alternatives.[1] Kim (2001) finds from a vector autoregressive (VAR) model comprising the aggregates of the G-6 countries that U.S. expansionary monetary policy delivers booms to the rest of the world through the channel of the world real interest rate. Choi and Lee (2010) also find that AEs' expansionary monetary policies persistently boost output growth and inflation in Asian EMEs. The IMF (2010) offers an overview on the matter and evaluates policy options for responding to the surge of capital inflows into capital-receiving economies. Kim (2001), and Choi and Lee (2010) use price measures of the monetary conditions of AEs. Recently, Bruno and Shin (2015) have suggested aggregate cross-border lending through the banking sector (i.e., non-core liabilities) as a GL measure. Kim and Shin (2016) examine the effect of the U.S. domestic credit on output and bond yields in EMEs through the onshore and offshore finance channels. Nonetheless, estimating GL with a single measure from a dominant country or a country group, regardless of whether price or quantity, has limitations. Chen et al. (2012) retrieve demand and supply shocks from price and quantity measures of GL, and analyze their impacts on GDP growth in the receiving countries. More recently, Eickmeier et al. (2013) have used a factor model to retrieve GL factors from a large set of data including price and quantity measures, and identified them as global monetary policy, global credit demand, and global credit supply.

While it is broadly similar to Eickmeier et al. (2013) in drawing out multiple components of GL, our approach has three innovative features. First, we identify the three momenta of GL from financial data of the G5 countries—the U.S., France, Germany, Japan, and the U.K.—rather than by incorporating both AEs and EMEs. We assume that GL comprises three momenta: policy-driven liquidity, market-driven liquidity, and risk averseness. Policy-driven liquidity is affected by discretionary policy actions of monetary authorities. Market-driven liquidity is generated through market developments and innovations within the financial systems of AEs and transmitted across borders in the spirit of Bruno and Shin (2015). Risk averseness reflects market participants' collective willingness to take financial risks, including price uncertainty and counterparty solvency. Second, we systematically investigate the impacts of GL momenta on EMEs. We apply a VAR model to data from EMEs, adding GL momenta derived from AEs as the exogenous variables.

Our approach enables us to identify distinctive GL shocks and the corresponding reactions of EMEs. To derive the three liquidity momenta, we select nine financial variables in each of the G5 countries, and then apply sign restrictions to characterize their principal components as economically meaningful factors. Minimal sign restrictions are imposed to identify these factors: for example, the policy-driven factor is set to increase the monetary base. We employ a factor-augmented vector autoregressive (FAVAR) model to incorporate the panel data of 10 EMEs for 1995Q1–2014Q3. This model includes the three factors as exogenous variables.

EMEs' policy responses to GL shocks and economic repercussions are derived from the impulse response analysis based upon the estimated panel FAVAR model. In response to positive GL shocks driven by G5 policies or their financial markets, EMEs appear to reduce policy rates and increase foreign reserves, thus mainly curtailing the shocks' impacts on their external fronts rather than on their real economies. Against a heightened risk averseness which accompanies capital outflows, EMEs furnish foreign-currency liquidity by running down foreign reserves while initial policy responses differ between IT and non-IT EMEs. Despite EMEs' policy responses, increases in global liquidity overall generate positive spillovers on equity markets and output, and a liquidity reversal owing to heightened risk averseness calls for negative spillovers. We also find that the responses of macro-financial variables to GL shocks are less volatile in IT countries than in non-IT countries.

The remainder of the paper is structured as follows. Section 2 presents the FAVAR model, and Section 3 estimates GL momenta from a factor model. Section 4 examines forecast error variance decomposition and impulse responses of the estimated model for IT countries. Section 5 looks at GL impacts on non-IT countries for comparison. Section 6 concludes.

2. Empirical modeling of global liquidity transmission

To measure the dynamic impacts of the GL momenta originating from AEs on key macro-financial variables in EMEs, we adopt a panel FAVAR model by extending the panel VAR models widely used in the literature.[2] Rebucci (2010) utilizes an 18-country panel using mean group estimators, which is the average of estimation for individual countries, to investigate whether growth of developing countries was driven by external shocks or domestic shocks. Ciccarelli et al. (2013) estimate a panel VAR model to find differences among euro area countries in monetary policy effects, allowing the slopes and contemporaneous impact matrix to differ between sub-country groups while assuming zero cross-country correlations.

This study also follows works on cross-border GL transmission such as Kim (2001), Canova (2005), Berger and Harjes (2009), Darius and Radde (2010), and Chen et al. (2012). Previous studies have employed GL metrics differing in coverage (country groups; banking sector vs. financial system) and scope (price vs. quantity measures; direct vs. indirect measures) to serve individual research purposes. To evaluate the transmission of GL originating from AEs into EMEs, we use both price and quantity data accounting for monetary policy at the zero lower bound.

To measure GL, recent studies have begun to adopt indirect measures drawn from factor models or VAR models. The need for aggregating large sets of data emerges, because no clear measure is suggested by the theoretical work, and relevant data are of global coverage. Factor models excel in dealing with large sets of data, which are of low quality or high heterogeneity. Eickmeier et al. (2013) use a factor model to derive three components of GL while Chen et al. (2012) employ a dynamic factor model to measure the costs of noncore funding; and both studies use sign restrictions to identify different GL shocks.

Our empirical modeling of GL transmission entails two stages. In the first stage, we derive GL momenta from a static factor model. We employ data from AEs in deriving the momenta, an approach consistent with the notion that the AEs' liquidity conditions are governed by common factors and the fact that AEs have relatively higher mutual liquidity exposures. In the second stage, we estimate the impacts of the GL momenta on EME macro-financial variables by adding GL momenta shocks as exogenous variables to a VAR model of EMEs. This

[1] Darius and Radde (2010) measure GL by adding the international reserves of G-7 countries to the U.S. monetary base and analyze the impacts of GL on asset prices in individual countries. Their findings suggest that GL has a limited impact on domestic housing prices.

[2] Canova and Ciccarelli (2013) provide a comprehensive overview on this empirical model including motivations, estimation issues, and comparison with other empirical methods.