Effects of Monetary and Macroprudential Policies on Financial Conditions: Evidence from the United States

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Bratislava, Nov, 24, 2016

Motivation

- There is a growing consensus on the central role of macroprudential policy measures in constraining financial stability risks build-ups (Nier et al., 2014).
- But there are different views on the role of the monetary policy in this matter.
- Post-GFC debate: whether in some circumstances, monetary policy may deviate from its traditional objectives to support financial stability (Dell'Ariccia et al., 2015b; Smets, 2014).
- Careful analysis of costs and benefits (including policies' interactions and their impact of financial conditions within national boarders and abroad) is required. Further study is needed.

Literature

- Domestic financial conditions:
  - Monetary policy (Jorda et al., 2015; Laseen et al. 2016; Bruno and Shin, 2014, Angeloni et al., 2014)
  - Macroprudential policy (Zhang and Zoli, 2014; Elliot et al.,2013; Cerutti et al., 2015)
- Financial conditions abroad:
  - Monetary policy (Chen et al. 2014)
  - Macroprudential policy (Danisewicz et al, 2015; Beirne and Friedrich, 2014)

Approach

Contribution:

How do monetary policy shocks and macroprudential policy measures in AEs affect financial conditions within and outside national borders?

Outline:

1. Policy and financial condition measures
2. Impact of monetary policy and macroprudential actions on domestic conditions.
3. Impact of monetary policy and macroprudential actions on financial conditions in other countries.
4. Main results

1. Policy and financial condition measures

Monetary policy shocks

- Exogenous monetary policy changes for the United States from an estimated Taylor rule with time-varying parameters (Coibion, 2012):

$$\Delta \boldsymbol{f_t} = \boldsymbol{c_t} + \boldsymbol{\rho_{1,t} fb_m} + \boldsymbol{\rho_{2,t} fb_{m-1}} + \boldsymbol{\varphi_{\pi,1} F_t \pi_{t+1,t+2}} + \boldsymbol{\varphi_{gy,t} F_t gy_t} + \boldsymbol{\varphi_{ue,t} F_t ue_t} + \boldsymbol{m_t} \quad (1)$$

- where Δf_t is the intended change in the Federal Funds Rate, fb_m and fb_{m-1} are the level of FFR before two last FOMC meetings while $F_t\pi$,$F_t gy_t$, and $F_t ue_t$ are the forecasts of average inflation, output growth, and the unemployment rate.

- The residuals—m_t— captures exogenous monetary policy shocks is relatively free of current and forecasted real-time movements in macroeconomic variables, but also of regime changes.

Macroprudential Policies Actions

- The Federal Reserve and other agencies' measures used since 1918 to early 1990's (Elliott, Feldberg, and Lehnert, 2013):
  - Demand-side measures, such as limits on loans-to-value ratios, margin requirements, loan maturities, and tax policies;
  - Supply-side actions, including lending and interest rate ceilings, reserve and capital requirements, portfolio restrictions, and supervisory guidance.
- Classified at the quarterly basis:

$$\boldsymbol{MaPP_t = 1}\ if\ a\ macroprudential\ tightening\ measure\ is\ introduced$$
$$\boldsymbol{MaPP_t = -1}\ if\ a\ macroprudential\ easing\ measure\ is\ introduced$$
$$\boldsymbol{MaPP_t = 0}\ otherwise$$

Financial Conditions

- Financial stability is approximated by estimating the degree of financial overheating based on growth rates of real credit and property prices (Gourinchas and Obstfeld,2012; Dell'Ariccia et al., 2012; Williams, 2015; Jorda et al., 2015.)

- Data

  - IFS bank credit to the private non-financial sector or BIS data on bank and nonbank credit to the private non financial sector;

  - Property prices are measured using OECD and IMF real house prices;

  - All series are seasonally adjusted and deflated by the CPI.

2. Impact of monetary policy and macroprudential actions on domestic conditions.

Methodology

- A distributed lag model (Romer and Romer, 2010):

$$\Delta \boldsymbol{fc_t} = \boldsymbol{\alpha_t} + \boldsymbol{\delta(L)m_t} + \boldsymbol{\varepsilon_t} \quad (2)$$

- where m_t are monetary policy shocks and fc_t is the log of real credit (property prices), and α_t are quarterly dummies.

- Sample (data availability):
  - Monetary policy: 1969Q3 to 2008Q4
  - Macroprudential policy: 1960Q1 to 1992Q2.
- Alternative approaches:
  - VAR with financial variables and monetary/macroprudential measures
  - Controlling for a simultaneous influence of both policies (1969Q3-1992Q2)

Baseline results

Figure 2: Monetary Shock
(percent change)

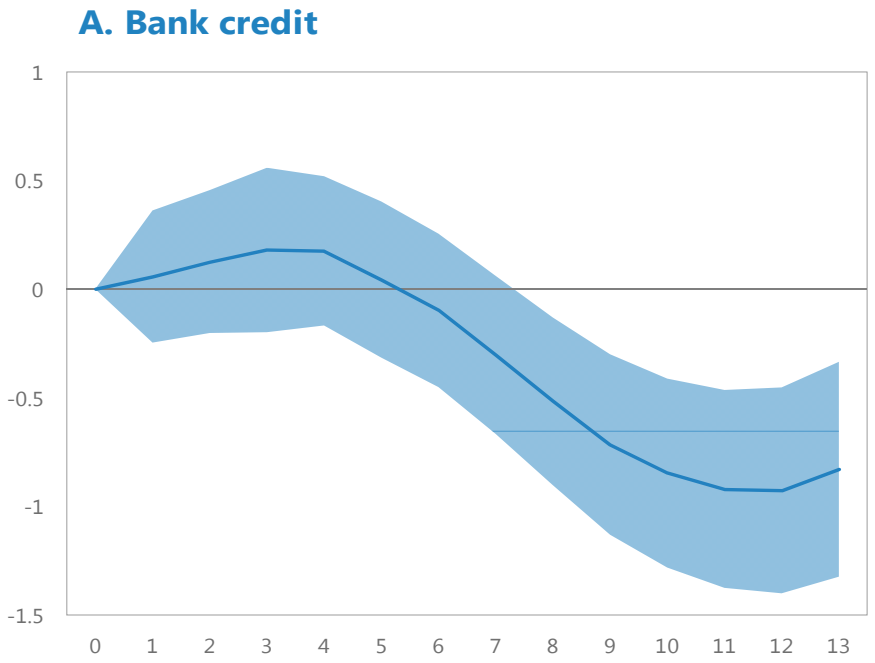
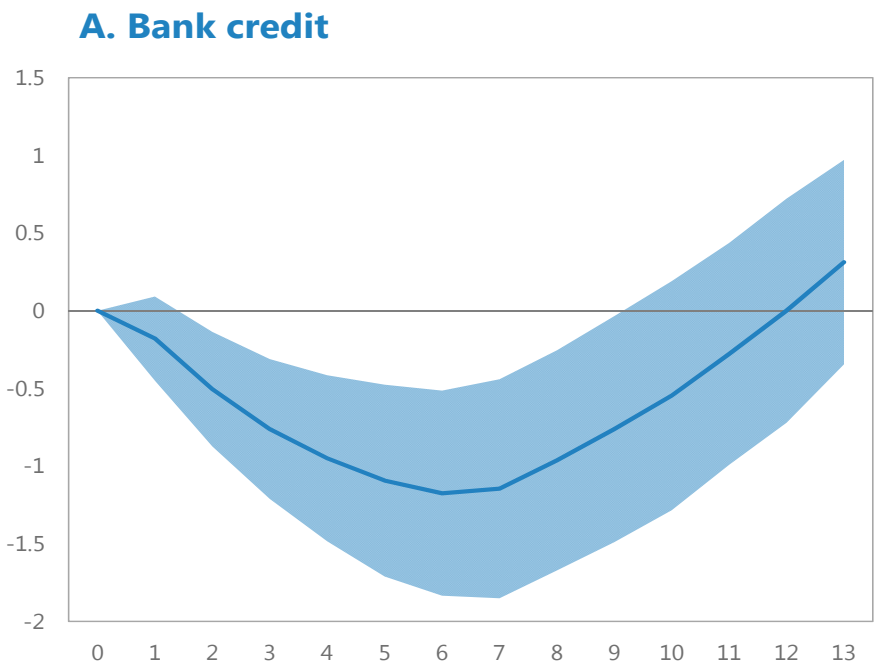


Figure 3: Macroprudential Policy Measures
(percent change)



Note: The y-axis shows the impact of monetary policy shocks or macroprudential policy measures on the log level of real credit—the coefficients δ in Equation (2). The x-axis indicates quarters after the shock in t =0. Dashed lines indicate the 90 percent confidence bands. Source: BIS, Haver, IFS-IMF, Coibion (2012), Elliott et al. (2013), and authors' calculations.

Asymmetric Effects

Figure 4: Positive vs. negative shocks
(percent change)

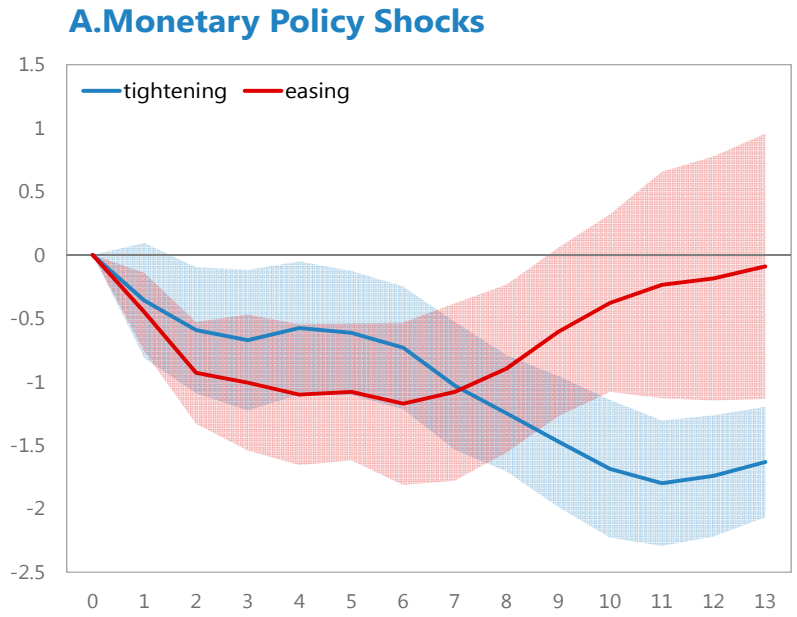
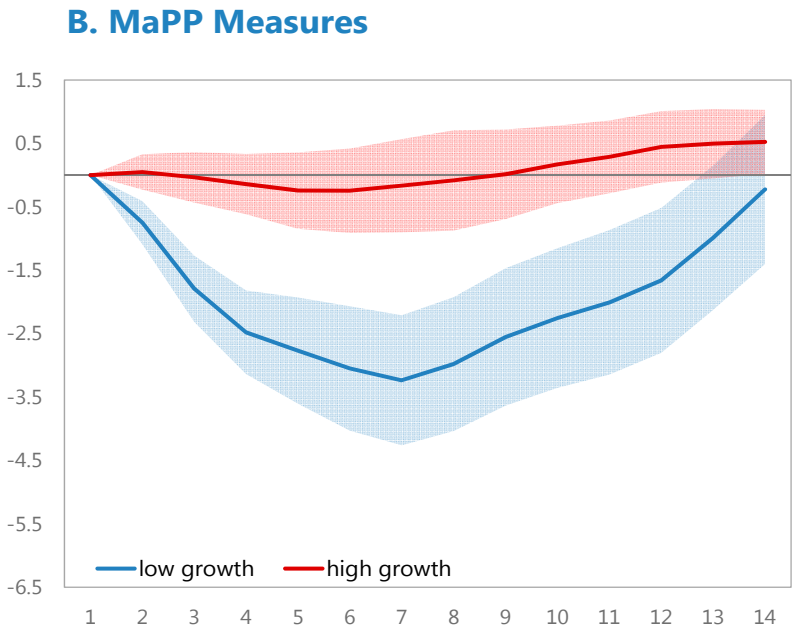


Figure 5: Low- vs. high-growth regimes
(percent change)



The y-axis shows the impact of Monetary and Macroprudential shocks in absolute terms on the log level of real credit—the coefficients δ in Equation (4) and (5)—depending on growth regime. The x-axis indicates quarters after the shock in t =0. Dashed lines indicate the 90 percent confidence bands. Sign of the impact is switched for monetary easing, for comparison purposes.
Source: BIS, Haver, IFS-IMF, Coibion (2012), Elliot et al. (2013), and authors' calculations.

3. Impact of monetary policy and macroprudential actions on financial conditions in other countries.

Methodology

- A distributed lag model:

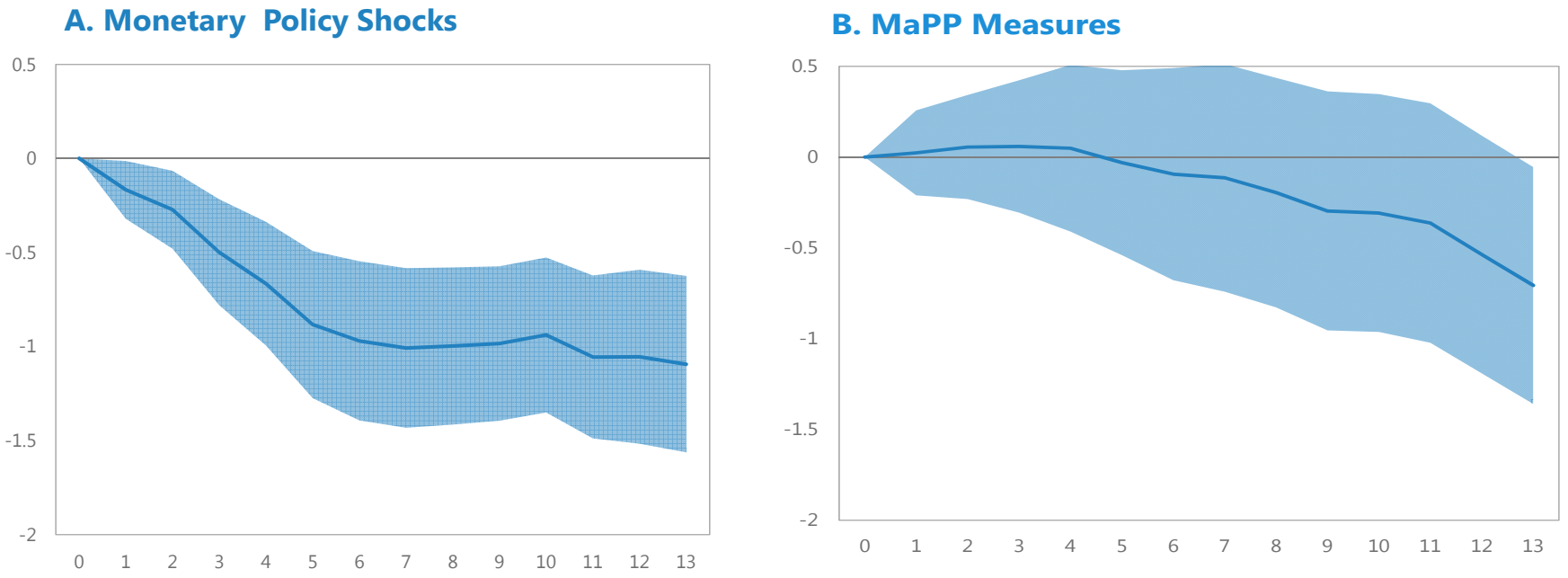
$$\Delta fc_{it} = \alpha_i + \delta(L)m_t + \varepsilon_{it} \qquad (8)$$

- where m_t are U.S. monetary policy shocks and fc_{it} is the log of real credit in country *i* , and α_i are country fixed-effects.

- Sample:
  - balanced panel of 20 advanced and emerging market countries
  - 1969Q3 to 2008Q4

Baseline results

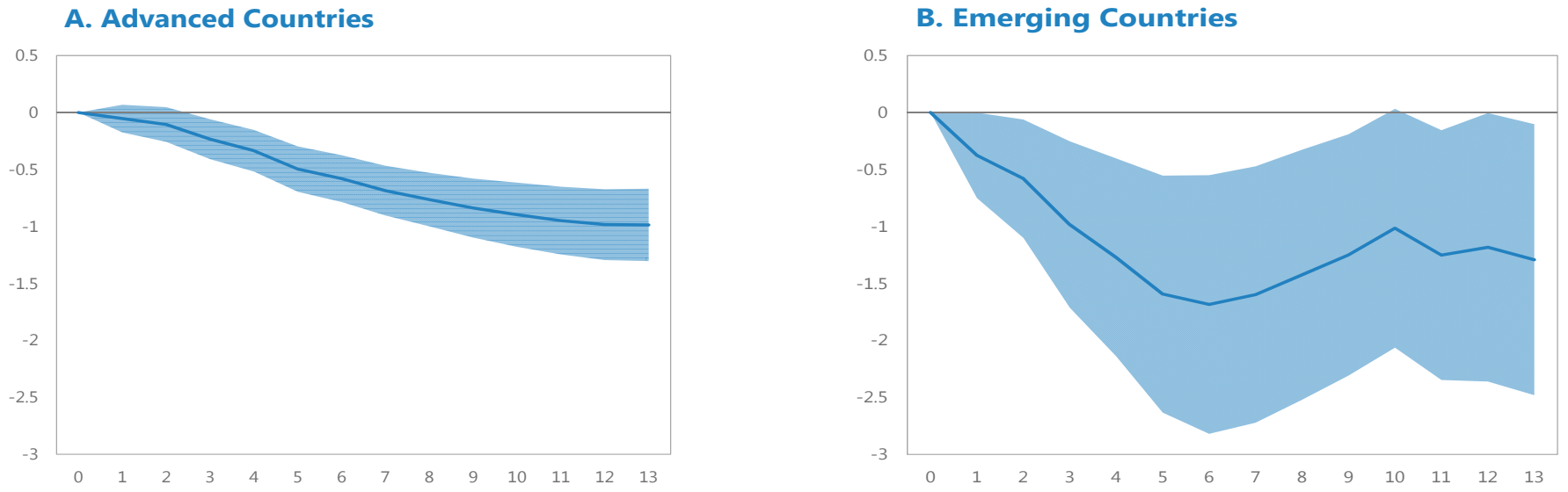
Figure 8: Spillovers from Domestic Policy on Bank Credit in Other Countries
(percent change)



Note: The y-axis shows the impact of monetary policy shocks and Macroprudential measures on the log level of real credit—the coefficients δ in Equation (8), respectively. The x-axis indicates quarters after the shock in t =0. Dashed lines indicate the 90 percent confidence bands. Source: BIS, Haver, IFS-IMF, Coibion (2012), Elliott et al. (2013), and authors' calculations.

Role of country-specific factors (I)

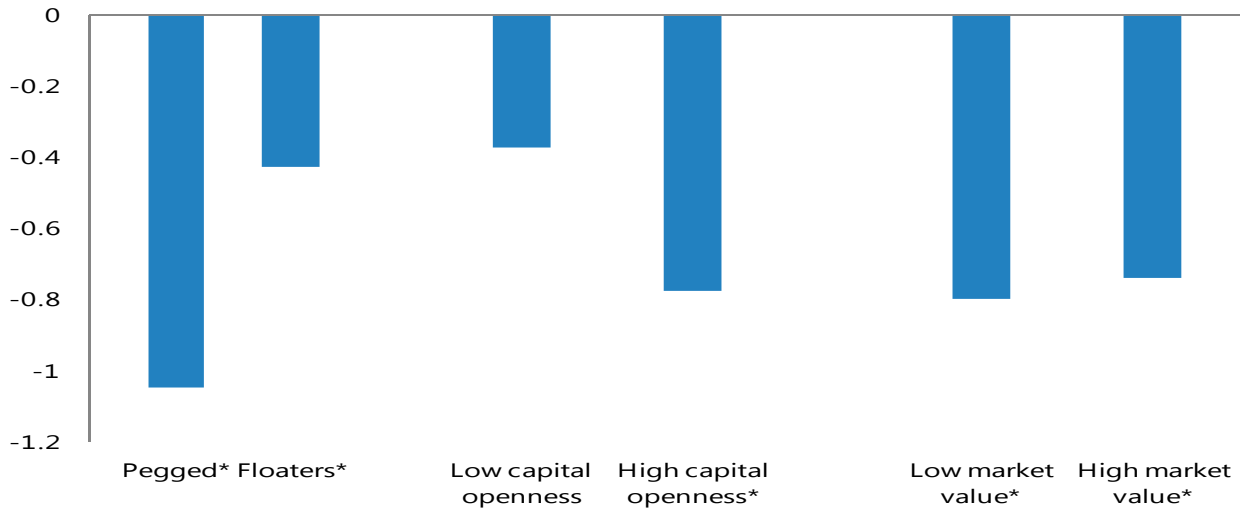
Figure 9: Spillovers from Domestic Monetary Policy on Bank Credit in AE and EM
(percent change)



Note: The y-axis shows the impact of monetary policy shocks and Macroprudential measures on the log level of real credit—the coefficients δ in Equation (8), respectively. The x-axis indicates quarters after the shock in t =0. Dashed lines indicate the 90 percent confidence bands. Source: BIS, Haver, IFS-IMF, Coibion (2012), Elliott et al. (2013), and authors' calculations.

Role of country-specific factors (II)

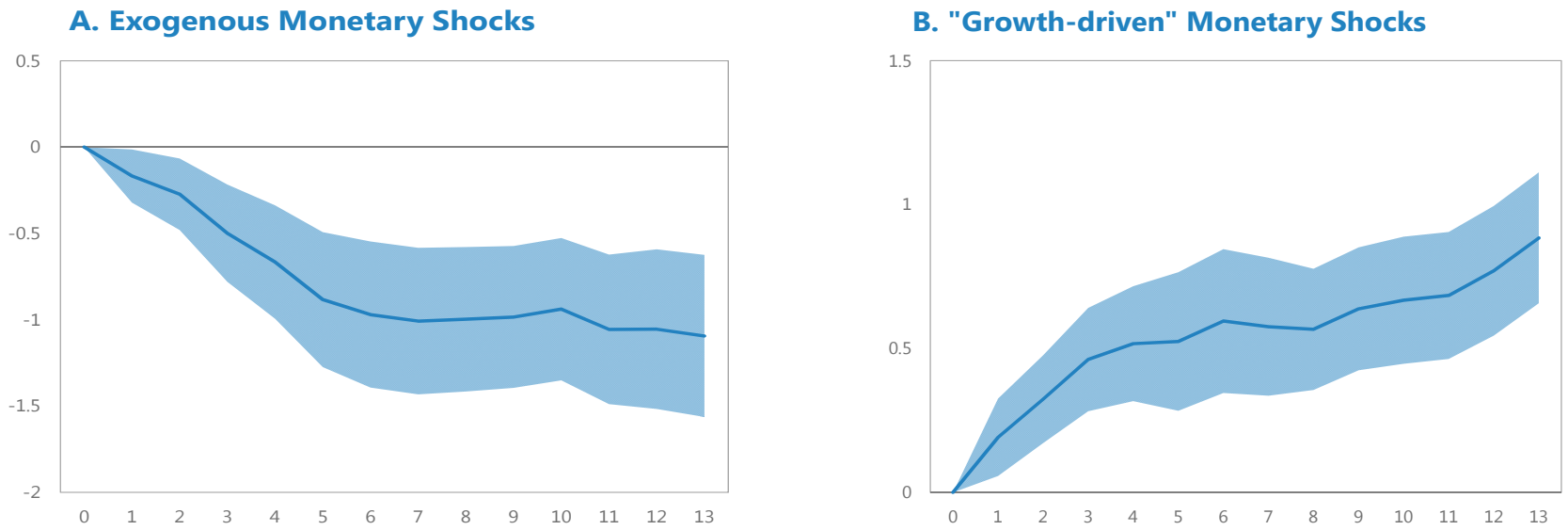
Figure 10: Spillovers from Domestic Monetary Policy on Bank Credit
(percent change)



Note: The y-axis shows the impact of monetary policy shocks on the log level of real credit—the coefficients δ in Equation (9). The y-axis indicates peak impact. * indicates statistically significant effects. Source: BIS, Haver, IFS-IMF, Coibion (2012), Elliott et al. (2013), and authors' calculations.

Role of the factors underlying U.S. monetary policy changes

Figure 11: Spillovers form U.S. “growth-driven” vs. exogenous shocks on bank credit
(percent change)



Note: The y-axis shows the impact of monetary policy shocks on the log level of real credit—the coefficients δ in Equation (11). The x-axis indicates quarters after the shock in t =0. Dashed lines indicate the 90-percent confidence bars.
Source: BIS, Haver, IFS-IMF, Coibion (2012), Elliott et al. (2013), and authors’ calculations.

Main conclusions

- Monetary shocks have significant and persistent effects on financial conditions.
- Lags in the impacts are also important (6 to 8 quarters) while macroprudential policy measures have immediate but short-lasting effects.
- Policy tightening has larger effects than easing, but also the effect is larger during recessions than expansions.
- U.S. monetary shocks affect financial conditions abroad with the effects depending on:
  - factors underlying policy changes (e.g., “growth-driven” positive effects)
  - and recipient economic characteristics and policies (e.g., EMs, peggers, KA)
- Macroprudential policy measures used to have limited spillover effects.

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