

A Literature Review of Spillover Effects of International Financial Crisis

Wanxian Li

College of Economics, Jinan University, Guangzhou 510000, China

Abstract

Since the end of the 20th century, almost all the financial crises around the world have been infectious cross-border. As the global economy becomes more interconnected, cross-border spillovers of financial crises become more rapid. It has become concerned and appeals scholars to study the cross-border spillover mechanism of financial crisis and explore the effective measures to mitigate the external financial impact. This paper reviews the previous research of the spillover effect of international financial crisis, and points out the fields less involved in the current research, and puts forward some suggestions for future research direction and innovative perspective.

Keywords

Financial crisis; Spillover effect; Financial stress.

1. INTRODUCTION

Economic globalization and financial liberalization have promoted the international flow of factors of production such as labor, technology and capital, and accelerated the division of labor and technological progress in global industries. Country around the world have formed a unified, interconnected and inseparable whole in the economy. While enjoying the huge benefits brought by globalization, they are also increasingly faced with the threat of external risks. With the deepening of economic globalization and financial liberalization, cross-border investment and speculation activities have become increasingly frequent, and the mechanism for the formation, accumulation and proliferation of international financial risks has become more complex, which has also created favorable conditions for the international contagion of the financial crisis.

In addition, the depth and breadth of the impact of the financial crisis is also expanding. The financial crisis will hit the financial market and the real economy. Financial institutions and real enterprises will suffer huge losses or go bankruptcy on a large scale. The rapid rise in unemployment has also made the social system more fragile.

Since the end of the 20th century, many scholars have been engaged in the research on the formation of financial crisis and its international contagion with the rapid and far-reaching influence of financial crisis, in an attempt to clarify the generation and transmission mechanism of financial crisis theoretically and empirically. This paper summarizes the research literature on spillover effects of international financial crisis and sort the research process and logic from the end of the 20th century to the present.

2. LITERATURE REVIEW OF MEASUREMENT OF FINANCIAL STRESS

In the earlier studies on financial crisis, researchers regarded the occurrence of financial crisis as a simple binary variable, that is, there are only two states, which is occur or do not occur, and they believed that the financial crisis was more of a phenomenon caused by the

currency or the banking sector than a systemic event. But in fact, the economy is in a complex financial environment, and the financial risks it faces vary with the changes of various financial or economic indicators. It is biased to divide the financial environment in the system into two extremes, which is not conducive to the study of spillover effects of the financial crisis. In addition, in economies with relatively mature financial systems, financial crises are relatively rare, so the use of simple binary variables to measure financial conditions is not conducive to the study of financial crises. The proposal of the financial stress index provides a more comprehensive and accurate tool to measure the financial risks faced by the system and facilitates the development of research and monetary policy.

The concept of Financial pressure index (FSI) originally put out by the Illing and Liu (2003). they select a series of financial or financial variables to analyze Canada's financial system, using mathematical techniques such as factor analysis to construct FSI, and defines the financial stress refers to the uncertainty of financial markets and financial institutions and changing expectations of pressures of economic system. This variable is continuous and high-frequency, covering the stock market, bond market, foreign exchange market and banking sector, which is more suitable for studying the financial stability of developed countries. Subsequently, other scholars have made a lot of contributions to improve the construction of this index. Among them, the International Monetary Fund confirmed this method to measure the risk of financial crisis, and published a set of 7 variables selected from the banking sector, securities market and foreign exchange market, to synthesize the FSI. Hakkio and Keeton (2009) summarizes the financial pressures have some characteristics, including underlying asset value and investor behavior of intensified uncertainty increased, the degree of information asymmetry increased, and the uncertainty of risk assets and non-current assets increased, etc. They selected the 11 variables involved in the various financial markets, to synthesize Kansas financial pressure index (KCFSI), and demonstrates the index can better describe economies because of the financial risk. Cardarelli (2011), on the basis of previous studies, selected 7 variables and synthesized the financial stress index of developed countries (AE-FSI). Then Balakrishnan and Danninger et al. (2011) constructed the financial stress index (EM-FSI) reflecting the financial stability of developing countries. Since then, most scholars have used financial stress index to measure the financial risk in the system and analyzed the cross-border transmission of financial crisis based on the spillover effect of financial stress index.

3. LITERATURE REVIEW OF SPILLOVER EFFECTS OF THE INTERNATIONAL FINANCIAL CRISIS

3.1. Contagion Mechanisms of Financial Crisis

Masson (1999) attributed the contagion causes of financial crisis to three aspects: Monsoon effect, Spillover effect and Net contagion effect. Monsoon effect refers to the common or global impact that can affect the macroeconomic fundamentals of all countries at the same time, which emphasizes the impact of common shock. Spillover effect refers to the phenomenon that one country's financial crisis spreads to other countries through trade and financial linkage, which can be divided into trade spillover effect and financial spillover effect. Net contagion generally refers to the contagion phenomenon that cannot be explained by Monsoon effect and Spillover effect. It is mainly caused by investors' psychological expectations and irrational behaviors, and emphasizes the self-reinforcement of expectations and multiple jump equilibrium. The following mainly describes the international financial crisis Spillover effect research status, including trade spillover effect and financial spillover effect.

3.2. Trade Spillover Effects

In the transmission channel of the financial crisis, scholars have argued about trade channel or financial channel is dominant. On the macro data level, the empirical evidence that the financial crisis was transmitted mainly through trade channels was first found by Glick and Rose (1998). Their empirical evidence was based on five financial crisis, and the result shows that through the international trade linkage, countries are affected by the currency crisis, and trade linkage helps to explain the correlation of the foreign exchange market pressure during the crisis. Eichengreen and Ross (1999) used the binary Probit model to test the correlation between the possibility of financial crisis among 20 industrial countries during 1959-1993. In the study, the author constructed two weight matrixes respectively based on bilateral trade links and macroeconomic variables, and found that the former was significant and robust, while the latter was not significant, indicating that trade links were the main channel of crisis transmission, rather than macroeconomic similarities. On the micro data level, Forbes (2000) studied the stock market performance of more than 10,000 companies during the Asian economic crisis, and found that companies that have direct trade with the country in the crisis or have a direct competition relationship with the crisis country have lower returns on the stock market. Based on this, Forbes summarized the two effects of the financial crisis transmitted through trade channels, the direct trade effect (also known as the income effect) and the product competition effect, which both are the main mechanisms for the spillover of the financial crisis. However, on the other hand, any scholars have published empirical studies on international trade that are not the main transmission channel of monetary crisis. Masson (1998) studied the Mexican financial crisis in 1994 and the financial crisis in Thailand in 1997, and found that exports to Mexico and Thailand accounted for only a small share of neighboring countries' exports. As the result, the effect of the financial crisis in the trade partners led to a decrease in export demand, which led to exports was low. In addition, Masson calculated the losses caused by product competition between five countries during the Thai financial crisis, and found that the loss of competition was relatively small, and concluded that the trade spillover effect was not the main transmission channel of the financial crisis. As a conclusion. Harrigan (2000) studied the changes in commodity prices and sales volumes in various industries in the United States during the Asian financial crisis, and found that export demand was less affected except for steel industry. The Asian financial crisis caused a decline in import demand in Asian countries however hedged by the expansion of domestic demand. And because of the in elasticity of demand, the depreciation of Asian countries' currencies didn't cause an increase in US import demand. Therefore, trade is not the main channel for financial crisis.

Theoretical research on trade spillover effects is much more limited than empirical research. For example, Gerlac and Smets (1995) first studied the model how a country's currency depreciation affects cross-border trade, and then conducts financial crises. In the model of Gerlac and Smets, a country's currency depreciation will cause the country's exports to have a price advantage, and its counterparties' imports will increase, leading to a deficit in the current account of its counterparties and a decrease in foreign exchange reserves, which can easily lead to attacks by speculators. Corsetti et al. (2000) constructed a more specific model to reveal that trade links mainly transmit financial crises through two channels: one is that a country's currency depreciation leads to a decline of relative price of its products exported, causing compress of demand of the same product market to affect other countries' exports. The second is that cheap exports lead to the improvement of other countries' terms of trade, so that consumer level will improve with a given nominal income. Therefore, combining the two channels, Corsetti believes that the depreciation of a country's currency does not always have a negative impact on other countries. In the existing research on different influence channels of trade spillover effects, there are mainly three channels: competition effect, income effect and cheap import effect. The competition effect was first proposed by Corsetti (2000). It refers to

the fact that when a country's currency depreciates, the decline in the relative price of exports causes the demand of export of other countries competing product be compressed; the income effect refers to the financial crisis affecting a country's total income and income distribution, which in turn affects the country's demand for imports; the cheap import effect means that the currency depreciation of a crisis country leads to a decline in the relative price of its exports, and the importing country's terms of trade improve, and consumers can buy higher level goods under the conditions of a given nominal income.

Prompted by Corsetti, Wincoop, and Yi to point out the interactive effects of various channels, Forbes (2002) decomposed the impact of trade spillover effects according to the three effects of trade linkages in the financial crisis, and constructed three indicators to measure competition effects, income effects and cheap import effect. Forbes divided four industries and conducted research within the industry, and introduced macroeconomic variables as control variables, and explored its ability to explain changes in national stock market returns. The results confirmed the spillover effects of trade channels on the financial crisis and found that both the competition effect and the income effect have significant contributions to the domestic economic fluctuations caused by the financial crisis. The cheap import effect changes when the situation is different.

3.3. Financial Spillovers Effect

Financial spillover effects have the same attention as the spillover with trade. Pesenti, Paolo and Cédric Tille (2000) were the first to systematically study the channels and transmission mechanisms of currency crisis spillovers, and concluded that financial crises are mainly spread through trade channels and co-lender channels with the characteristics of self-realization. The co-lender channel is centered on capital flow: when a country experiences a financial crisis, on the one hand, co-lenders lose confidence and draw loans from other borrowers with similar characteristics, which leads to credit crunch; on the other hand, co-lenders will readjust their asset allocation due to bad debts, which will affect all the borrowers of the lender, causing a global credit crunch.

In the empirical study of financial spillover effects, scholars' views on whether financial channels are the dominant channels for financial crisis spillover effects have changed over time. Forbes (2000) first tried to measure and compare the effects of trade channels and financial channels on the spillover of financial crises, but found that financial channels are not the main channel of crisis transmission. Forbes conducted research on data from more than 10,000 companies in 46 countries during the Asian financial crisis and the Russian financial crisis, and found that the effects of commodity competition and income effects in trade channels were more significant, but the credit crunch had little effect on the crisis. Van Rijckeghem and Weder (2001) studied the effects of bank loan channels and trade channels on the contagion of the crisis, and provided evidence that financial crises overflowed through bank loans and constructed an index to measure the degree of competition for bank funds. He found evidence of the co-lender effect in the Mexico, Thailand and Russia crises. However, the effect of this effect was not robust during the Asian financial crisis, which proved that the crisis transmission is highly correlated with competition between trade and capital. In a paper published in 2003, the scholar continued to study the panel data of cross-border bank loans during the financial crises in Mexico, Thailand, and Russia, and found evidence that the financial crisis overflowed through common bank lenders. However, Forbes and Chinn conducted a more in-depth study using the two-step method in 2003, and still believe that the trade channel has a greater influence in transmitting the crisis than the financial channel. First, Forbes used global factors, industry factors, cross-border linkage factors and individual country factors to explain the country's market rate of return. Then, Forbes split cross-border linkage factors into direct trade links, market competition relationships, bank loans and foreign direct trade links to study. The

research results show that both cross-border linkage factors and industry factors can effectively explain the return rates of stocks and bonds. However, although cross-border financial linkages became closer from 1996 to 2000, direct trade linkages still dominated the spillover effects of the financial crisis, while the impact of direct cross-border investment was not significant. After the subprime mortgage crisis in 2008, Reinhart and Rogoff (2008) studied all financial crises in the history, covering all regions from the default in England in the 14th century to the subprime mortgage crisis in the United States at that time, confirming that financial crises usually originate from international financial centers and then spread to other countries through interest rate shocks and commodity prices plummeting.

Since the financial stress index was proposed and developed by Illing and Liu in 2003, Moriyama (2010) used the financial stress index in an IMF work report to analyze the spillover effects of the global financial crisis on the economic activities of developing countries in the Middle East and North Africa and affirmed the role of the financial stress index in measuring the spillover effect of the crisis. He summarized the three channels for the spillover of the financial crisis: first is the shrinking demand for exports of goods and services; the second is the decrease in remittance inflows; the third is the sudden break-down of capital inflows. Moriyama found through research that two-thirds of the increase in financial pressure in developing countries in the Middle East and North Africa can be directly or indirectly explained by the spillover of financial pressure in developed countries. Cardarelli (2011) constructed a financial stress index in developed countries to study the transmission of financial crises, and found that financial panics caused by banking crises are more likely to cause a real economic recession than financial panics caused by securities and foreign exchange markets. Balakrishnan, Danninger, Elekdag, and Tytell (2011) referred to Cardarelli's financial stress index construction method to synthesize the financial stress index of developing countries, used to study the financial channel spillover effects of financial crises, and found that developing countries with higher debt to developed countries are more likely to be effected. He pointed out that cross-border bank loan linkages are the main transmission channel of financial crises. Dovern and Roye (2013) analyzed the monthly data of the financial stress index of 20 major countries and found that the linkage of the financial stress index increased during the financial crisis, and the linkage increased with the degree of openness of the economy. At the same time, Dovern believes that the spillover effect of financial pressure is transmitted from developed countries to developing countries, while the spillover effect in the opposite direction does not exist.

At the micro level, research is still relatively small, but some scholars have pointed out that banks are affected by the spillover effect of financial pressures has heterogeneity. W. Chen, S. Hamori and T. Kinkyo (2017) introduced indicators representing the level of bank competition and bankruptcy risk into the model to study the impact of US financial crisis on the growth of bank loan supply in other countries. The results show that banks with a higher degree of competition and a higher margin of safety are less affected by the spillover of US financial pressure.

4. CONCLUSION

Throughout the above-mentioned research development process, with the development of economic globalization and financial liberalization, the ties among countries are not only limited to trade ties, but also involve financial ties. The role of financial linkages as the spillover channel of the financial crisis has become more and more obvious. The academic research have increasingly explored the reasons for the heterogeneity of the impact of the spillover effects of the financial crisis on various countries. At the same time, they analyze the effective methods have been taken to reduce the impact of external financial pressure spilling on the country.

Although the current research results are very rich, more in-depth research and innovation on the causes of the heterogeneous impact of financial pressure spillovers on countries and micro-financial institutions should be conducted. For example, on the macro level, further research can discuss the heterogeneous impact of the financial structure, degree of financial maturity of the financial market on the countries during financial crisis; on the micro level, further research can explore the heterogeneous impact of external shocks on banks and non-bank financial institutions with different characteristics, and provide effective advice for governments and individual financial institutions to resist external financial shocks.

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