Productivity Shocks and Monetary Policy in a Two-Country Model

December 15, 2025

Monetary Policy and De-Dollarization Dynamics in a Two-Country DSGE Model: Evidence from the US and China December 15, 2025

1 The Model

We develop a two-country New Keynesian model with nominal rigidities, where the two countries are identified as the United States (US) and China (CN). Each country is populated by households, firms, and a central bank. The model includes standard IS curves, New Keynesian Phillips curves, and Taylor-type monetary policy rules. International linkages arise through trade, terms of trade, and the exchange rate, allowing for monetary and real spillovers across countries.

Home and foreign assignment. The home economy is the United States (US), and the foreign economy is China (CN). The US represents an advanced economy issuing the global reserve currency, while China is modeled as a large emerging economy with partial financial dollarization.

Objective. The objective of this paper is to analyze the transmission mechanisms and international spillovers of two key shocks:

1. a *monetary policy shock in the US economy*, and

2. a *de-dollarization shock in China*, representing a reduction in the degree of dollarization within the Chinese financial system.

Table 1: Key Equilibrium Conditions

Equation	**Description**
Euler equation	Intertemporal consumption choice
IS curve	Output dynamics with terms of trade effects
NK Phillips Curve	Inflation–marginal cost relationship
Market clearing	Goods market equilibrium
Natural output	Output under flexible prices
Output gap	Deviation from natural output
Taylor rule (US)	US monetary policy reaction function
Taylor rule (CN)	China policy rule with dollarization channel

1.1 Households

Households consume differentiated goods, supply labor, and trade nominal bonds internationally. The representative household in country H maximizes expected lifetime utility

$$U = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left(\frac{C_t^{1-\sigma}}{1-\sigma} - \frac{N_t^{1+\varphi}}{1+\varphi} \right), \tag{1}$$

The representative household in country F maximizes expected lifetime utility

$$U^* = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \left(\frac{C_t^{*\,1-\sigma}}{1-\sigma} - \frac{N_t^{*\,1+\varphi}}{1+\varphi} \right), \tag{2}$$

where C_t (resp. C_t^*) is the consumption index in the home (resp. foreign) country, N_t (resp. N_t^*) denotes labor supply, $\beta \in (0,1)$ is the subjective discount factor, $\sigma > 0$ is the coefficient of relative risk aversion, and $\varphi > 0$ is the inverse Frisch elasticity. Foreign households have analogous preferences, as shown by U^*. Consumption is a CES composite of domestic and imported bundles:

Table 2: Variable Glossary

Variable	**Description**
C_t, C_t^*	Aggregate consumption in the home (US) and foreign (China) economy
$C_{H,t}$, $C_{F,t}$	Consumption of home and foreign goods by home households
$C_{H,t}^*$, $C_{F,t}^*$	Consumption of home and foreign goods by foreign households
N_t, N_t^*	Labor supply in the home and foreign economy
Y_t, Y_t^*	Aggregate output in the home and foreign economy
$Y_t(h)$, $Y_t^*(f)$	Output of an individual firm in home and foreign economy
A_t, A_t^*	Productivity level in the home and foreign economy
a_t, a_t^*	Log productivity shocks in the home and foreign economy
$P_t(h)$, $P_t(f)$	Prices of home and foreign goods in the home economy
$P_t^*(h)$, $P_t^*(f)$	Prices of home and foreign goods in the foreign economy
$\pi_{H,t}$, $\pi_{F,t}^*$	Inflation rates in home and foreign economy
W_t, W_t^*	Nominal wage in the home and foreign economy
$mc_{H,t}$, $mc_{F,t}^*$	Real marginal cost in home and foreign economy
r_t^{US}	US nominal policy interest rate
r_t^{CN}	China nominal policy interest rate
x_t, x_t^*	Output gap in the home and foreign economy
$\bar{y}_t$, $\bar{y}_t^*$	Natural level of output in home and foreign economy
s_t	Terms of trade (relative price of foreign to home goods)
e_t	Nominal exchange rate (USD/CNY)
$dol_{CN,t}$	Degree of financial dollarization in China
m_t^{US}, m_t^{CN}	Monetary policy shocks in US and China
$\varepsilon_{dol,t}$	De-dollarization shock in China
$Q_{t,t+1}$, $Q_{t,t+1}^*$	Stochastic discount factor (home and foreign)
D_t^n, $D_t^{n,*}$	Nominal bond holdings (home and foreign)

$$C_t = \left[(1-\alpha)^{1/\eta} C_{H,t}^{\frac{\eta-1}{\eta}} + \alpha^{1/\eta} C_{F,t}^{\frac{\eta-1}{\eta}}\right]^{\frac{\eta}{\eta-1}}, \tag{3}$$

$$C_t^* = \left[(1-\alpha)^{1/\eta} (C_{F,t}^*)^{\frac{\eta-1}{\eta}} + \alpha^{1/\eta} (C_{H,t}^*)^{\frac{\eta-1}{\eta}}\right]^{\frac{\eta}{\eta-1}}, \tag{4}$$

where $\eta > 0$ is the elasticity of substitution between home and foreign goods and $\alpha \in [0,1]$ measures trade openness. Households in both countries maximize the utility function in equation (1) subject to their respective budget constraints.

The budget constraint of the representative household in the home country is given by

$$\int_0^1 P_t(h)\, C_t(h)\, dh \;+\; \int_0^1 P_t(f)\, C_t(f)\, df \;+\; \mathbb{E}_t\big[Q_{t,t+1}\, D_{t+1}^n\big] \;\leq\; D_t^n \;+\; W_t N_t \;+\; TR_t. \tag{5}$$

The budget constraint of the representative household in the foreign country is analogously given by

$$\int_0^1 P_t^*(h)\, C_t^*(h)\, dh \;+\; \int_0^1 P_t^*(f)\, C_t^*(f)\, df \;+\; \mathbb{E}_t\big[Q_{t,t+1}^*\, D_{t+1}^{n,*}\big] \;\leq\; D_t^{n,*} \;+\; W_t^* N_t^* \;+\; TR_t^*. \tag{6}$$

Definitions:

- $P_t(h), P_t(f)$: prices of domestic (h) and foreign (f) goods in the home country at time t.
- $C_t(h), C_t(f)$: consumption of domestic and foreign goods by home households at time t.
- $P_t^*(h), P_t^*(f), C_t^*(h), C_t^*(f)$: the corresponding variables for the foreign country (denoted with *).
- $\mathbb{E}_t[\cdot]$: conditional expectation operator based on the information set at time t.
- $Q_{t,t+1}$: stochastic discount factor, i.e., the price in period t of a one-period asset

paying one unit in period $t+1$. $Q^*_{t,t+1}$ is the foreign counterpart.

- D^n_{t+1}: nominal asset holdings chosen in t and maturing in $t+1$ (D^n_t is the beginning-of-period position). The foreign counterpart is $D^{n,*}_t$.

- $W_t N_t$: nominal labor income, where W_t is the wage rate and N_t denotes labor supply. Analogously, $W^*_t N^*_t$ for the foreign economy.

- TR_t, TR^*_t: lump-sum transfers received by households at time t, which may include dividends or fiscal transfers.

1.2 Firms

A continuum of monopolistically competitive firms produce differentiated goods with linear technology:

$$Y_t(h) = A_t N_t(h), \qquad Y^*_t(f) = A^*_t N^*_t(f), \tag{7}$$

where A_t and A^*_t are productivity processes.

Under Calvo pricing, a fraction $(1-\theta)$ of firms can re-optimize their price each period. The optimal reset price satisfies

$$\tilde{P}_{H,t} = \frac{\varepsilon}{\varepsilon - 1} \frac{\mathbb{E}_t \sum_{k=0}^{\infty} (\beta\theta)^k Q_{t,t+k} Y_{t+k} MC_{H,t+k}}{\mathbb{E}_t \sum_{k=0}^{\infty} (\beta\theta)^k Q_{t,t+k} Y_{t+k}}, \tag{8}$$

where $MC_{H,t}$ is real marginal cost.

Log-linearization yields the New Keynesian Phillips Curves:

$$\pi_{H,t} = \beta \mathbb{E}_t[\pi_{H,t+1}] + \kappa mc_{H,t}, \tag{9}$$

$$\pi^*_{F,t} = \beta \mathbb{E}_t[\pi^*_{F,t+1}] + \kappa mc^*_{F,t}, \tag{10}$$

with slope $\kappa = \frac{(1-\theta)(1-\theta\beta)}{\theta}$.

1.3 Equilibrium and Aggregate Demand

Market clearing requires

$$Y_t(h) = C_t(h) + C_t^*(h), \qquad Y_t^*(f) = C_t(f) + C_t^*(f). \tag{11}$$

Combining the Euler equation with the definition of terms of trade $s_t \equiv p_{F,t} - p_{H,t}$ gives the IS equations:

$$y_t = \mathbb{E}_t[y_{t+1}] - \frac{1}{\sigma}\big(r_t - \mathbb{E}_t[\pi_{H,t+1}]\big) - \frac{\omega_2}{\sigma}\mathbb{E}_t[\Delta s_{t+1}], \tag{12}$$

$$y_t^* = \mathbb{E}_t[y_{t+1}^*] - \frac{1}{\sigma}\big(r_t^* - \mathbb{E}_t[\pi_{F,t+1}^*]\big) + \frac{\omega_2}{\sigma}\mathbb{E}_t[\Delta s_{t+1}], \tag{13}$$

where $\omega_2 = 2\alpha(1-\alpha)(\sigma\eta - 1)$.

1.4 Output Gaps and Natural Output

Natural output $\bar{y}_t$ is defined by $mc_{H,t} = 0$. Solving yields

$$\bar{y}_t = \frac{\varsigma\psi}{\delta}a_t - \frac{\omega_2\sigma\psi}{\delta}a_t^*, \tag{14}$$

$$\bar{y}_t^* = \frac{\varsigma\psi}{\delta}a_t^* - \frac{\omega_2\sigma\psi}{\delta}a_t, \tag{15}$$

where a_t, a_t^* are productivity shocks, and ψ, δ are composite parameters.

We define the output gaps as

$$x_t = y_t - \bar{y}_t, \qquad x_t^* = y_t^* - \bar{y}_t^*. \tag{16}$$

1.5 Monetary Policy

Each central bank follows a Taylor-type rule. The US rule follows the standard form:

$$r_t^{US} = \varrho_{US} r_{t-1}^{US} + (1-\varrho_{US})(\phi_{\pi,US}\pi_{US,t}^{CPI} + \phi_{x,US}x_{US,t}) + m_{US,t}. \tag{17}$$

For China, the monetary policy rule includes both the US spillover and a dollarization channel:

$$r_t^{CN} = \varrho_{CN} r_{t-1}^{CN} + (1-\varrho_{CN})(\phi_{\pi,CN}\pi_{CN,t}^{CPI} + \phi_{x,CN}x_{CN,t}) + \delta_{rUS} r_t^{US} + \gamma_{dol} dol_{CN,t} + m_{CN,t}. \quad (18)$$

Here, δ_{rUS} captures how the People's Bank of China (PBoC) responds to US monetary policy, while γ_{dol} measures the influence of dollarization pressures on domestic policy rates.

The degree of dollarization evolves as:

$$dol_{CN,t} = \rho_{dol} dol_{CN,t-1} + \gamma_\pi \pi_{CN,t}^{CPI} + \epsilon_{dol,t}, \quad (19)$$

where $\epsilon_{dol,t}$ is a de-dollarization shock.

1.6 Transmission Mechanism of De-Dollarization

The degree of dollarization crucially affects the effectiveness of monetary policy in China. When financial assets and contracts are highly dollarized, the PBoC's ability to control inflation and output is weakened. Because domestic financial conditions respond less to changes in the renminbi interest rate, the central bank must implement larger rate adjustments to achieve its inflation target.

Mechanism:

1. High dollarization reduces the sensitivity of domestic demand to the Chinese policy rate.

2. Inflation becomes less responsive to monetary policy.

3. The PBoC must raise or lower interest rates by larger magnitudes to influence prices.

4. A *de-dollarization shock* ($\epsilon_{dol,t} < 0$) reduces the share of dollar-denominated assets, strengthening the transmission channel of domestic monetary policy.

5. This shock first affects the Chinese interest rate $r_{CN,t}$ through the Taylor rule and then propagates to output, inflation, and exchange rate dynamics.

Thus, de-dollarization enhances the autonomy of China's monetary policy and increases its capacity to stabilize inflation.

2 Bayesian Estimation

2.1 Data

All series are seasonally adjusted and expressed in quarterly changes. Dollarization dynamics are proxied using data on foreign currency deposits or external liabilities, depending on availability.The model is estimated using six quarterly macroeconomic series from the Federal Reserve Economic Data (FRED) and Chinese statistical sources:

Table 3: Observables Used in Estimation

Variable	Economy	Description
y	US	Real GDP growth (quarterly)
p	US	CPI inflation (quarterly)
r	US	Short-term interest rate (Fed Funds Rate)
y_{CN}	China	Real GDP growth (quarterly)
p_{CN}	China	CPI inflation (quarterly)
r_{CN}	China	Short-term interest rate

3 Posterior Estimates

Posterior means and 90% highest posterior density (HPD) intervals for the key parameters are reported in Table **??**.

Table 4: Structural Parameters

Parameter	Description
β	Subjective discount factor
σ	Coefficient of relative risk aversion
ϕ	Inverse Frisch elasticity of labor supply
α	Degree of trade openness
η	Elasticity of substitution between home and foreign goods
θ	Calvo price stickiness parameter
ε	Elasticity of substitution among differentiated goods
κ	Slope of the New Keynesian Phillips Curve
ω_2	Trade-related composite parameter in IS equation
ψ, δ	Composite parameters determining natural output

Table 5: Monetary Policy Rule Parameters

Parameter	Description
ϱ^{US}	Interest rate smoothing (US)
ϱ^{CN}	Interest rate smoothing (China)
$\phi_{\pi,US}$	Response to inflation (US)
$\phi_{\pi,CN}$	Response to inflation (China)
$\phi_{x,US}$	Response to output gap (US)
$\phi_{x,CN}$	Response to output gap (China)
δ_{rUS}	Spillover from US policy rate to China
γ_{dol}	Impact of dollarization on China's policy rate

Table 6: Exogenous Shock Processes

Shock	Law of Motion	Description
a_t	$a_t = \rho_a a_{t-1} + \varepsilon_{a,t}$	Productivity shock (US)
a_t^*	$a_t^* = \rho_{a^*} a_{t-1}^* + \varepsilon_{a^*,t}$	Productivity shock (China)
m_t^{US}	$m_t^{US} \sim \mathcal{N}(0, \sigma_{US}^2)$	US monetary policy shock
m_t^{CN}	$m_t^{CN} \sim \mathcal{N}(0, \sigma_{CN}^2)$	China monetary policy shock
$dol_{CN,t}$	$\rho_{dol} dol_{CN,t-1} + \varepsilon_{dol,t}$	Dollarization process
$\varepsilon_{dol,t}$	$\sim \mathcal{N}(0, \sigma_{dol}^2)$	De-dollarization shock

Table 7: Posterior Estimates of Structural Parameters

Parameter	Prior Mean	Posterior Mean	90% HPD Interval	Prior Std
ρ_{US}	0.600	0.5968	[0.2796, 0.9264]	0.2000
ρ_{CN}	0.600	0.5986	[0.2855, 0.9329]	0.2000
ρ_{dol}	0.600	0.1918	[0.0443, 0.3299]	0.2000
θ_{US}	0.400	0.4001	[0.3195, 0.4819]	0.0500
θ_{CN}	0.400	0.3995	[0.3167, 0.4803]	0.0500
σ	4.500	4.3728	[3.5328, 5.1829]	0.5000
$\phi_{\pi,US}$	1.500	1.6962	[1.2233, 2.1514]	0.3000
$\phi_{\pi,CN}$	1.500	2.1015	[1.6206, 2.5502]	0.3000
$\phi_{x,US}$	0.500	0.6930	[0.3777, 1.0018]	0.2000
$\phi_{x,CN}$	0.500	0.8075	[0.4943, 1.1075]	0.2000
ϱ_{US}	0.400	0.1743	[0.0163, 0.3251]	0.2000
ϱ_{CN}	0.400	0.0882	[0.0070, 0.1682]	0.2000
γ_{π}	0.400	0.5660	[0.2462, 0.8935]	0.2000
γ_{x}	−0.150	−0.1493	[−0.3126, 0.0181]	0.1000
γ_{e}	0.080	0.0822	[0.0002, 0.1646]	0.0500
γ_{r}	0.100	0.1007	[0.0179, 0.1808]	0.0500
δ_{rUS}	0.350	0.4864	[0.3258, 0.6405]	0.1000

Note: The log data density (modified harmonic mean) is −1026.76.

Table 8: Posterior Estimates of Shock Standard Deviations

Shock	Prior Mean	Posterior Mean	90% HPD Interval	Prior Std
e_1	0.100	1.8182	[1.6090, 2.0334]	0.0500
e_2	0.100	0.8792	[0.7743, 0.9822]	0.0500
e_3	0.100	2.5532	[2.2498, 2.8486]	0.0500
e_4	0.100	11.6145	[10.2825, 12.9591]	0.0500
e_5	0.100	0.0244	[0.0226, 0.0263]	0.0500
e_6	0.100	3.4002	[3.0032, 3.7934]	0.0500

Posterior Estimates of Structural Parameters

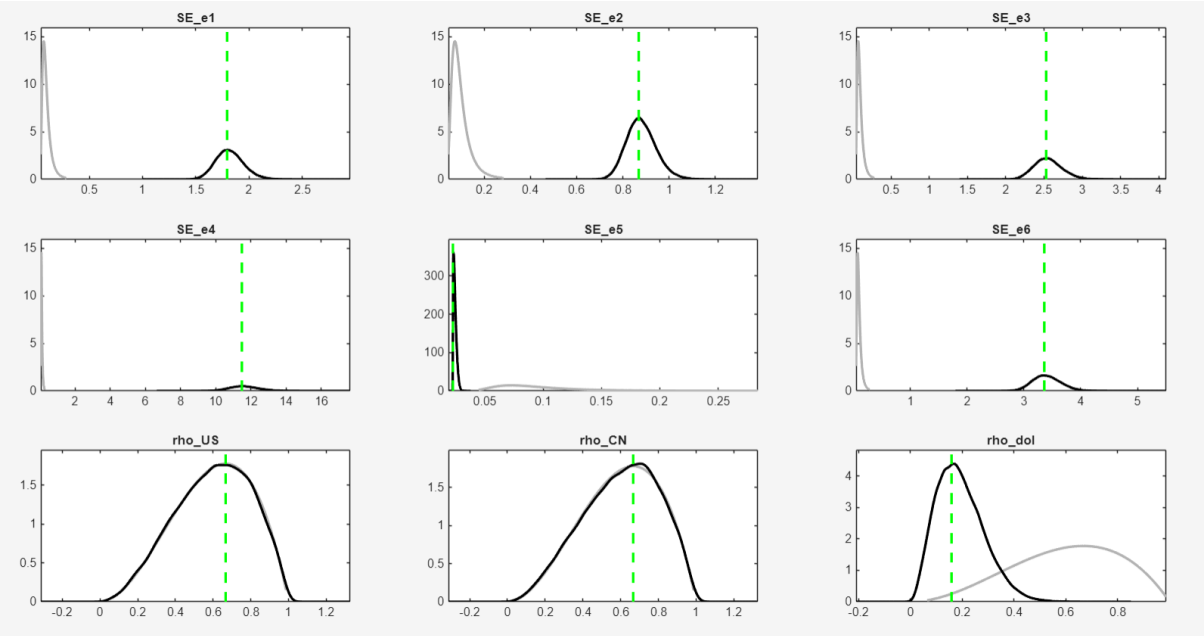

Figure 1: Bayesian Estimation

Posterior Estimates of Structural Parameters

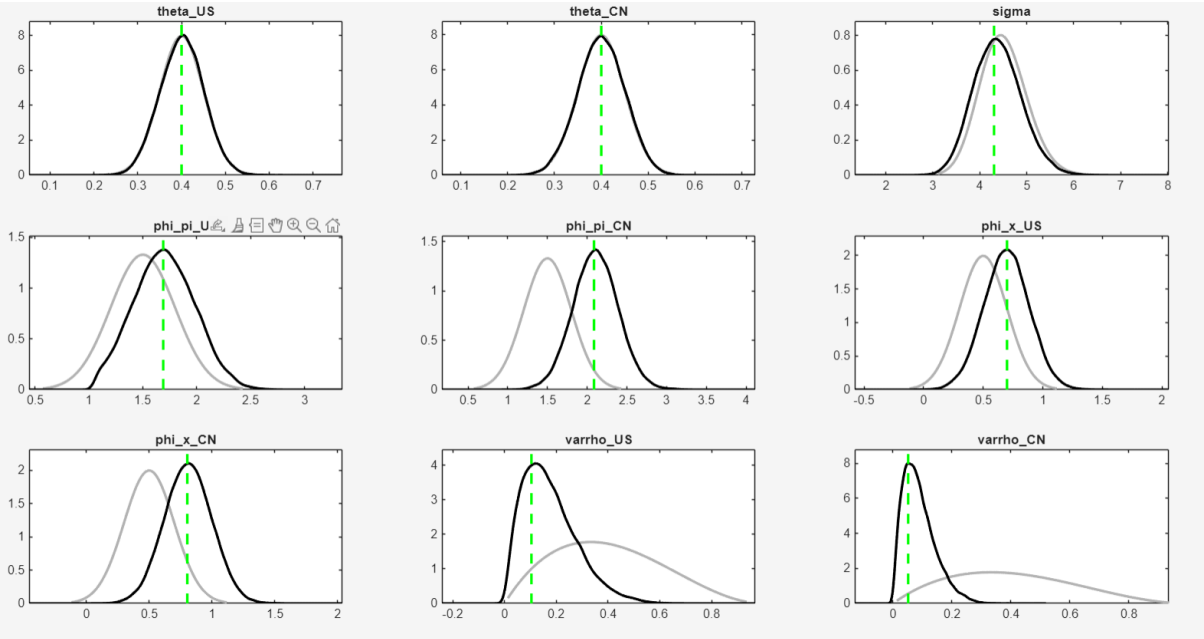

Figure 2: Bayesian Estimation

Posterior Estimates of Structural Parameters

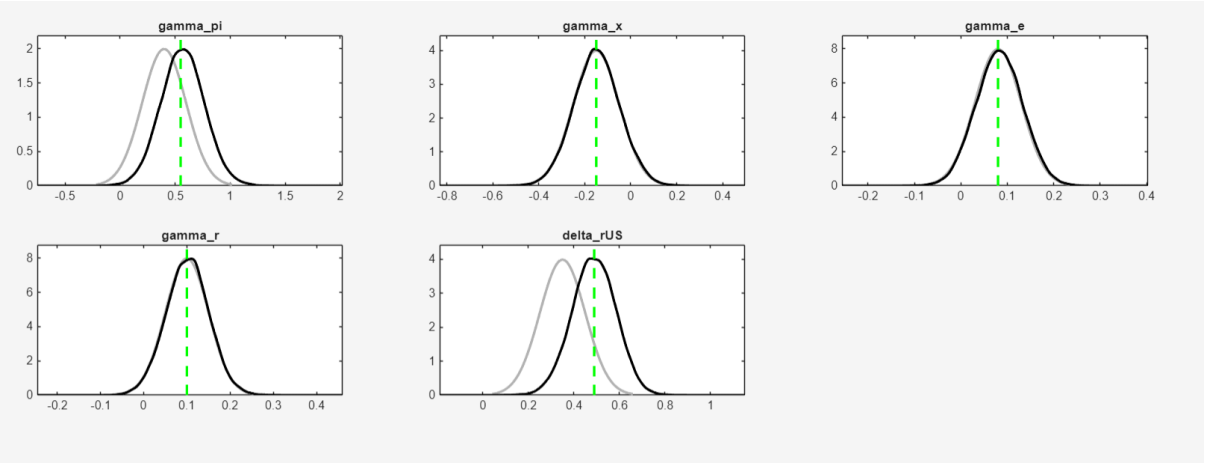

Figure 3: Bayesian Estimation

4 Results and Discussion

- **Variable** Monetary policy interest rate for the United States.
- **Direction** A positive shock leads to a temporary increase in the monetary policy interest rate.
- **Timing** The model is estimated using quarterly data; in this sense, the positive shock persists for approximately four quarters (one year).
- **Economic Interpretation** This is an expected result, as a positive shock to the interest rate naturally generates an increase in the monetary policy rate.

IRFs for a positive shock in the US Monetary Interest Rate

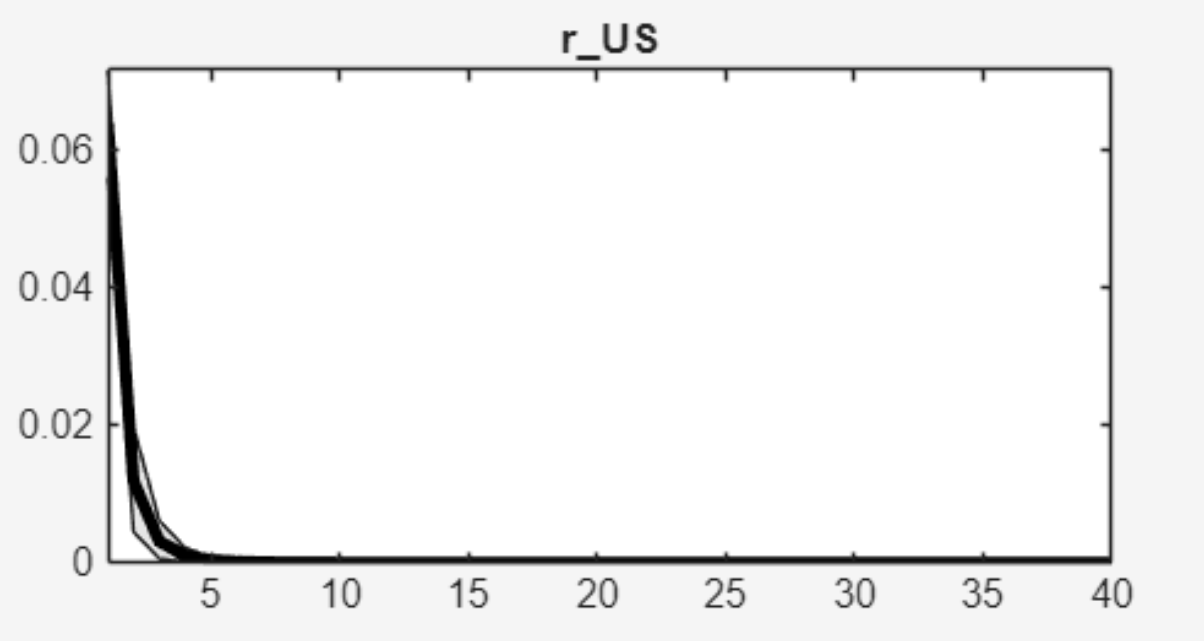

Figure 4: Bayesian Post IRF

- **Variable** Inflation rate for the United States.
- **Direction** An increase in the interest rate leads to a decrease in inflation in the United States.
- **Timing** The effect lasts for approximately three quarters and is closely related to the duration of the original monetary policy shock.
- **Economic Interpretation** A positive change in interest rates increases the cost of borrowing within the financial system. This, in turn, reduces investment and aggregate demand, which in the short run translates into a decline in the overall price level of the economy.

IRFs for a positive shock in the US Monetary Interest Rate

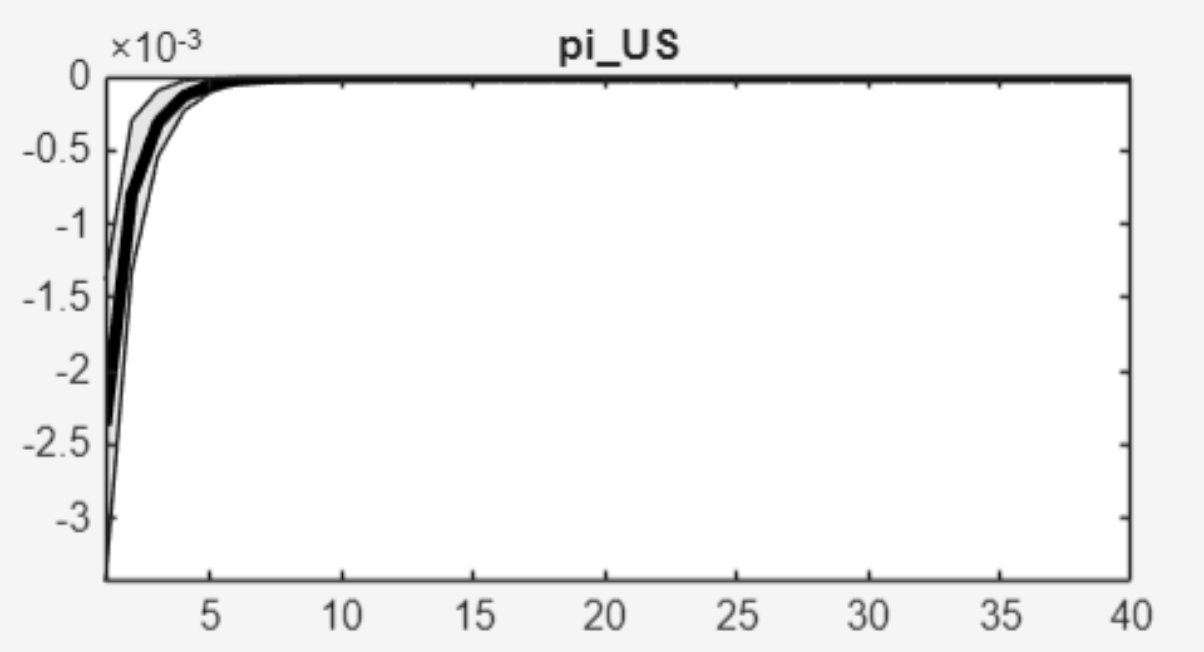

Figure 5: Bayesian Post IRF

- **Variable** Marginal cost for the United States.
- **Direction** Marginal costs decrease following a positive monetary policy shock in the United States.
- **Timing** The effect persists for approximately five quarters.
- **Economic Interpretation** Since the monetary policy shock initially generates a reduction in the inflation rate, it is also associated with lower input prices. Consequently, firms experience a reduction in production costs, reflected in a decline in marginal costs.

IRFs for a positive shock in the US Monetary Interest Rate

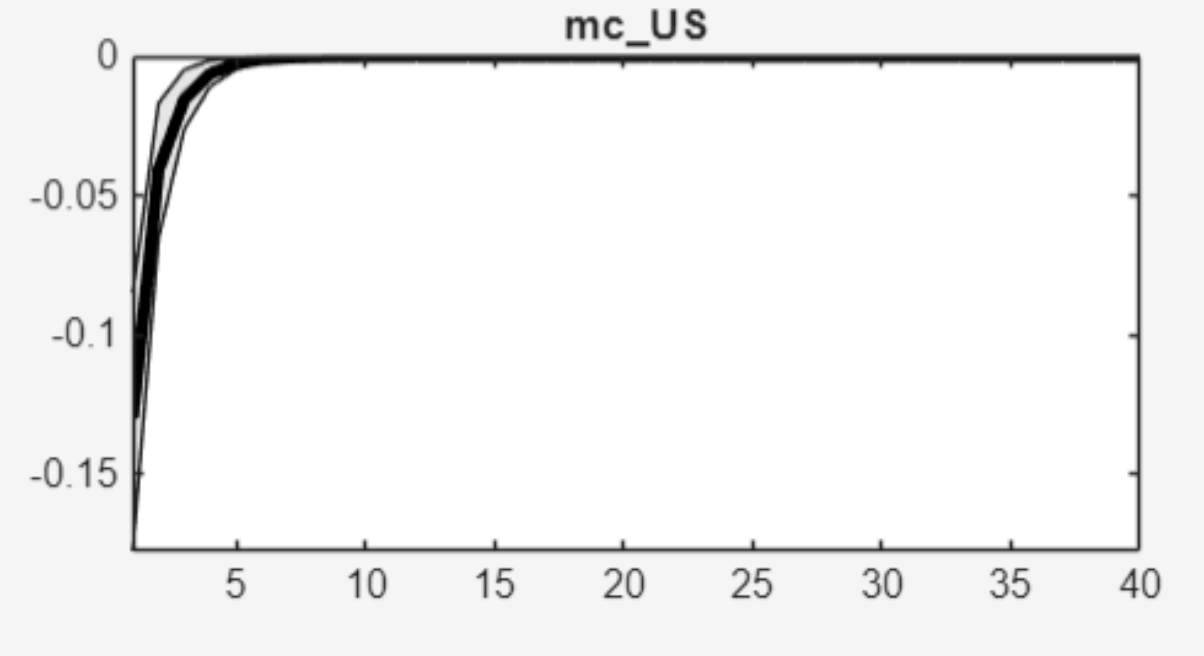

Figure 6: Bayesian Post IRF

- **Variable** National production for the United States.
- **Direction** Negative.
- **Timing** More than one year (approximately six quarters).
- **Economic Interpretation** The positive shock represents a contractionary monetary policy. In the short and medium term, this policy is associated with a decrease in aggregate demand and output. Consequently, the impulse response function for U.S. production is negative following a positive shock to the Federal Reserve's monetary policy interest rate.

IRFs for a positive shock in the US Monetary Interest Rate

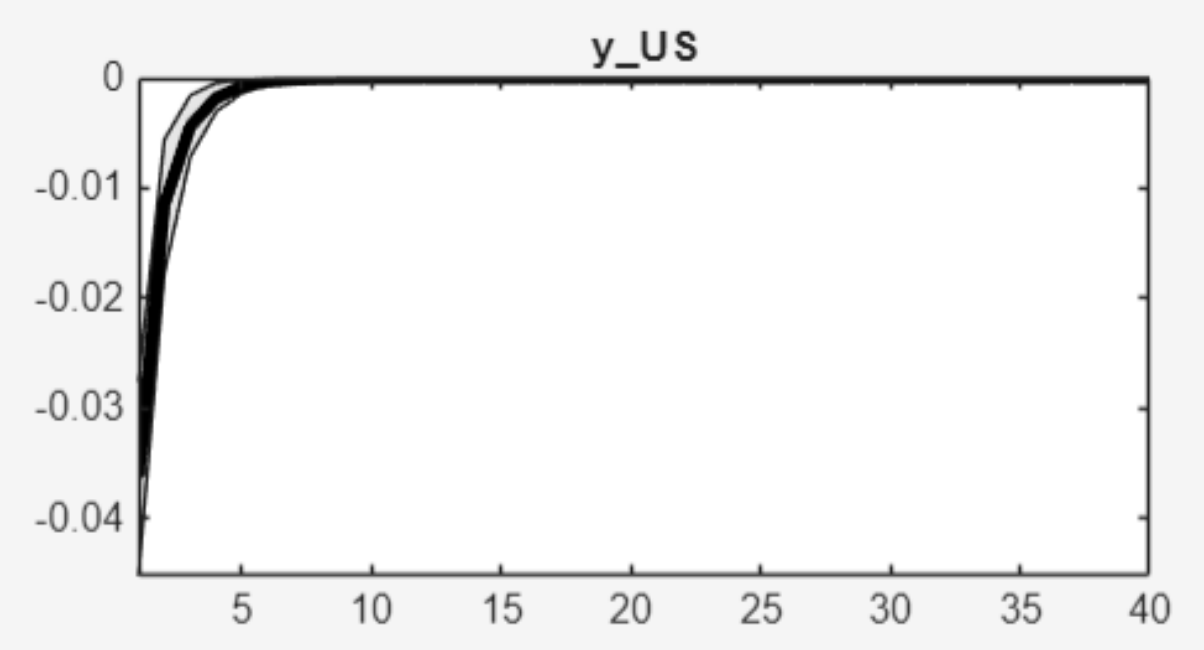

Figure 7: Bayesian Post IRF

- **Variable** Exchange rate: U.S. dollar versus Chinese yuan.
- **Direction** Negative.
- **Timing** Approximately five quarters.
- **Economic Interpretation** The decline in prices and marginal costs in the United States following a monetary policy shock leads to a reduction in U.S. price levels relative to those of China. This relative price adjustment results in a depreciation of the exchange rate, which is reflected as a decline in the nominal exchange rate during the first five quarters.

IRFs for a positive shock in the US Monetary Interest Rate

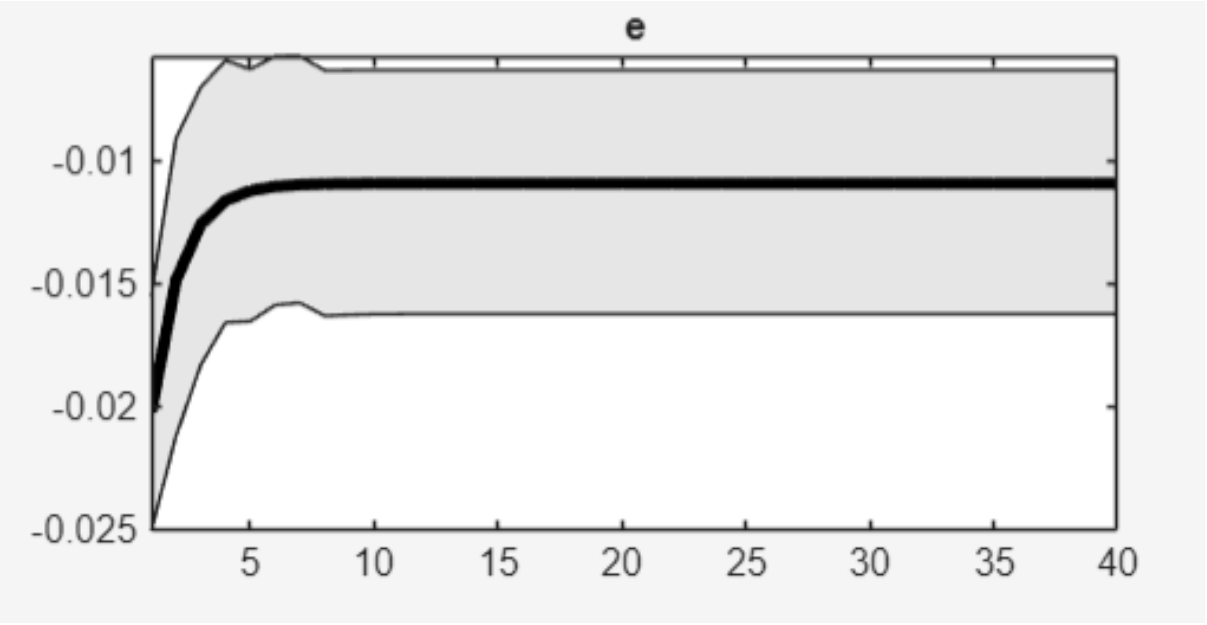

Figure 8: Bayesian Post IRF

- **Variable** Monetary policy interest rate for China.
- **Direction** Positive.
- **Timing** Approximately four quarters.
- **Economic Interpretation** An increase in the U.S. interest rate leads to a corresponding increase in China's interest rate. This response can be interpreted as an effort by Chinese monetary authorities to avoid a depreciation of the domestic currency against the U.S. dollar.

IRFs for a positive shock in the US Monetary Interest Rate

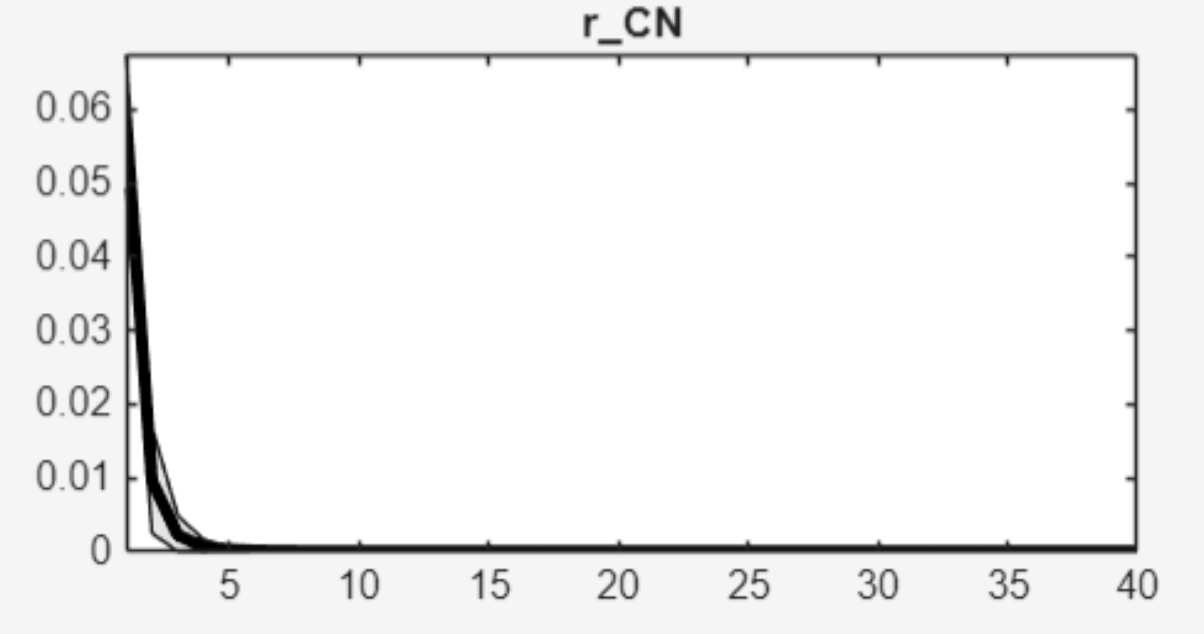

Figure 9: Bayesian Post IRF

- **Variable** Inflation rate for China.
- **Direction** Positive.
- **Timing** Approximately five quarters.
- **Economic Interpretation** An increase in the U.S. monetary policy interest rate reduces inflation in the United States, which leads to a depreciation of the U.S. dollar against the Chinese yuan. This development is beneficial for the Chinese economy, as U.S. goods become relatively cheaper, allowing China to expand its exports to the United States. As a result, production in China increases, which in the short run is also associated with upward pressure on domestic prices.

IRFs for a positive shock in the US Monetary Interest Rate

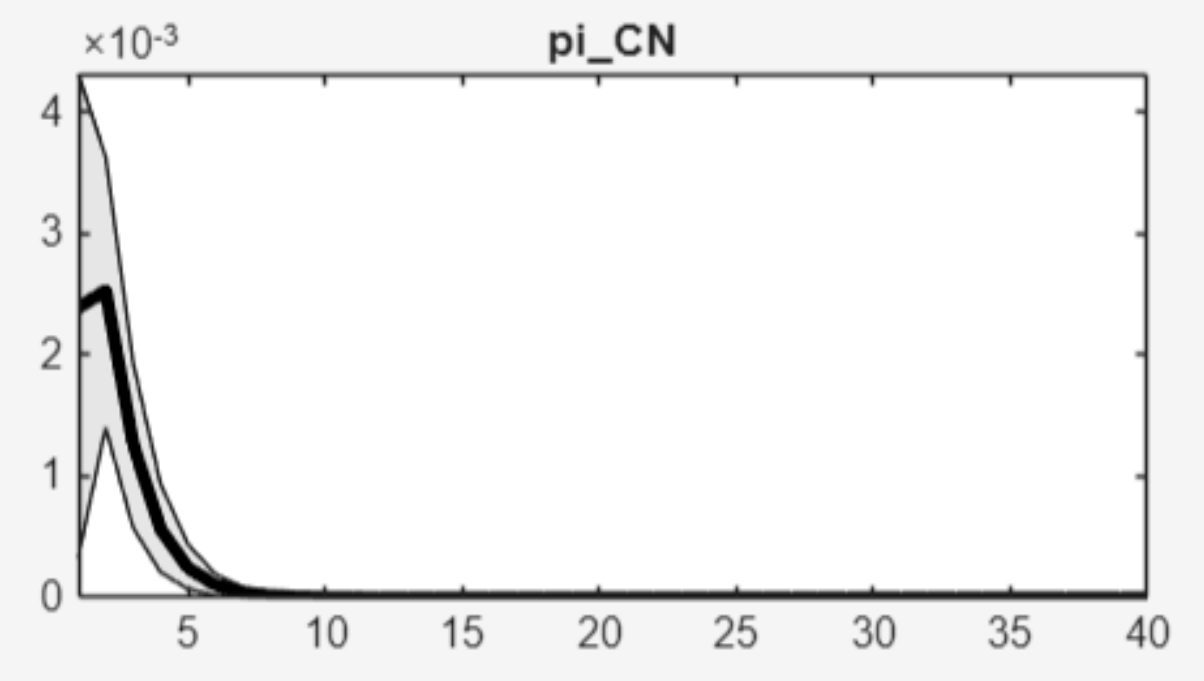

Figure 10: Bayesian Post IRF

- **Variable** Marginal cost for China.
- **Direction** Positive.
- **Timing** Approximately two quarters.
- **Economic Interpretation** Since inflation in China increases following the U.S. monetary policy shock, a corresponding rise in marginal costs for firms and enterprises is also expected.

IRFs for a positive shock in the US Monetary Interest Rate

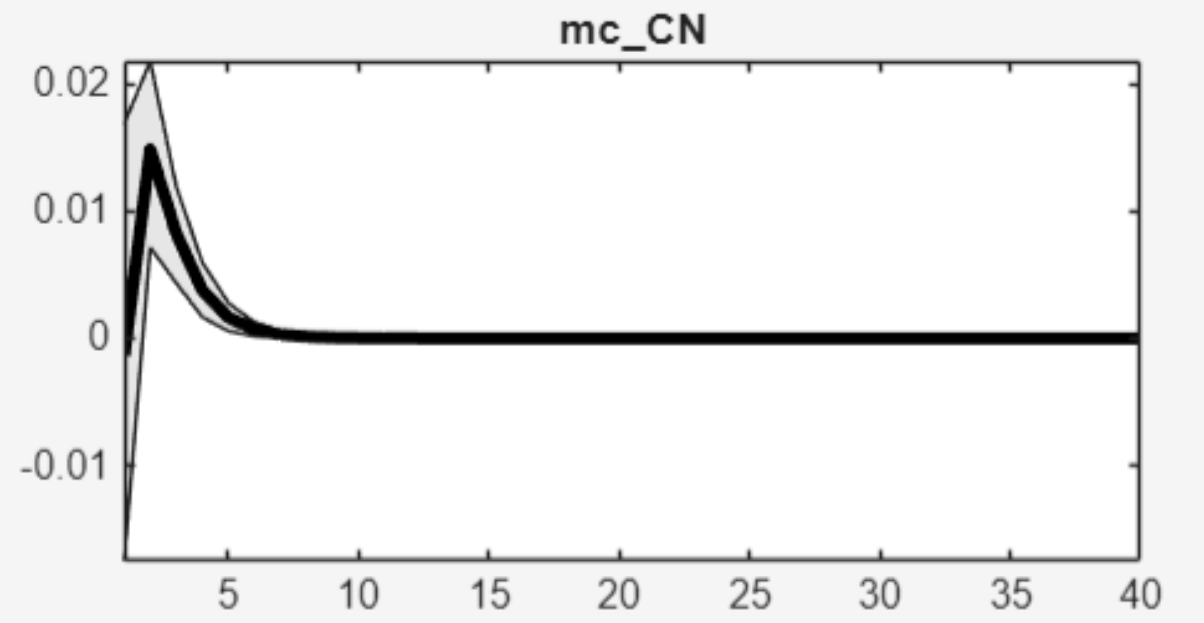

Figure 11: Bayesian Post IRF

- **Variable** National production for China.
- **Direction** Positive.
- **Timing** Approximately four quarters.
- **Economic Interpretation** An increase in the U.S. monetary policy interest rate leads to a depreciation of the exchange rate, which enhances China's export competitiveness in the U.S. market. As a result, Chinese exports and overall production increase.

IRFs for a positive shock in the US Monetary Interest Rate

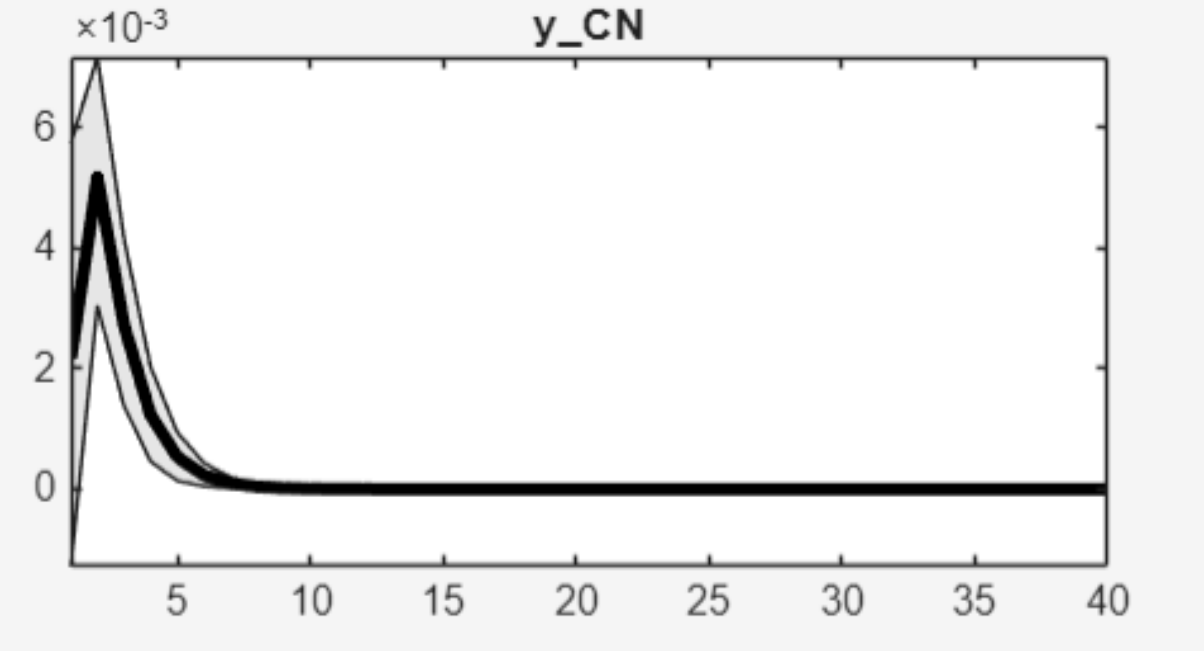

Figure 12: Bayesian Post IRF

- **Variable** Monetary policy interest rate for the United States.
- **Direction** Positive.
- **Timing** Approximately five quarters.
- **Economic Interpretation** An increase in the degree of dollarization in China weakens the effectiveness of Chinese monetary policy and generates inflationary pressures. In response, Chinese authorities raise their monetary policy interest rate, and the United States reacts by also increasing its policy interest rate.

IRFs for a positive shock in the China Dollarization

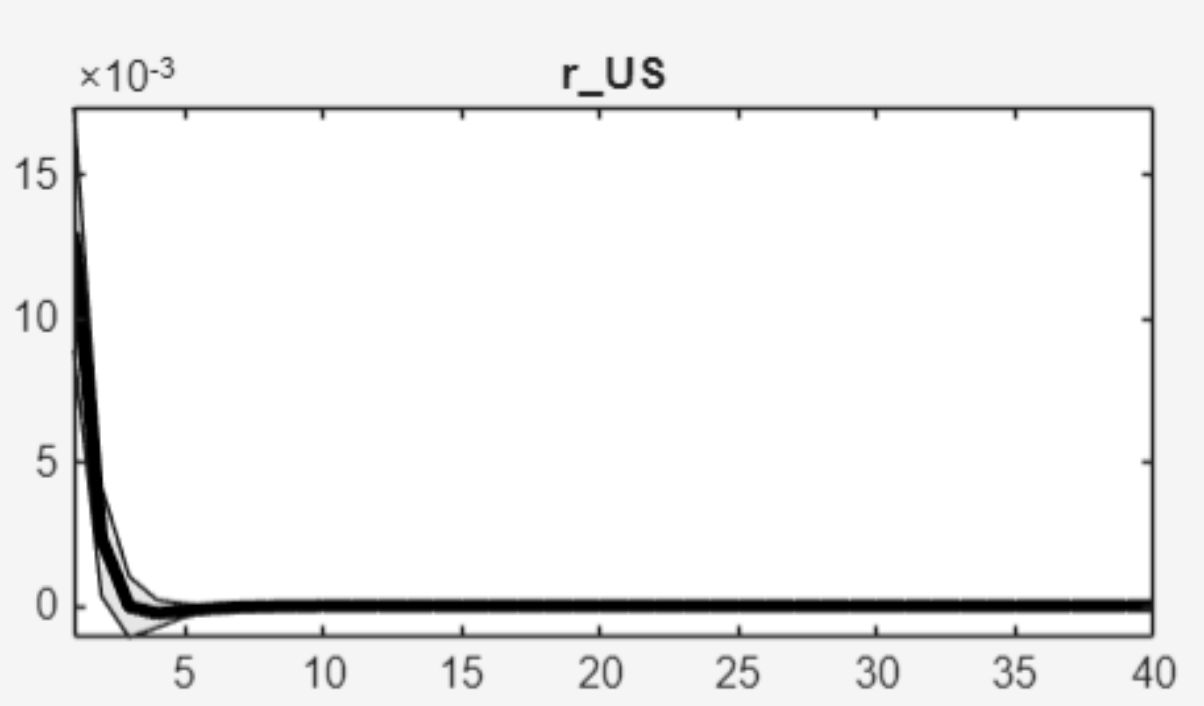

Figure 13: Bayesian Post IRF

- **Variable** Inflation rate for the United States.
- **Direction** Positive.
- **Timing** Approximately five quarters.
- **Economic Interpretation** Since increased dollarization in China exerts an upward effect on the U.S. interest rate, this effect eventually leads to an increase in inflation in the United States.

IRFs for a positive shock in the China Dollarization

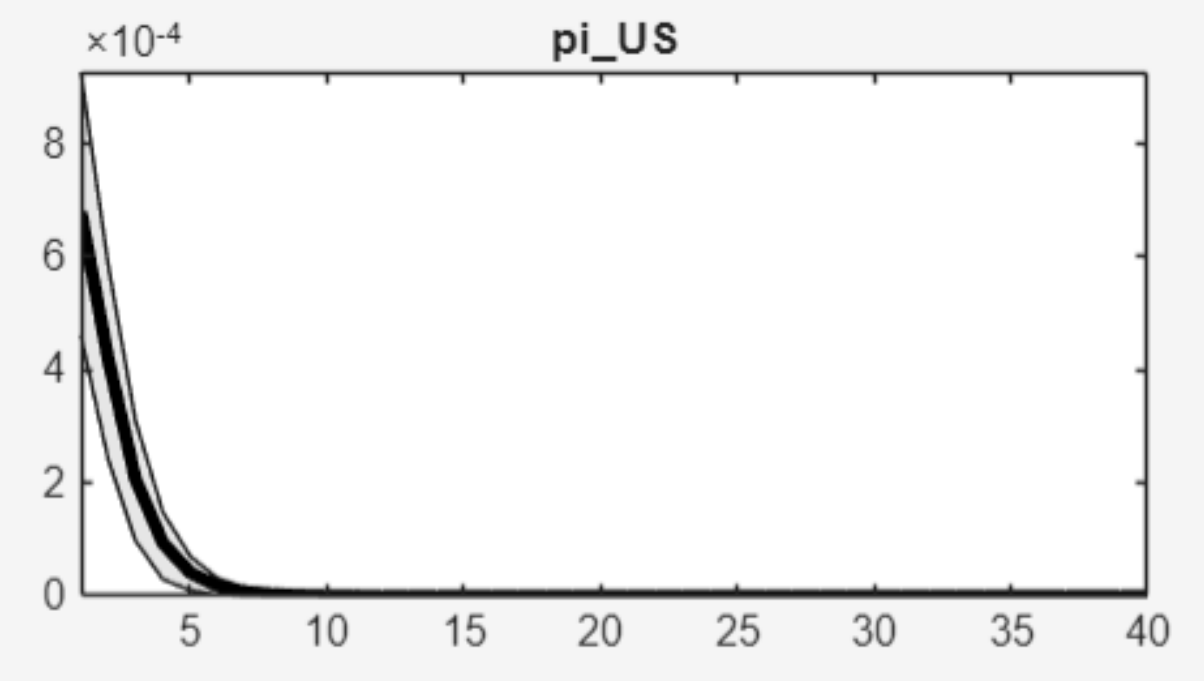

Figure 14: Bayesian Post IRF

- **Variable** Marginal cost for the United States.
- **Direction** Positive.
- **Timing** Approximately five quarters.
- **Economic Interpretation** Since inflation in the United States increases following the dollarization shock, a rise in production input prices and, consequently, in marginal costs is expected.

IRFs for a positive shock in the China Dollarization

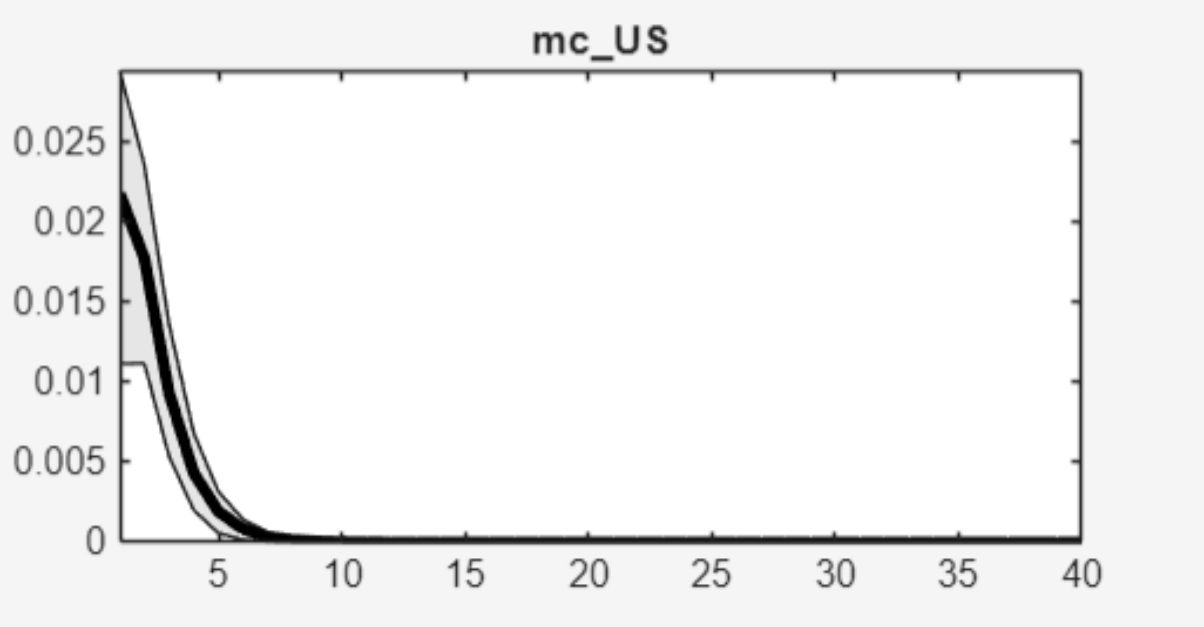

Figure 15: Bayesian Post IRF

- **Variable** National Production for the USA
- **Direction** Positive
- **Timing** 5 quarters
- **Economic Interpretation** more production

IRFs for a positive shock in the China Dollarization

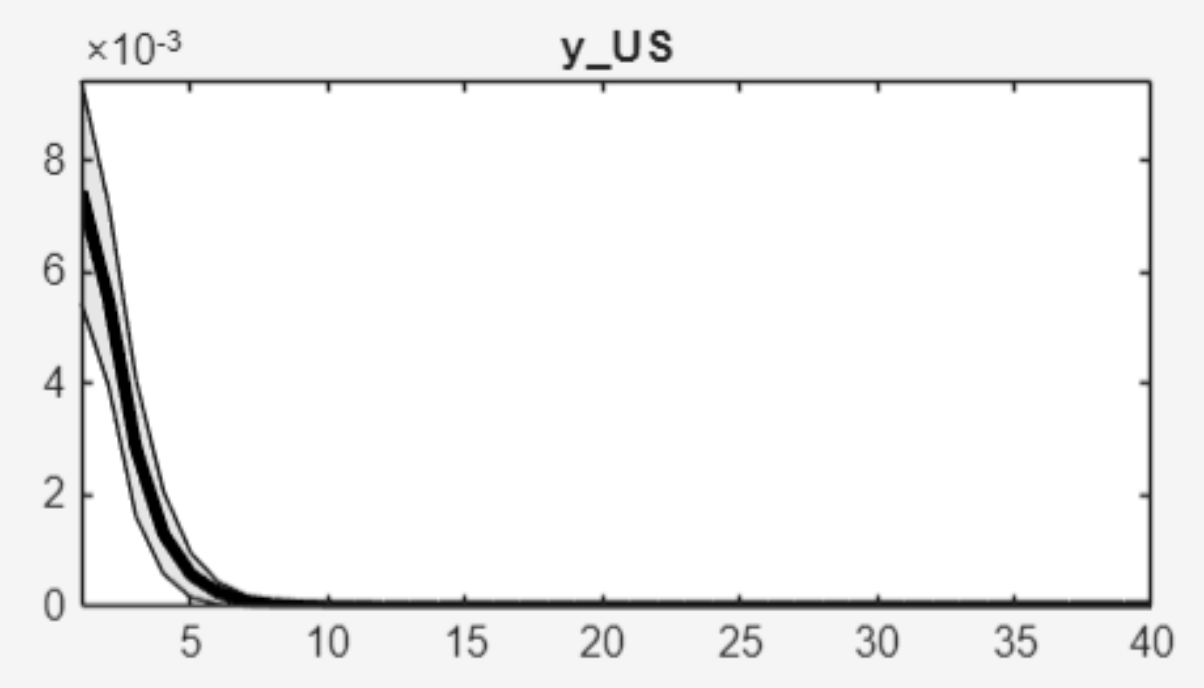

Figure 16: Bayesian Post IRF

- **Variable** Exchange Rate: Dollars vs Yuang
- **Direction** No direction (at least not a significant effect)
- **Timing** No significant effect
- **Economic Interpretation** The is no significant effect in the nominal exchange rate becuase of a shock in the dollarization of China.

IRFs for a positive shock in the China Dollarization

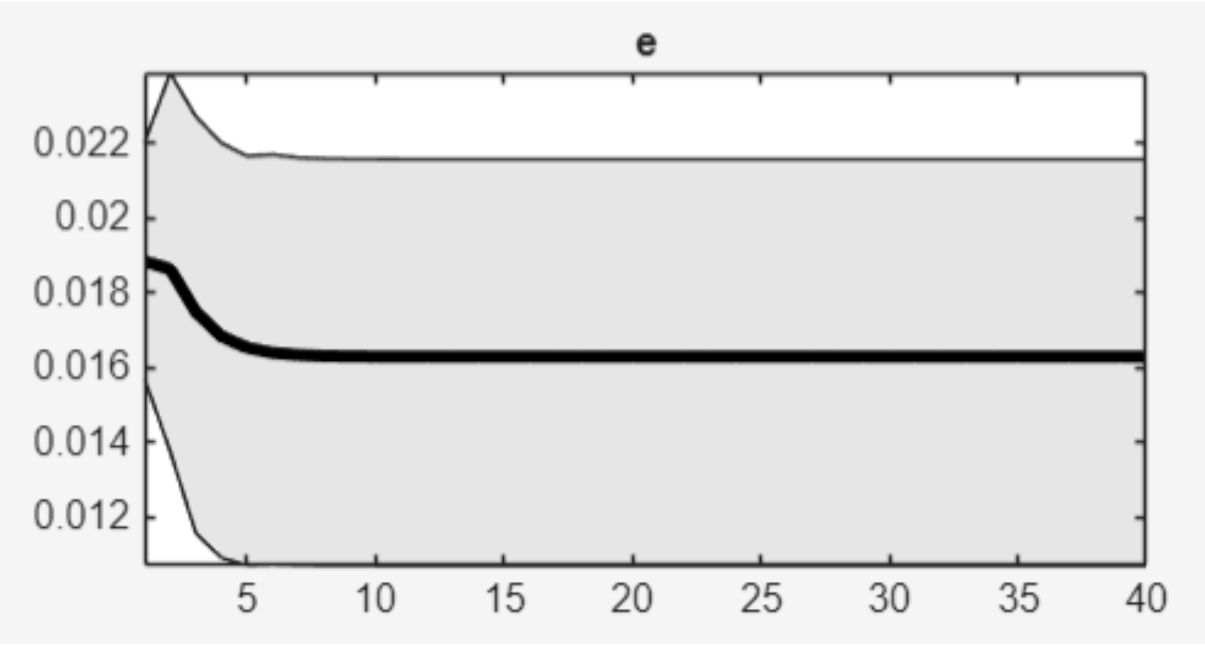

Figure 17: Bayesian Post IRF

- **Variable** Monetary policy interest rate for China.
- **Direction** Positive.
- **Timing** Approximately five quarters.
- **Economic Interpretation** A sudden increase in dollarization weakens the effectiveness of China's monetary policy and generates inflationary pressures. In response, Chinese monetary authorities raise the policy interest rate to contain inflation.

IRFs for a positive shock in the China Dollarization

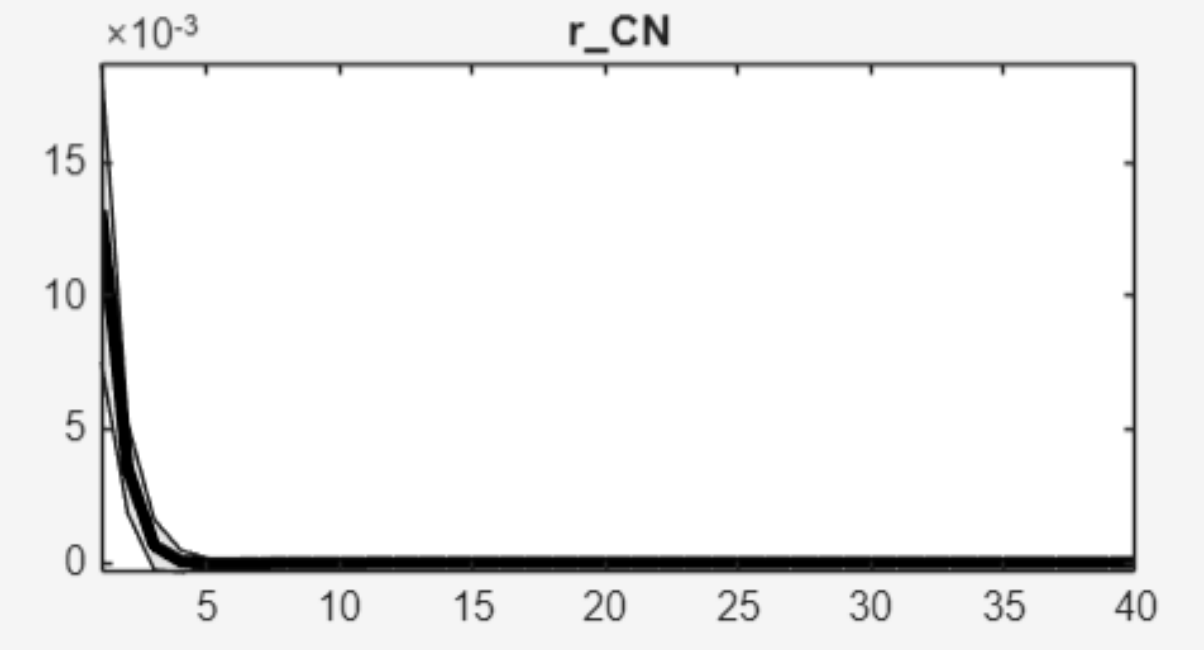

Figure 18: Bayesian Post IRF

- **Variable** Inflation rate for China
- **Direction** Negative
- **Timing** 5 quarters
- **Economic Interpretation** The increase in the interest rate of China is associated with a decrease in the inflation rate.

IRFs for a positive shock in the China Dollarization

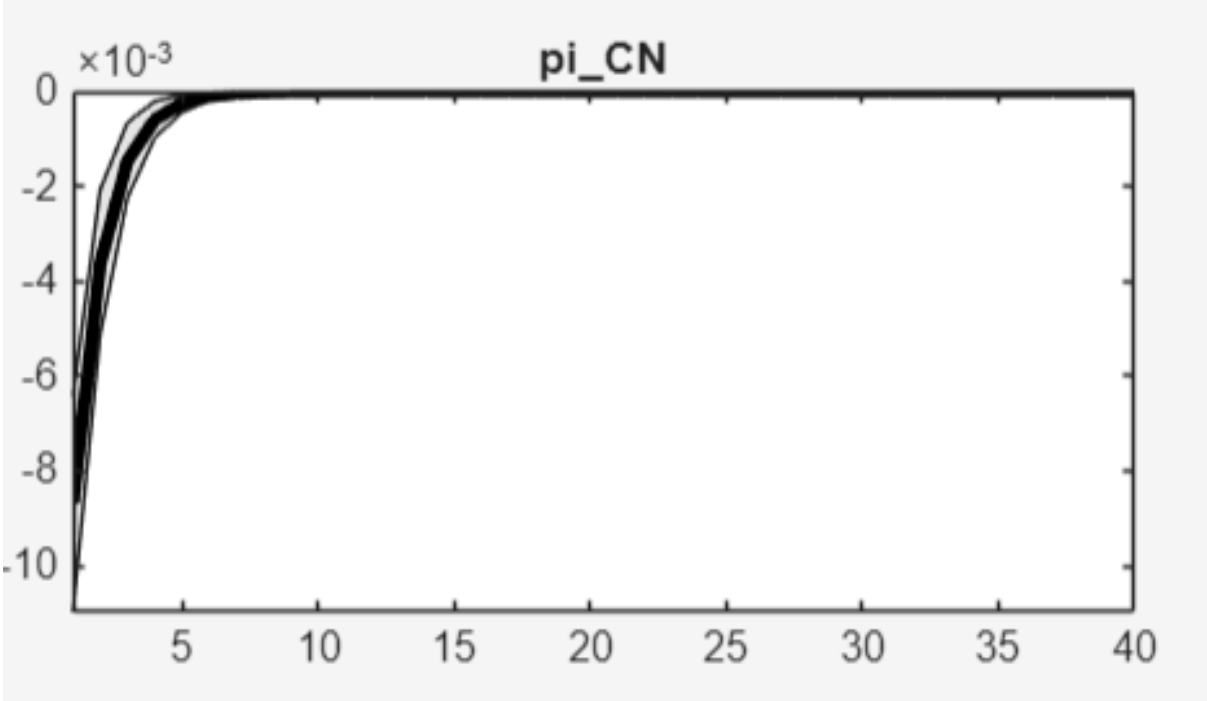

Figure 19: Bayesian Post IRF

- **Variable** Marginal Cost for China
- **Direction** Negative
- **Timing** 5 quarters
- **Economic Interpretation** Because of the reduction in the inflation rate of China, the marginal costs of China also reduce.

IRFs for a positive shock in the China Dollarization

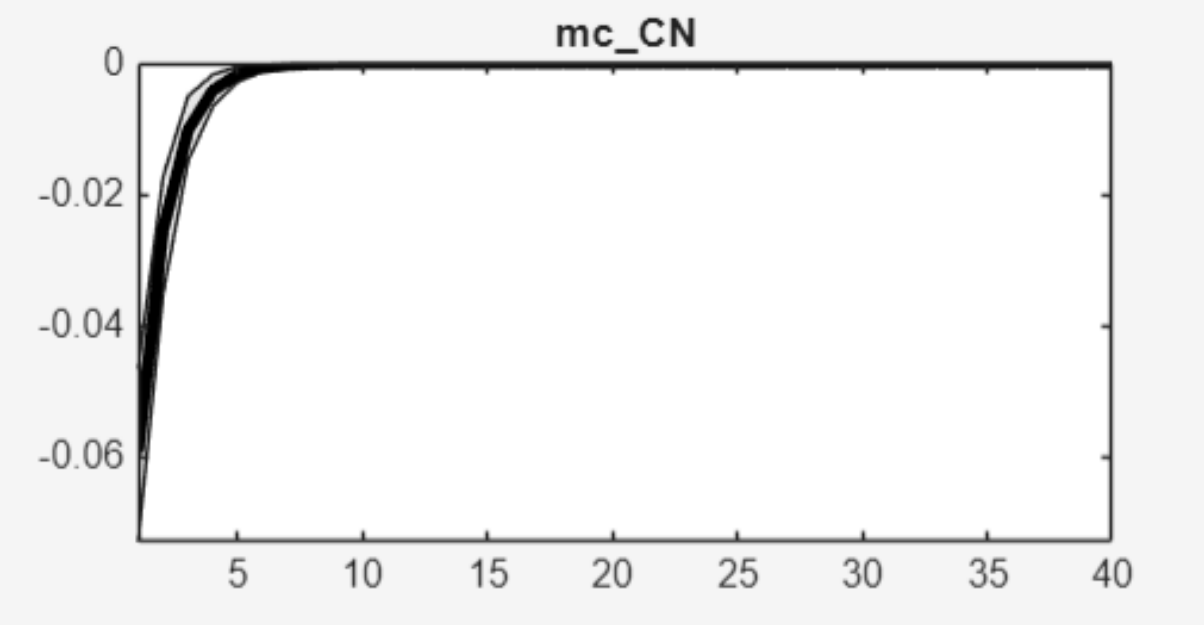

Figure 20: Bayesian Post IRF

- **Variable** National Production for China
- **Direction** Negative
- **Timing** 5 quarters
- **Economic Interpretation** The increase in the interes rate of China is associated with the deacrease in the production of this country.

IRFs for a positive shock in the China Dollarization

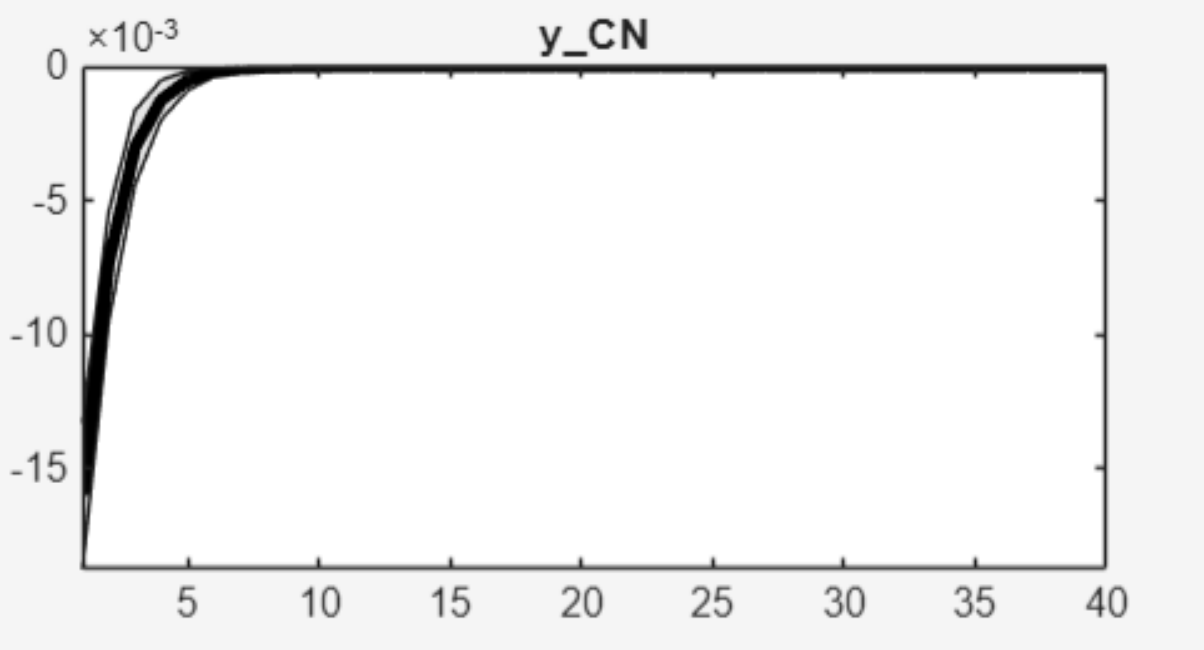

Figure 21: Bayesian Post IRF

5 Conclusion

This paper presents a two-country DSGE model where the home economy is the United States and the foreign economy is China. We analyze two main shocks: a US monetary policy shock and a Chinese de-dollarization shock. The latter operates through the monetary policy rule of the People's Bank of China, directly affecting the interest rate and improving the effectiveness of monetary transmission. Bayesian estimation supports the presence of strong cross-border linkages and highlights the macroeconomic relevance of financial de-dollarization in emerging economies.

6 MCMC Diagnostics

The MCMC inefficiency factors for each block are reported in Table **??**. Some parameters, especially volatility parameters and θ_{CN}, show higher inefficiency factors, indicating slower chain mixing.

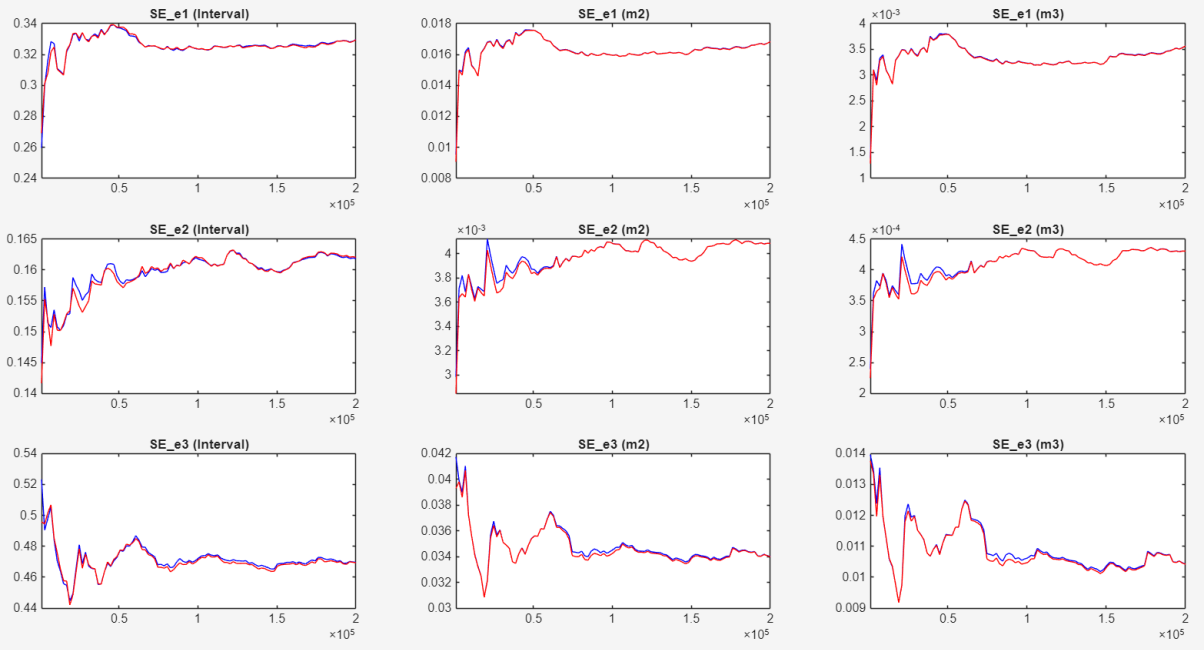

Figure 22: Based on Brooks and Gelman (1998)

7 MCMC Univariate Convergence Diagnostic

Based on Brooks and Gelman (1998)

MCMC Univariate Convergence Diagnostic

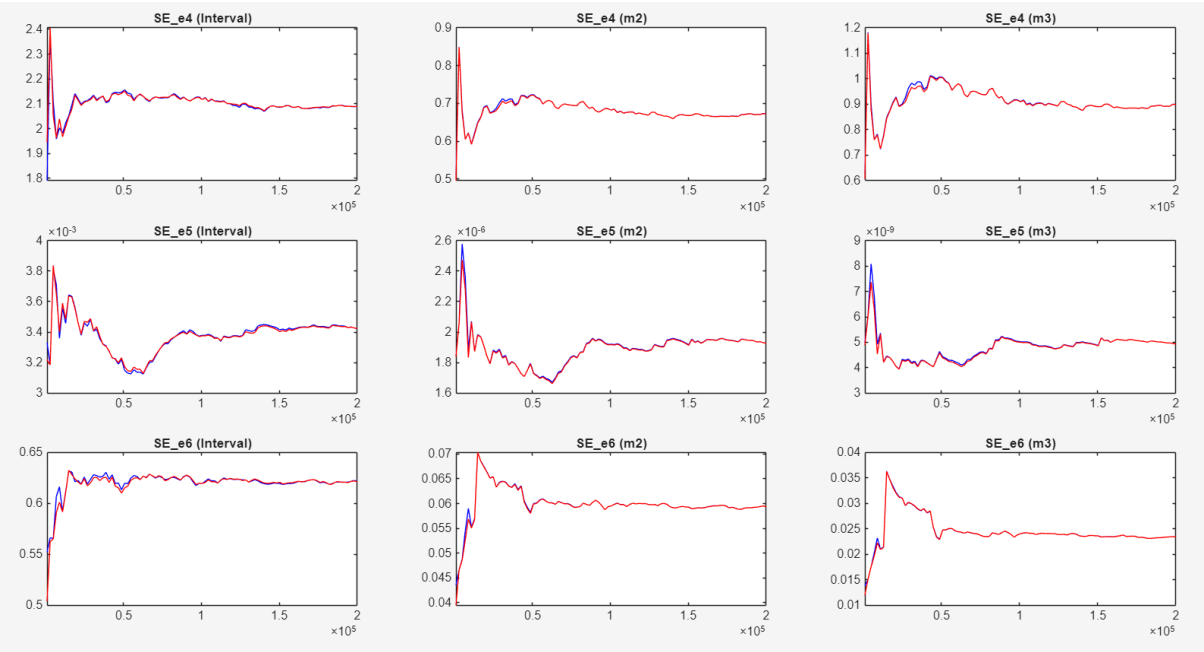

Figure 23: Based on Brooks and Gelman (1998)

MCMC Univariate Convergence Diagnostic

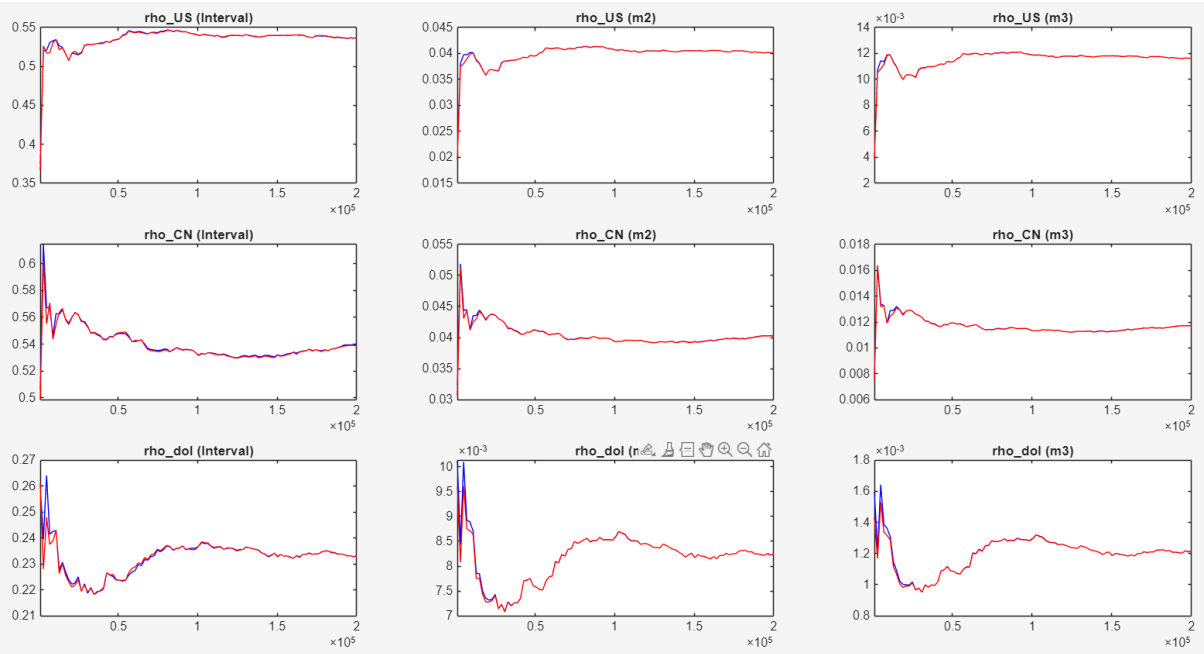

Figure 24: Based on Brooks and Gelman (1998)

MCMC Univariate Convergence Diagnostic

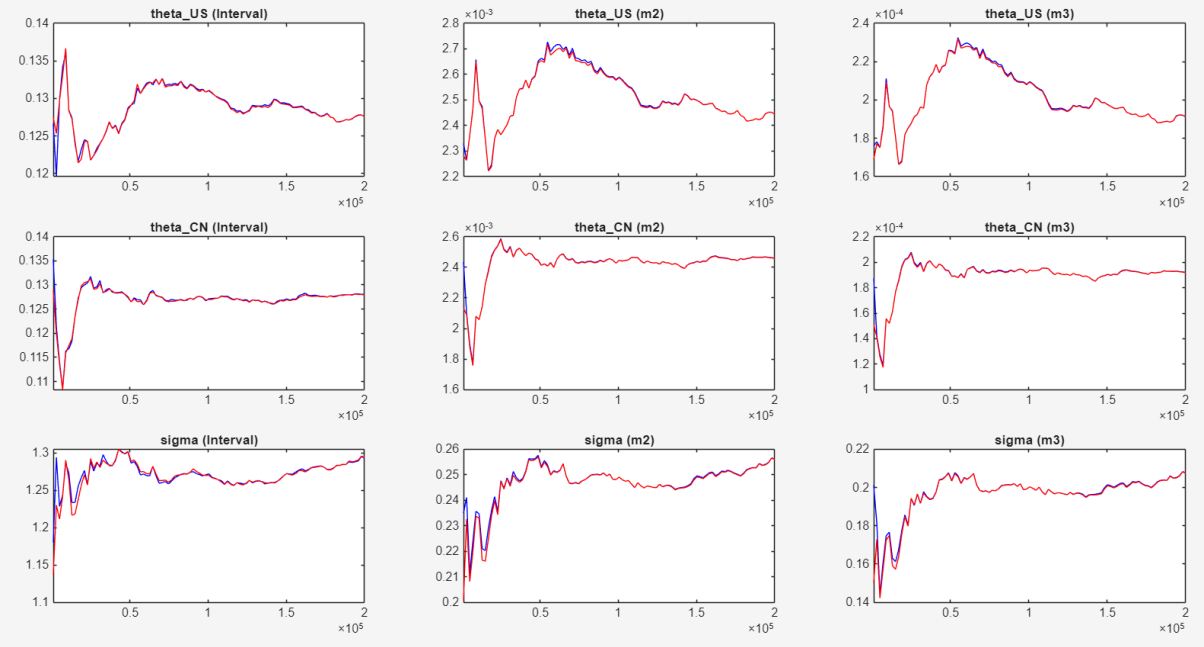

Figure 25: Based on Brooks and Gelman (1998)

Real Data Observed for the US and China

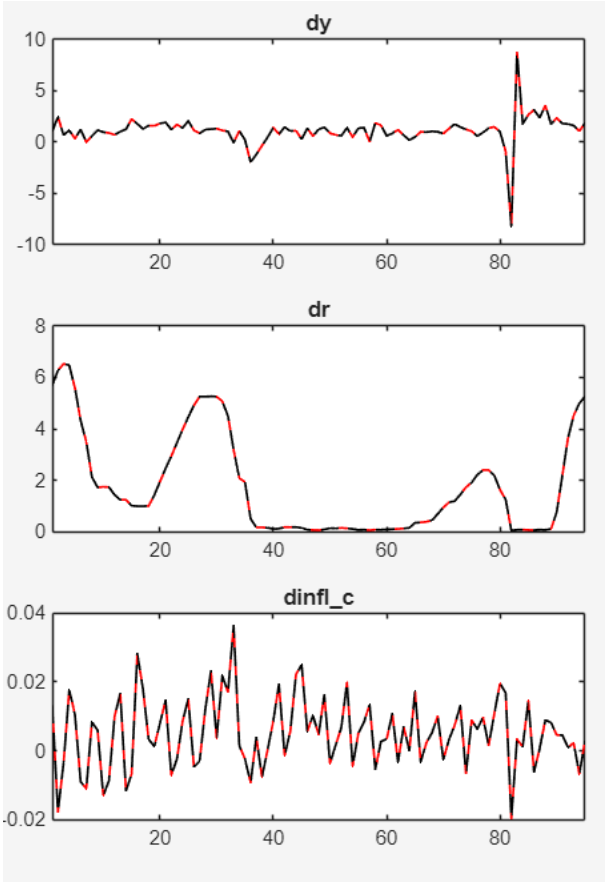

Figure 26: Bayesian Estimation

Real Data Observed for the US and China

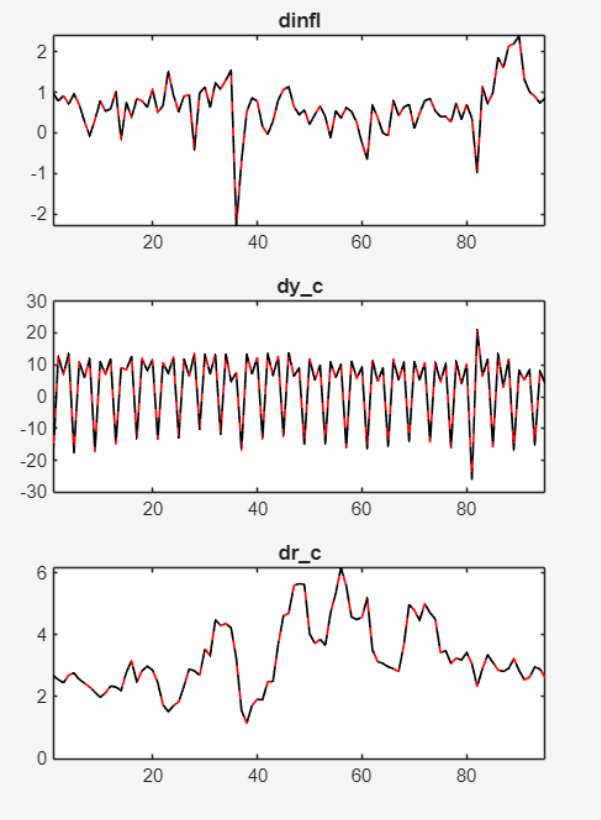

Figure 27: Bayesian Estimation