Measurement Model-based Impact of International Capital Flow on China’s Financial Stability

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Abstract

The gradual advancement of economic globalization has led to the continuous expansion of international capital flows. The way of capital flows such as foreign investment and portfolio investment has gradually emerged. The massive flow of international capital on a global scale, to a certain extent, makes up the shortage of funds in the host country, which has brought opportunities for the economic development of the world. But at the same time, there are some drawbacks in the flow of international capital, such as the host country asset price bubble triggering a financial crisis. On the basis of combing scholars' literature on the influence of international capital flow, this paper demonstrates the influence of international capital flow on China’s financial stability from both theoretical and empirical aspects. The empirical results show that international capital flows can have a significant impact on the stability of China’s finances. Among them, the reversal of the total amount of international capital flows has the greatest impact on China’s Gross Domestic Product (GDP), and the impact of the reversal of foreign direct investment runs the second. The impact relationship between the reversal of international debt and GDP is negative. It is hoped that through the research of this paper, it will provide theoretical basis for China to accept international capital injection in the later period to enhance the stability and security of China’s financial market.

Keywords: International capital flow, Financial stability, Impact research, Empirical analysis.

1. RESEARCH BACKGROUND

1.1 Literature review

International capital flows are directly related to the financial stability of a country. International capital flows have greatly affected the financial system of a country by increasing the money supply, supporting the banking system and expanding the capital market. This relationship can stabilize a country’s economic development in a stable state. But if it is interrupted or reduced, it will curb the development of the country. In recent years, the frequent outbreak of the international financial crisis has led to increased debates of the pros and cons of international capital flows. Domestic and foreign scholars have also carried out many researches on the impact of international capital flows on financial stability. Rossdon mainly studied the impact of international capital flows on China’s financial security and found that the direction, duration and form of international capital flows affect the financial security of a country through a certain transmission mechanism (Rossdon, 2009). Wang Yong and others focused on the impact of international capital flows on China’s financial security and found that the direction, duration and form of international capital flows affect the financial security of a country through a certain transmission mechanism (Rossdon, 2009). Su Linhao carried out the analysis of the specific impact of the elements in the international capital flows on the financial stability, from the international credit, securities investment, direct investment and other factors that affect the financial stability of the transmission mechanism (Su, 2011). Zhu Cheng mainly studied the influence of the mechanism and channel of international capital flow influencing on the financial stability of a country. On this basis, it analyzes the stability of China’s financial flow in the face of international capital flow, and then puts forward the concrete measures to deal with the negative impact on international capital flows (Zhu, 2013).

1.2 Research purpose
The purpose of this paper is to analyze the impact of factors of the main factors influencing international capital flow on the stability of China’s financial market. To do this, this paper, based on the positive and negative impact, conducted a theoretical study outlining the impact of international capital flows on China’s financial stability. Then, based on the measurement model of Ozan Sula and Thomas D.Willett, the formula of reversal value of international capital flow and its main factor reversal value is obtained. In order to increase the validity of the data, the unit time of each variable data is selected of the adjacent three years, which is the sum of the total amount of international capital flows, foreign direct investment, international debt, securities investment and China’s domestic Gross Domestic Product (GDP) (Zhuang and Zhang, 2013).

The empirical process mainly uses the unit root test method, the Granger causality test method, the impulse response function and so on. Under the premise of ensuring the long-term relationship between the variables, the influence degree of each variable is obtained (Chen and Xu, 2012). Among them, the reversal value of the total international capital flows has the greatest impact on China’s financial stability, followed by the reversal value of foreign direct investment; the international debt reversal value has an impact on China’s financial stability, but this relationship is negative; the decline in international debt will help the financial market become more stable, and vice versa. It can be seen that international capital flows can significantly affect the stability of China’s financial markets, so China needs to enhance the vigilance of foreign investment with reasonable control of international capital inflows, in order to reduce financial risks and navigate the steady development of the national economy.

2. IMPACT OF INTERNATIONAL CAPITAL FLOWS ON CHINA’S FINANCIAL STABILITY

The impact of international capital flows on China’s financial stability is mainly divided into both positive and negative aspects. Specifically, the international capital flows have a positive impact on China’s economic development. First, international capital flows are conducive to the introduction of advanced management techniques for Chinese companies from foreign banks, including information technology, network systems, and online banking, which will promote the development of similar domestic banks, so as to improve the overall level of national financial services and efficiency. At the same time, the international capital flow is also conducive to the introduction of advanced management concepts from foreign banks, which can help domestic financial institutions to improve management and optimize the allocation of funds to promote the more robust development of the national financial system (Chen, 2007). Second, the international capital flows make foreign banks have to rely on lower costs, improve efficiency and quality of service to gain market share. This will also stimulate domestic financial institutions to improve their own service level and operational quality, and to stimulate regulatory authorities to make higher regulatory requirements, thereby enhancing the overall efficiency of China’s financial markets. Third, international capital flows are conducive to improving the system capacity of national financial markets, such as the construction of financial infrastructure, improving clearing and settlement systems and the information disclosure, accounting standards and trading systems. For example, when international securities enter the Chinese market in large numbers, in order to comply with the international standards, to reduce the risks and to strengthen the supervision and control of the market, the government will certainly adopt internationally accepted accounting standards to improve the market trading system and the settlement system of liquidation of derivatives (Wei and Yu, 2015). Fourth, in the process of international capital flows, mature financial institutions of mature countries, such as all-round banks will enter into China, form a multi-competitive state in the domestic market. This will break the Chinese traditional single bank-led financial system as well as the monopoly of financial institutions, to promote the more mature and sound development of national financial markets.

The negative impacts of international capital flows on China’s economic development are as follows. First, the flow of long-term foreign direct investment is likely to cause China’s balance of payments crisis. For example, when foreign direct investment (FDI) enters China, most domestic enterprises who do not have the ability to produce and export cannot gain much profit in the short term. And the companies need to continue to remit the export income, eventually resulting in growing negative balance of payments (Yang, 2017). Second, international capital interruption, flight, and foreign investors selling large amounts of domestic assets, etc. lead to the collapse of domestic asset prices, causing national financial market instability, including exchange rate fluctuations, rising interest rates, imbalance of international payments, currency devaluation. In order to stabilize the financial market, most banks will implement a credit crunch policy, which in turn will result in the bankruptcy of small and medium enterprises whose development depends on bank funds and loans, producing a vicious cycle of bad loans. Moreover, the irrational international debt structure caused by international capital flow on the stability of China’s financial market. To this end, this paper, based on the positive and negative impact, conducted a theoretical study outlining the impact of international capital flows on China’s financial stability.
flows will lead to excessive borrowing syndrome, leading to domestic financial market instability. For example, when the non-banking sector is too optimistic about economic development, foreign currency debt will continue to increase. Foreign currency increases will lead to the devaluation of the currency. Borrowers are often unable to repay due to increasing debt burden, resulting in a large number of bad loans for domestic commercial banks, resulting in reduced stability of commercial banking system. Finally, when China’s securities market is open, changes in investment in the international securities market are easily transmitted to the domestic financial system. Most of the international securities investors are extremely sensitive to changes in real income, so they will quickly change the direction of investment in stocks and other securities. This will shake the domestic financial markets, increasing financial risks (Wang and Bian, 2015).

3. EMPIRICAL ANALYSIS

3.1 Model design and variable selection

According to the above analysis, it can be seen that the relative size of international capital flows and its main factors, such as foreign direct investment and international debt, will affect the financial stability of a country. Moreover, compared to the influx of international capital in a short period of time, the impact of sudden inflow or outflow of the international capital on such nation is more serious, which may lead to financial breakage or even financial crisis. Therefore, it is necessary to analyze the influence of international capital flows on China’s financial stability, and the first thing to do is to calculate the reversal value of international capital flows and its main factors.

In this paper, Radelet and Sachs’ international capital flow reversal value measurement method is used to calculate the reversal value of China’s international capital flows from of the percentage between the first-order difference of the net inflow of international capital and the GDP of the previous year. The formula is as follows:

$$Reversal_{i,t} = \frac{K_{i,t} - K_{i,t-1}}{GDP_{i,t-1}} \times 100\%$$ (1)

where \(i\) represents the capital inflow type, \(t\) represents the time, \(K\) represents the international capital net inflows, \(Reversal\) represents the reversal value of the foreign direct investment (FDI), international debt and securities portfolio investment. When \(Reversal_{i,t} \leq 0\), China’s international capital inflows are stable, with no reversal of international capital flows; when \(Reversal_{i,t} > 0\), there is a reversal of international capital flows, and the serious reversal situation is determined by the absolute value of such reversal value. Moreover, the formula above uses GDP of the previous year as a denominator, for standardization of the data to make the sample data more stable.

Then Ozan Sula and Thomas D. Willett measurement model are used and revised. The impact of the international capital flows and its main factors on China’s financial stability, the expression is as follows:

$$Reversal_{i,3} = \alpha + GDP_3 \ln flow\_Scale_{i,3} + \epsilon_{i,3}$$ (2)

where \(Reversal\) represents the reversal value of international capital flows and their decomposition factors, \(Inflow\_Scale\) represents the net inflow of international capital for three years, that is, the inflow of China’s international capital before the reversal of international capital flows. \(GDP_3\) represents control variables, the residual term is \(\epsilon_{i,3}\).

Based on precious researches and regression model, different types of international capital flows are selected, including the total amount of international capital flow (Tot), reversal value foreign direct investment (FDI), international debt reversal value (Debt) and reversal of securities investment (Por). Gross domestic product (GDP) is used as China’s financial development indicators. In general, the greater the international capital inflows are, the higher the likelihood of reversal of international capital flows in the country is and and the greater impact on its economy and finances is. Therefore, the analysis of impact of international capital flows on China’s financial stability lies in the possibility of reverse of international capital flows after China has experienced a large number of international capital inflows. This paper chooses the cumulative net inflow of international capital for the past three years as an explanatory variable, representing the size of the international capital flowing into a country.

3.2 Data description
Data on international capital flows and gross domestic product (GDP) between 1997 and 2015 are selected, with data unit amounting to three years. The data are from the International Financial Statistics Database (IFS), the World Development Statistics Database (WDI), www.safe.Gov.cn and the China Statistical Yearbook.

### 3.3 Empirical test

The linear regression model is used to study the relationship between China’s GDP and international Tot, FDI, Debt and Por. In order to prevent pseudo-regression, the ADF method must first be used to test the stability of the data units of each variable. Table 1 shows the test results. Table 1 shows that the time series of the above variables are stable, which can be directly carried out into the next causal relationship test.

<table>
<thead>
<tr>
<th>Variables</th>
<th>t-Statistic</th>
<th>Prob.</th>
<th>Test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>-3.237</td>
<td>0.032</td>
<td>stable</td>
</tr>
<tr>
<td>Tot</td>
<td>-5.261</td>
<td>0.002</td>
<td>stable</td>
</tr>
<tr>
<td>FDI</td>
<td>-4.125</td>
<td>0.017</td>
<td>stable</td>
</tr>
<tr>
<td>Debt</td>
<td>-3.543</td>
<td>0.025</td>
<td>stable</td>
</tr>
<tr>
<td>Por</td>
<td>-3.998</td>
<td>0.012</td>
<td>stable</td>
</tr>
</tbody>
</table>

Critical value of the significant level
1% -4.121
5% -3.089
10% -2.690

In order to study whether there are causal relations between GDP and Tot, GDP and FDI, GDP and Debt, GDP and Por, Granger causality test is carried out on four groups of variables. Table 2 shows the test results. Table 2 shows that Tot, FDI, Debt and Por are the causes of GDP changes. GDP is the cause of FDI and Debt changes.

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>F-Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP does not Granger Cause Tot</td>
<td>0.90034</td>
<td>0.4303</td>
</tr>
<tr>
<td>Tot does not Granger Cause GDP</td>
<td>7.49885</td>
<td>0.0084</td>
</tr>
<tr>
<td>GDP does not Granger Cause FDI</td>
<td>5.82703</td>
<td>0.0391</td>
</tr>
<tr>
<td>FDI does not Granger Cause GDP</td>
<td>6.25827</td>
<td>0.0163</td>
</tr>
<tr>
<td>GDP does not Granger Cause Debt</td>
<td>3.93591</td>
<td>0.0627</td>
</tr>
<tr>
<td>Debt does not Granger Cause GDP</td>
<td>4.13947</td>
<td>0.0554</td>
</tr>
<tr>
<td>GDP does not Granger Cause Por</td>
<td>1.02984</td>
<td>0.3513</td>
</tr>
<tr>
<td>Por does not Granger Cause GDP</td>
<td>5.68547</td>
<td>0.0206</td>
</tr>
</tbody>
</table>

GDPP represents GDP growth rate, Tot represents the international capital flow reversal rate of unit time period. The binary regression equation $GDPP = a + b \times Tot$ is established. The parameters of the model are estimated and tested. The estimation and test results show that the coefficient b of the independent variable Tot does not pass the test, indicating that the simple linear relationship between the two variables is not established. Therefore, the impulse response function is used to clarify the relationship between the variables. The results of the impulse response of GDP to Tot, GDP to FDI and GDP to Debt, GDP to Por are shown in Figure 1, Figure 2, Figure 3 and Figure 4. From the results of the impulse response function, it can see that: first, impact of Tot on GDP is high and the reaction rate is faster. On the second year of Tot change, GDP will produce significantly, which is close to 0.1; second, the impact of FDI change on GDP is also faster with relatively low significance, which is only 0.05; third, the impact of Debt on GDP is also more significant, there are mainly negative impact, and it became significant at the third year; fourth, the impact of Por on GDP is weak, which is basically maintained at around 0.02 (Wei and Zhou, 2016).
4. CONCLUSION

In conclusion, with the establishment of the measurement model, combined with unit root test method, Granger causality test method, impulse response function and so on, it is found that international capital flows have a great influence on the stability of China’s financial market. Among them, the reversal value of the total...
international capital flows has the greatest impact on China’s financial stability, followed by the reversal value of foreign direct investment; the reversal value of international debt has a negative impact on China’s financial stability. This study serves as a supplement and deepening of the previous scholars' research results, which can provide theoretical reference for China’s subsequent introduction of international capital, thus greatly improving the security and stability of the financial markets of the country and promoting the sustained and rapid development of the national economy. To this end, the Chinese government can make adjustment from the following aspects: first, the comprehensive use of income tax, transaction tax and other tax tools are adopted to curb the fleeing of international hot money after gaining speculative profits in China. In the process, the state foreign exchange management departments should accurately calculate the appreciation of renminbi based on the domestic macroeconomic situation, estimate taxation ranges and tax rates to avoid the problem of funding strand breaks caused by the fleeing of hot money (Yao, 2013). Second, it should gradually improve the financial supervision legal system, optimize the financial supervision methods, strictly examine the authenticity of various import and export trades, monitor foreign investment purposes and purity, and strengthen the supervision of foreign banks with timely analysis, monitoring, early warning the abnormal changes of foreign exchange reserves and so on. Third, it should strengthen the management and control of state-owned assets, improve the property rights and financial structure of enterprises, straighten the commission-agent relationship, and reduce the loss of state-owned assets; it should strictly regulate the property management and asset evaluation of the overseas expansion, including foreign investment, back door listing, cross-border mergers and acquisitions.

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