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Does internationalisation increase exchange rate exposure? -Evidence from Chinese financial firms☆

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ABSTRACT

This study investigates both the symmetric and asymmetric exchange rate exposures of Chinese financial firms in the context of an accelerated pace of RMB internationalisation. We find that an increasing number of Chinese financial firms are exposed to negative symmetric effects from the change in the trade weighted effective exchange rate. The evidence concerning asymmetries shows that after 2009 negative exchange rate shocks (a weaker RMB) have a stronger effect on exposures than positive shocks (a stronger RMB). Changes in the bilateral exchange rate also have a significant impact on firm returns, given the importance of the USD in the effective exchange rate. Further, the empirical analysis reveals that exchange rate exposures are associated with firm level characteristics including total assets, earnings per share, net cash flows, investment incomes, total liabilities and firm size. Finally, we suggest that domestic and foreign stakeholders need to pay close attention to the movement of the Yuan's exchange rate before it becomes completely convertible.

1. Introduction

The "flow-oriented" exchange rate theory suggests that currency movements have a significant impact on firm values (Dornbusch & Fischer, 1980; Phylaktis & Ravazzolo, 2005), as firm returns are exposed to unanticipated changes in exchange rates (Dominguez & Tesar, 2001, 2006; Hodder, 1982; Jorion, 1990; Martin & Mauer, 2003). This is defined as exchange rate exposure, which is viewed as an important source of risk for international firms[1]. Unexpected exchange rate movements of this kind are a basic feature of global financial markets, especially they are floating rates, which are usually recognised as the source of currency risks. However, we also have to bear in mind that some fixed exchange rate systems can also carry a source of uncertainty if the central bank or government is not able to sustain the parity and the currency is subject to a speculative attack. Examples of this are the attacks suffered by the Mexican peso in 1992, the Thai baht in 1997 or the Argentinian peso in 2002, when they moved from a one-to-one rate against the US dollar to a floating exchange rate as a consequence of their debt crises. Previous studies have examined currency exposures in developed economies with independent floating rates[2] like the US, Japan, Canada and Australia (Bodnar & Gentry, 1993; Khoo, 1994; Williamson, 2001). Less attention has been paid to currency exposures in emerging markets given that these economies are often criticised for their fixed exchange rate regimes or managed floating exchange rate

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[1] Typically, firms are exposed to transaction, translation and economic exposures. Transaction exposure is the impact of exchange rates on the cash flows of specific identifiable foreign currency-denominated transactions. Translation exposure is also called accounting exposure, but it is not considered here since it does not affect cash flows. Economic exposure encompasses the competitive and indirect effects of exchange rate risk. Unlike the other two types of exposure, this dimension can also affect domestic firms (Bartram, 2007; Booth & Rotenberg, 2010; Martin & Mauer, 2003)

[2] See the IMF for detailed classifications of exchange rate regimes.

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regimes. An interesting case is the Yuan or Renminbi, RMB, since on some occasions trading partners have accused China of "manipulating" the RMB exchange rate.

The exchange rate policy in China has gone through dramatic changes since 1994 and the Yuan is becoming flexible and convertible. China unified the dual system of the foreign exchange market in 1994 and the daily floating range of USD/RMB (units of RMB per unit USD) was limited at 0.3%. The managed floating exchange rate regime was introduced in July 2005 and the RMB exchange rate started to be quoted to a basket of currencies rather than being pegged to the USD only. The daily trading band for the currency was widened to 0.5% in 2007, and further expanded to 1% in 2012, and to 2% in 2014. China's state council also announced its intention to widen the band to 3% in 2015. The historical daily trading fluctuation range for the GBP to the USD during 01/2012–05 /2015 was −1.898(min) to 1.914 (max) with an average of 0.00056, while the daily fluctuation of the USD to the RMB was −1.093(min) to 1.102 (max) with an average of −0.00344 over the same period.[3] This makes research into the currency exposure in China compared to the two independent floating rates in the UK and US of topical importance in the current global economic climate. This can also be explained by two other points about China. First, the Chinese government is trying to internationalise its currency, the Yuan, which may expose Chinese firms to exchange rate changes since the Yuan is becoming increasingly popular in international transactions.[4] Second, the Chinese economy is closely linked to the global economy and any turmoil in the Chinese financial market could spill over into other markets.

In this paper we focus on the currency exposure of Chinese financial firms, which matters a great deal both domestically and internationally. This is partly because Chinese financial firms are actively reacting to their government's calling to internationalise the RMB by issuing offshore RMB bonds, investing overseas, offering loans, etc. The values of firms must be subject to exchange rate movements in the currency transaction and translation process. This could be of great concern for both firm managers and investors alike. The authorities also need to pay attention to the currency exposure of financial firms as crises have historically tended to emerge from financial markets. At the same time, foreign institutions and investors need to understand the currency exposure of Chinese financial firms, since a potential crisis or default happening in these firms could cause important damage or serious losses to foreign clients. Trade partners are also concernced about the spillover effects of domestic turmoil in China[5] like the turbulence in the Chinese financial market at the beginning of 2016.

The focus of this paper is on financial firms because of the importance of the financial sector for the development of any country, and particularly for emerging economies. There is a clear link between economic growth, poverty alleviation and the degree of development of the financial sector (e.g. Cepparulo, Cuestas, & Intartaglia, 2017). Exchange rate exposure may have dramatic consequences for the development and health of the financial sector in China, and foreign financial flows are an important source of funds for the development of the country. The net financial account for China was positive from 1997 until 2015, but with a clear trend towards negative territory[6]. Financial corporations play a key role in attracting and acting as a channel for foreign inflows of capital. Whether or not they are seen as such depends on how they manage their risk exposure, amongst other factors. Given the internationalisation of the RMB, exchange rate risk management is becoming a priority.

Less attention has been paid in the literature to the currency exposure of Chinese firms. At the industry level, exchange rate movements have significant exposure effects on industry returns, and the exposures vary across industries (Cuestas & Tang, 2015; Miao, Zhou, Nie, & Zhang, 2013; Tang, 2015). At the firm level, Li, Ma, and Xu (2015) find that the foreign currency denominated prices of Chinese exporters receive high exchange rate pass-through effects. Wong, Wong, and Leung (2009) suggest that negative foreign exchange exposure is prevalent for larger Chinese banking firms, and a strong correlation between firm size and exposure effects has been found in Chinese firms (Tang, 2015). Regarding asymmetric effects from currency movements, Miao et al. (2013) and Cuestas and Tang (2015) find that asymmetries exist, but they did not examine the determinants of the asymmetric exposures. Dranev and Babushkin (2014) study the asymmetric exchange rate exposure and its determinants in the BRIC (Brazil, Russia, India and China) countries, but they fail to explore the effects of positive and negative exchange rate shocks on firm returns.

Our study fills the gap in the literature. We aim to investigate both the symmetric and asymmetric exchange rate exposures of Chinese financial firms before and after the announcement of RMB internationalisation. The conventional approach for measuring exchange rate exposure is based upon the capital asset pricing model (CAPM) framework (Bodnar & Gentry, 1993; Chue & Cook, 2008; Dominguez & Tesar, 2001). Previous studies find that currency depreciations and appreciations have similar effects in magnitude on firm returns (Bodnar & Wong, 2003; Chue & Cook, 2008; Dominguez & Tesar, 2006; Muller & Verschoor, 2007), and this is called the symmetric exchange rate exposure. However, currency depreciations may not have the same effects in magnitude on firm values that currency appreciations do, so empirical attention has been paid to modelling the asymmetric effects of exchange rate changes on firm returns (Hsu, Yau, & Wu, 2009; Koutmos & Martin, 2003, 2007; Muller & Verschoor, 2006; Tang, 2015).

This paper follows the CAPM framework but adds a GARCH (1,1) specification to the modelling in order to remove potential ARCH effects in the regression residuals, which improves the accuracy of the exchange rate exposure measurement. Considering the different effects on firm values during the ups and downs of currency movements, we introduce the nonlinear autoregressive distributed lagged (NARDL) model to explore the long-run asymmetric exchange rate exposure. Besides the commonly used trade weighted effective exchange rate (TWEER) in the literature, we also examine the currency exposure of the bilateral real rate of the USD to the RMB since the Yuan has assigned a heavy weight against the USD in the currency basket.[7] Further, we explore the determinants of (a)symmetries by examining firm level indicators using quantile regressions.

The results of this study underscore the importance for Chinese financial firms of managing currency exposures. Our main findings can be summarised as follows. First, after the announcement of RMB internationalisation in 2009, an increasing number of Chinese financial firms have become exposed to currency movements, in particular from the negative change in the trade-weighted effective exchange rate. Second, significant estimates of asymmetric exchange rate exposure suggest that before 2009 currency movements increased firm returns because of the strong economic fundamentals in China, while after 2009 the negative TWEER shock dominates in the asymmetric exposures and the positive RER shock plays an important role in influencing firm values.[8] Third, currency exposures at the firm level are

[3] Source: authors' calculation from the trading data available on the Chinese Dazhihui Securities trading software. The historical daily fluctuation range of the USD to RMB was −2.012 (min) to 1.102 (max) with an average of −0.0061 for 01/2006–05/2015.

[4] The Yuan was the fourth most widely used currency for international payments in 2015 according to the Society for Worldwide Interbank Financial Telecommunication (SWIFT).

[5] Changes in the RMB exchange rate changes may affect the exports of competitor countries in third markets through the "spillover effect" (Mattoo, Mishra, & Subramanian, 2012).

[6] According to data from the World Bank (https://data.worldbank.org/indicator/BN.FIN.TOTL.CD?locations=CN), the net financial account became negative for the first time since 1997.

[7] Research evidence also shows that the Yuan is still mainly pegged to the USD after the 2005 RMB policy reform (Frankel & Wei, 2007).

[8] The negative change in the trade-weighted effective exchange rate means a weaker