

Literature Review of the Risk Management of Foreign Exchange Derivatives

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Abstract: Based on the analysis of the current international and domestic financial markets, this paper summarizes the relevant research on the risk management of foreign exchange derivatives in the existing literature, and tries to find out the new development ideas and direction of China's foreign exchange derivatives market and foreign exchange derivatives.

Keywords: Foreign exchange derivatives; Risk management; Exchange rate risk

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1. Literature on the development of foreign exchange derivatives market

Forward contracts first appeared in the mid-19th century, but their trading volume has been low and there has been little research into them. Until the 1970s, in order to avoid risks, countries all over the world carried out innovation of financial products, so a variety of financial derivatives emerged, and the study of foreign exchange derivatives gradually attracted people's attention.

Initially, the research on its foreign exchange derivatives market is still relatively lacking. Marshall J (1992) pointed out that, like traditional financial business, foreign exchange derivative business also has various risks. He classified risks into five categories: credit risk, operational risk, market risk, legal risk and liquidity risk. Beginning in the 1970s, the development of electronic information technology provided a constant impetus for innovation in the foreign exchange derivatives market. Basel Committee on Banking Supervision (1997) pointed out that electronic information technology could be applied to the foreign exchange derivatives market, and banks should guard against risks brought by technological innovation in the foreign exchange derivatives market. Economist Stephen Roach (2002) pointed out that foreign exchange derivatives can improve economic efficiency and promote the growth of non-real economy. The Bank for International Settlements (2004) summarized the regulatory experience of more than 20 countries, including Mexico, Czech Republic, Brazil and South Korea, on the foreign exchange derivatives market and proposed some methods to control market risks. Robert L. MacDonald (2011) pointed out that the foreign exchange derivatives market can avoid and manage exchange rate risks.

Foreign exchange derivatives are still relatively new products for our country. However, with the development of the foreign exchange derivatives market, the domestic academic circle also began to pay attention to this field. In recent years, literatures on the development of foreign exchange derivatives market began to emerge.

2. Empirical literature on hedging function of foreign exchange derivatives

In foreign studies, the use of financial derivatives has a positive impact on enterprise value. Choi and Jiang (2009) took the foreign exchange risk gap data of American enterprises from 1983 to 2006 as the research sample, and compared and analyzed the data by scoring method. They found that multinational corporations were less affected by foreign exchange risks and could effectively hedge foreign exchange risks by using foreign exchange derivatives. Bartram, Brown and Conrad (2011) studied the data of non-financial companies in 47 countries and analyzed the impact of financial derivatives on companies in terms of value and risk. The empirical results show that financial derivatives can effectively reduce corporate risk and have a positive effect on corporate value. Allayannis,

Ugur Lel and Darius (2012) selected 39 companies with large exchange rates as research samples and found that currency derivatives were significantly related to value premium of companies with strong internal and external corporate governance. Michael P. Donohoe (2015) analyzed the impact of financial derivatives from the perspective of corporate tax. Research has found that financial derivatives can effectively save the corporate tax effect even better than the tax rate reduction.

Foreign exchange derivatives have obvious advantages in hedging the exchange rate risks faced by enterprises. George Allayannis and Eli Ofek (2001) studied samples of S&P500 non-financial companies in 1993 and found that companies would use foreign exchange derivatives to hedge. It also found that the level of use of derivatives depended on the firm's exposure to foreign sales and trade. There is a positive relationship between the use of exchange rate derivatives and exchange rate risk. Li, Matej, and Marin? (2014) concluded that data on listed bank holding companies in the United States between 1997 and 2012 tended to be samples. Research shows that the increase in the use of financial derivatives will significantly increase the systemic risk of bank holding companies. The higher the degree of use of exchange rate derivatives, the greater the corresponding exchange rate risk.

In domestic literature, the use of foreign exchange derivatives will bring premium effect to enterprises. Xiao Chao (2017) made use of the data of overseas construction enterprises from 2011 to 2015 and found that foreign exchange derivatives were positively correlated with enterprise value. There is a "U" shape between the degree of foreign exchange risk hedging and enterprise value. Foreign exchange derivatives are one of the important tools to avoid exchange rate risks. Zhao Anan (2012) learned from Jorion's risk exposure model and analyzed 106 A-share companies in Shanghai Stock market. The conclusion is that the influence of exchange rate changes on the earnings of listed companies is very obvious. Then it puts forward that listed companies can use foreign exchange derivatives to avoid risks. It is found that exchange rate risk, profitability, growth ability and asset size all have significant positive effects on the use of foreign exchange derivatives.

The single use of foreign exchange derivatives by domestic companies leads to weak management effect on exchange rate risks. Cao Yushan (2013) studied the effect of listed companies' use of financial derivatives for risk management from 2005 to 2011, and believed that listed companies generally used financial derivatives for hedging profits rather than hedging, resulting in weak risk management effects. Sven (2014) took 16 Chinese listed commercial banks as samples, took the period from 2006 to 2012 after the RMB exchange rate reform as the observation period, and used the stepwise regression method to investigate the role of foreign exchange derivatives on RMB exchange rate risk exposure. It is found that foreign exchange derivatives have a significant positive effect on exchange rate risk exposure coefficient, which can effectively mitigate the negative impact of RMB appreciation on banks. Tang Tao (2015) constructed the bivariate GJR-GARCH model to investigate the exposure of foreign exchange risk of enterprises investing abroad, and then used the VaR-GARCH model to measure the exchange rate risk of enterprises investing abroad before and after the reform of foreign exchange rate and the financial crisis. Empirical findings show that before and after the exchange rate reform, the yield rate of RMB against US dollar fluctuates more than that of other two currencies, and in terms of avoidance strategies, foreign exchange hedging is again proposed. Qiao Yanyang (2016) took the financial data of Chinese listed commercial banks from 2007 to 2014 as samples, built a panel data model from the financial perspective, and analyzed the effectiveness of foreign exchange derivatives such as foreign exchange options in dealing with the exchange rate trading risks and accounting risks of banks.

Financial derivatives play an important role in the bank's ex post risk taking. Fang Pei (2015) studied the data of listed commercial banks and concluded that the use of financial derivatives significantly improved banks' pre-event and post-event risk taking, and its impact on banks' post-event risk taking was greater and more significant. The influence of financial derivatives on the change of enterprise value is significant. Zhao Xin, Gao Nan and Ding Lili (2019) conducted A study on the data samples of A-share listed companies and conducted an empirical analysis to investigate the implementation effect of the impact of the use of foreign exchange derivatives on corporate value in China. The results show that the use of foreign exchange derivatives can increase the value of enterprises by about 3.3%.

Financial derivatives also have a certain impact on the systemic risk of banks. Zhang Xiaofei and Xu Longbing (2020) analyzed the data of Chinese listed commercial banks and the scale of the use of financial derivatives in the stock market and banks, and found that financial derivatives would aggravate the systemic risk of banks.

3. Literature on risk management of financial institutions using foreign exchange derivatives

Many scholars at home and abroad have conducted a large number of studies on risk management from different perspectives.

In many developed countries, the exchange rate risk, systematic risk management and foreign exchange hedging strategies have been gradually formed, and a large number of theoretical studies have been improved.

As a kind of market risk, foreign exchange risk needs to be paid attention to in risk management. Today, it is mainly about managing risk using financial technology. Takatoshi Ito, Satoshi Koibuchi et al. (2016) believe that there is a close relationship between enterprise exchange rate risk exposure and risk management. Based on the financial data of 227 listed companies in Japan in 2009, the results show that most Japanese companies use financial derivatives to reduce their exchange rate risks. Mayordomo, Rodriguez-Moreno and Pena (2014), based on the data of 95 bank holding companies in the United States during 2002-2011, studied the impact of bank holding companies' use of financial derivatives on the contribution of the overall systemic risk in the United States. The results show that the use of total financial derivatives by banks can not significantly affect the contribution to systemic risk, but a separate analysis of a type of financial derivatives will produce different results.

Financial derivative is a double-edged sword, in the use of both positive and negative effects, we can not only see the risk. The 2008 financial crisis, for example, was blamed by many on the use of derivatives. This is refuted in a paper by Keffala (2015), which takes the banks from emerging countries during 2003-2011 as the research object, and mainly measures the "pre-crisis period", 2003-2006 period, and the "crisis and post-crisis period" during the turbulent period, 2007-2011 period. The impact of derivatives use on bank stability in emerging countries. It is concluded that only options and futures can be regarded as risky derivatives and were partly responsible for exacerbating the last financial crisis, while swaps and forwards were not the main destructive factors.

4. Relevant literature review

Through the literature review and sorting of the above three aspects. It can be found that western developed countries began to study the development of their derivative markets and products at the end of the 20th century, providing theoretical guidance for the development of foreign exchange derivatives and market norms. Most of the literature holds a positive attitude toward the use of foreign exchange derivatives to regulate and manage exchange rate risks. As a large number of financial derivatives began to flood into the Chinese market, bringing both opportunities and risks of market reform, Chinese academic community also paid more attention to the study of financial derivatives, from the initial assumption of the foreign exchange derivatives market, to the diversification of foreign exchange derivatives and the standardization of the market, and later the relaxation of national policies and the improvement of the regulatory system. Scholars in our country have all discussed and research to it.

Many scholars have studied a large number of data of listed enterprises and data on the use of financial derivatives and found that the use of foreign exchange derivatives can effectively hedge risks and has a positive impact on enterprise value. In recent years, with the development of the derivatives market and the improvement of various data, this positive influence has been further embodied. With the continuous maturity of various studies, more and more financial institutions begin to use financial derivatives for risk management, which gradually forms the management of exchange rate risk, systematic risk management and foreign exchange hedging strategies, and a large number of theoretical studies are constantly improving.

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