The Heterogeneous Impacts of US' Monetary Policy Adjustment on Emerging Markets

Analysis Based on the Panel VAR

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Abstract— In this paper, we examine the impacts of the changes in the monetary policy of US on trade, capital flow, and economy of emerging markets. We find that the impacts vary across the emerging markets in three different regions: Central-East Europe, Latin America, and East Asia. Based on an empirical investigation using Panel-VAR analysis, we reveal that the degree of capital control by emerging markets is a key factor affecting the impacts. Although less capital control will lead to higher volatility on the capital flow of an economy, it may reduce its macro risks. Moreover, we find that the differences in trade openness and the trade structure have little effect on the impacts.

Keywords-monetary policy adjustment, heterogeneous impacts, trade flow, capital flow

1. INTRODUCTION

As the largest country in the world, the US dollar, its official currency, plays an irreplaceable role in the global economy, trade, payment, and settlement, etc. In most countries' foreign exchange reserves, US dollar reserves account for more than 50%. Therefore, in this context, the adjustment of US monetary policy adjustment will be closely related to the steady economic development of other countries, especially emerging markets.

Along with the adjustment of the US monetary policy, emerging markets have been long facing huge cross-border capital flows with high volatility, which has triggered thinking about the fragility of the emerging market economy. In recent decades, the US has completed three rounds of monetary policy cycles. With this cyclical change, emerging economies are facing a capital flow cycle of large-scale capital inflows and large-scale capital outflows, which has triggered a corresponding financial crisis and economic recession. [1] Therefore, the prelude to the fourth interest rate hike in the US since 1990 has also attracted widespread attention from the academic community. This paper will explore the following issues: Through which channels do the adjustment of US monetary policy mainly affect emerging market countries? Are the spillover effects of US monetary policy heterogeneous in different emerging market regions? If there is heterogeneity, what is the impact mechanism behind it? Therefore, we will combine the process and impact of US monetary policy adjustment, and use the GMM method

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and Panel-VAR model to study "the impact of US monetary policy adjustment on regional capital and the flow of trade channels in the three major emerging markets."

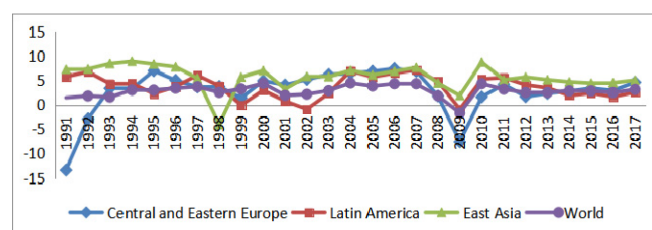

Figure 1. Comparison of GDP growth between the three major regions and the world

In the end, this paper will help understand the heterogeneous impact of U.S. monetary policy on the world economy, especially emerging market countries. At the same time, it can also provide a reference for different emerging market regions to formulate regulatory monetary policies and enhance their anti-risk capabilities, which is of great significance for countries around the world to make a reasonable response in the new round of US dollar interest rate hike cycle.

The former two cycles have caused crises in emerging market countries, and the third cycle also caused global economic turmoil.

2. Literature Review

Previous scholars focused their research on the transmission mechanism of US dollar monetary policy and capital flows. Eduardo Olaberria (2015) believes that during the zero interest rate policy of the US, a large amount of profit-seeking capital poured into emerging market countries, but after the US dollar interest rate hike, it will quickly withdraw and return to the safer US dollar market.[1] Andreea Roşoiu and Iulia Roşoiu (2013) analyzed the economic development characteristics of Poland, the Czech Republic, Romania, and Hungary, and focused on comparing the interest rate and exchange rate systems of various countries to illustrate the transmission mechanism of monetary policy.[2] In addition, Hoffmaister et al. (1997) used SVAR to compare the economic fluctuations in Asia and Latin America, and concluded that there are differences between the two regions.[3] Relatively speaking, Latin American countries are more sensitive to the impact of changes in world interest rates and domestic demand.

When studying the impact of the US monetary policy on countries around the world, some scholars mainly start from the transmission mechanism, transmission time lag, and spillover effects of monetary policy. Zhuang Jia (2009) believes that US monetary policy has caused spillover effects on China's output through policy, trade, asset prices and other channels. At the same time, he also points out that the spillover effects of China's central, eastern, and western regions vary according to regional differences.[4] The study found that in countries with freely floating exchange rates, the role of exchange rate transmission channels is obvious; In an economy with a fixed exchange rate, if capital flows freely, the interest rate transmission channel will play a significant role, and if the capital flow is controlled, the foreign exchange reserve transmission channel will play a significant role.[5]

It can be found that most studies have focused on the commonalities of the impact of US policies on other countries, and have not conducted in-depth discussions on regional heterogeneity. This will make it impossible to conduct comparative analysis under a unified premise, making the conclusion lack pertinence. Some studies also focus on a single object, which neglects the integrity of the world economic system, which will also bias the conclusions. In fact, many studies have shown that the three emerging market regions of East Asia, Latin America, and Central and Eastern Europe present completely different development models (Chi Gong & Soyoung Kim 2013; Xiang Weixing, Wang Da 2008; Kong Tamping 2010; Xiang Satellite, Wang Da 2011; Huang Zhilong 2015; Shu Bian 2006). [6][7][8][9][10][11] Therefore, this paper will analyze the development characteristics of the three regions in East Asia, Latin America, and Eastern Europe based on the previous literature (see Table 1), and use the GMM method and Panel-VAR model to systematically analyze whether the US monetary policy has a significant impact on the macroeconomics of the three major emerging market regions through trade and capital flow channels, and examines whether this impact is heterogeneous.

Table 1. COMPARISON OF TRADE FINANCE OF THREE MARKETS

Market	Trade	Finance
East Asia	Mainly manufacturing processing export trade	Floating exchange rate system with a low degree of capital openness
Latin America	Mainly export trade of raw materials	Floating exchange rate, free flow of capital
Central and Eastern Europe	Mainly driven by the EU	Floating exchange rate system with a high degree of capital openness

3. EMPIRICAL ANALYSIS

3.1 Variable selection and data sources of the econometric model

Based on the Panel-VAR model, this paper conducts an econometric analysis of the correlation between the US federal funds rate and the development of capital and trade in emerging market countries. In order to more effectively investigate the impact of the US federal funds rate on the capital and trade of emerging market countries, this paper selects six economic variables: IUS, GDP, PPP, IM, EX, NETPEI.

In order to obtain complete and effective data, after excluding years and countries without complete data, this paper selects the panel data of 14 countries in East Asia, Latin America, and Eastern Europe from 1994 to 2016. The IUS data comes from the official website of the U.S. Federal Reserve System, GDP data comes from the World Bank, the data of total import and export of goods comes from the official website of the World Trade Organization, data on foreign direct investment comes from the World Bank.

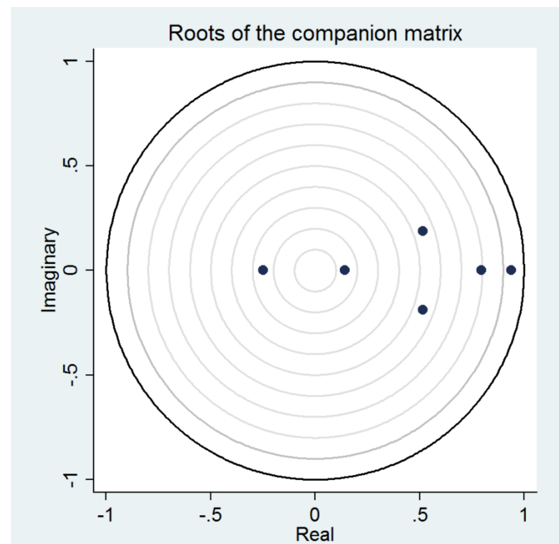

Figure 2. The Root of the companion matrix

3.2 Test

Before performing the formal Panel-VAR model analysis, we performed a unit root test on the data and found that the data remained stable after a differential of each variable. According to the unit circle test result, all the unit roots of the model are in the unit circle, indicating that the model is stable.

3.3 Conclusion: Impulse response analysis

To more accurately examine the dynamic impact of the federal funds rate on the import and export trade and foreign direct investment of emerging market countries, we analyzed the impulse response of the total amount of imports and exports and foreign direct investment on the federal funds rate. The result is shown in Figure 2.

The images in the first row and second column of Figure 2 reflect the impulse response of the net outflow of foreign direct investment on the interest rate. It can be seen that the interest rate has a negative impulse on the net outflow of foreign direct investment, and the rise in interest rate has reduced the outflow of foreign direct investment. Moreover, the effect in the early stage is very obvious and gradually weakened in the later stage.

The images in the second row and second column of Figure 3 reflect the impulse response of the net inflow of foreign direct investment on the interest rate. The attraction of interest rate to net FDI inflows is not as strong as the blocking power of interest rate to net FDI outflows. The net inflow of foreign direct investment has a response process from positive to negative to interest rates, and then to positive. The negative response in the middle stage can be explained by the outflow of short-term capital.

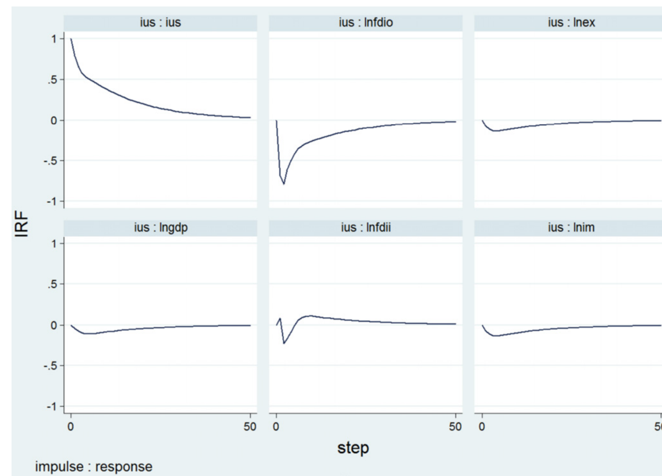

Figure 3. the impulse response of the model

The two images in the third column of Figure 2 reflect the negative impulse response of the scale of imports and exports on interest rates. Import and export volume has a negative response to interest rate and shows a trend of increasing first and then gradually converging. After breaking through the transmission lag of the interest rate to the exchange rate, the exchange rate to the commodity price, and the commodity price to the quantity of commodity demand, the negative impact of interest rate on the scale of imports and exports reaches the maximum, and then gradually weaken over time.

4. CONCLUSION AND SUGGESTION

Changes in US monetary policy will also have some impact on countries around the world. By using the Panel-VAR econometric model to study the relationship between the federal funds rate and foreign direct investment and import and export trade in emerging market countries, we can know: The federal funds rate has a negative effect on the scale of import and export trade, and a positive effect on foreign direct investment. In this regard, we can put forward effective suggestions for the development of the world's emerging economies to reduce the economic impact of the US dollar interest rate hike cycle on all the countries.

To effectively deal with the possible adverse effects of the US dollar interest rate hike cycle on all the countries, we can discuss two aspects: reducing internal risks and improving the ability to resist external risks. In terms of reducing internal risks, the main reason why emerging market countries are vulnerable to the impulse of external monetary policy is their unreasonable domestic economic structure and imperfect financial system. From the perspective of improving the ability to resist external risks, comprehensive access to international information and cooperation among countries are very important. Therefore, based on the above two aspects, the following suggestions are made for emerging market countries:

(1) Deepen and improve the financial system. A sound financial system can provide good guidance and protection for market entities and the country. The future development trend of

the financial system will undoubtedly move towards internationalization. In the process of internationalization, the financial markets of all countries will face opportunities and challenges. In the past few rounds of US dollar interest rate hike cycles, the imperfect financial system has brought catastrophic consequences for emerging market countries. Therefore, reasonable control of the scale of foreign debt, the establishment of sufficient foreign exchange reserves, and reduction of domestic leverage can enhance the country's financial stability and more effectively deal with the impulse of external monetary policy.

(2) Carry out the capital account opening prudently. The opening of the capital account is conducive to the integration of the domestic financial market with the international financial market, and is conducive to more capital inflows into the country. At the same time, the capital account opening is also risky. In the 1990s, Thailand, Malaysia, and other countries accelerated the process of opening up their capital markets, but suffered heavy losses during the 1997 Asian financial crisis. Capital account opening is a slow and long-term process. Promoting the opening of capital account in a planned way based on actual conditions is essential to the sustainable and stable development of a country's financial market.

(3) Strengthen the supervision of international capital flow. Under the environment of free capital flow, it is also necessary to supervise international capital flow. On the one hand, it can provide reliable and effective front-line data for the monetary policy of the country’s monetary authorities. On the other hand, it can also respond promptly when a large amount of international hot money flows in or a large amount of domestic capital flows out.

(4) Promote the improvement and development of the foreign exchange market. Changes in the federal funds rate have an impact on capital and trade in emerging market countries, which are mainly transmitted through the exchange rate mechanism. Choosing an appropriate exchange rate system, establishing sufficient foreign exchange reserves, and increasing the level of exchange rate marketization will help reduce the volatility of the foreign exchange market, thereby reducing the impact on the domestic market.

(5) Strengthen international cooperation. Emerging market countries can strengthen economic and political cooperation with each other, and when facing external impulses, they can unite to meet challenges together, responsibly shoulder their responsibilities, and work together for the future of sound development of the world economy.

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