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Corporate investment during the financial crisis: Evidence from China ☆

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ABSTRACT

China's growth model suggests that the 2008 financial crisis may have affected the Chinese economy differently from what one observes in mature market economies. In this paper, we examine how Chinese corporate investment responded to the financial crisis by using 1689 listed nonfinancial firms during Q12006–Q32010. We document that (1) the overall impact of the financial crisis on Chinese corporate investment is negative; (2) among three channels conveying the effect of the financial crisis, namely, the demand channel, the financial constraints channel, and the uncertainty channel, the demand channel dominates; (3) financial assets held by a nonfinancial firm are important in explaining the firm's fixed investment behaviour; (4) as compared to non-state firms, state-controlled firms are less affected by the financial crisis and more active in engaging in financial assets investment; and (5) foreign ownership can be seen as a buffer against the negative effect of the financial crisis and foreign-involved Chinese firms are less active in financial assets investment as compared to domestic firms.

1. Introduction

How has the 2008 global financial crisis affected the world's economies through company behaviour? There are two main streams of research. One focuses on shocks to credit markets and documents that the financial crisis has worsened credit market conditions, i.e. the quantity of credit available for borrowers is lower and costs of borrowing are higher (e.g. Ivashina & Scharfstein, 2010). In response, firms normally cut capital expenditures, reduce debt issuance, draw down lines of credit, and substitute internal liquidity for external liquidity (e.g. Campello, Graham, & Harvey, 2010; Duchin, Ozbas, & Sensoy, 2010). However, another group of researchers documents that corporate behaviour during the financial crisis is not always consistent with the predictions of the financial constraints theory, instead firms respond directly to a contraction in demand (Kahle & Stulz, 2013; Paunov, 2012) and to risk (Kahle & Stulz, 2013). In the literature, the issues of financial constraints and capital market imperfections tend to dominate. The logic is that the asymmetric information problem becomes more severe during the financial crisis, which leads to a larger wedge between external and internal financing. However, most existing studies examining the impact of the financial crisis are mainly based on firms in mature financial systems, such as the US, the UK, and Europe. Evidence on emerging markets is harder to find and in particular, there is little evidence on how the financial crisis has affected corporate behaviour in China.

China is interesting to study because China is representative of a model of financial system which is substantially different from that in mature market economies. More specifically, (1) the economic structure differs. For example, the financial crisis affected the economic systems in the UK and the US because of the arm's length nature of financial transactions that emphasize liquidity over engagement and the reliance on complex financial products. This feature is in contrast to the Chinese economy in which the real sector (nonfinancial firms mainly in manufacturing), supported by an engaged banking sector, plays a more important role in the economy. (2) The degree of regulation on the financial system differs. The financial sector in typical capitalism market economies, such as the UK and the US, is purely market-orientated with relatively little administrative intervention; in contrast, the Chinese financial system in general and the banking sector in particular have been tightly administrated by the government despite years of marketisation in other areas in the economy. Hence, the Chinese financial system has not been integrated with financial systems in mature markets, which implies that the Chinese financial sector was largely insulated from the tsunami effect of the credit crunch induced by the subprime mortgage market. (3) China's economy had been

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export-driven before the financial crisis. According to the Asian Development Bank (2009), one-third of China's GDP growth in 2007 was due to net exports. The financial crisis caused the contraction of demand for products of Chinese manufacturing firms from international markets. Therefore, unlike mature market economies, the impact of the financial crisis on China was experienced initially by the export-orientated real sector.

These features of the Chinese economy suggest that possible mechanisms that conduct the impact of the financial crisis on corporate activities in China are different from what one observes from mature market economies. For example, the conventional perception on the effect of the financial crisis is mainly the aggravated financial constraints the firm faces due to the crisis. Although widely applying to the firms in mature market economies, this perception may not apply to Chinese manufacturing firms. In China there were no shocks to the *supply* of credit thanks to the isolation of the Chinese financial sector from mature financial systems when the 2008 financial crisis took place. Due to a relatively thin corporate debt market, Chinese firms have been borrowing mainly from the state-dominated banking sector which is highly regulated. This implies that the effect of the financial crisis on Chinese firms may not be mediated by financial constraints; instead, a direct demand constraint is more likely given China's export-driven and manufacturing intensive economy.

A further difference lies in the extent to which the Chinese corporate sector engages in a mix of fixed and financial investments. China's model of the state-dominated financial system and the state-dominated corporate sector suggests that many state enterprises that can keep their earnings and have access to cheaper financing often operate outside their mandated areas by e.g. investing in real estate and the shadow banking system (see World Bank, 2012). This type of off-business financial assets investment was more profound during the financial crisis period. This is because the Chinese government responded to the financial crisis by providing a stimulus package in November 2008 which injected 4 trillion RMB into the system. The injection of liquidity was mainly conducted via the state-dominated banking sector and the projects were mainly carried out by state-owned enterprises. This suggests that the state-connected firms would have some additional liquidity available, which enables them to engage in off-business financial assets investment.[1] A feature of our investment model is that in the fixed investment equation we explicitly consider capital gains from financial assets held by the firm. In Section 4.1 of this paper we discuss in detail why expected capital gains from financial assets investment undertaken by a nonfinancial firm are relevant to the firm's fixed investment. To the best of our knowledge, there have been no researches in which the firm's financial assets investment is explicitly considered in examining the corporate investment behaviour of Chinese nonfinancial firms.

This paper provides a systematic empirical analysis of how the Chinese listed firms respond to the financial crisis, focusing on firm-level fixed investment. We distinguish between different channels through which the financial crisis affects firms' investment decisions. The results reveal insight into how the financial crisis affects the Chinese economy, including financial constraints, direct demand, and uncertainty effects. We also explicitly examine how the impact of the financial crisis and the channels conveying the real effect of the financial crisis differ between the state-controlled and non-state firms on the one hand, and between foreign-involved and domestic Chinese firms on the other.

The remainder of the paper is organized as follows: we review the related theories and literatures in Section 2. Section 3 describes the data. Section 4 presents empirical investment models and measurement of variables used in the empirical analyses. The main empirical results are discussed in Section 5. Section 6 concerns additional tests on the financial constraints channel. Section 7 concludes.

2. Related theories and literatures

Examining the effect of the financial crisis on firms' investment requires a specification of an investment model. Apart from the demand channel (where expectations are variously represented by sales, Tobin's Q or current profits), standard investment models often contain terms capturing financial constraints (e.g. cash flow).[2] As far as the uncertainty channel is concerned there is considerable controversy but the preponderance of results including meta-studies indicate that the effect of uncertainty on investment is generally negative, compatible with a real options or irreversibility effect (Bernanke, 1983; Dixit & Pindyck, 1994; Driver, Temple, & Urga, 2005; Koetse, de Groot, & Florax, 2009). Given that the financial crisis may have increased uncertainty simultaneously with reducing demand, it seems important to separate out these influences.

Regarding financial constraints, this theory predicts that there exists a wedge between the costs of internal and external financing under the assumption of asymmetric information and imperfect capital markets (Myers & Majluf, 1984; Stiglitz & Weiss, 1981). During financial crises not only is there a sudden squeeze in credit availability but also the firm's balance sheet condition deteriorates in recessions, both of which imply stricter credit rationing and higher costs of external borrowing (Fazzari, Hubbard, & Petersen, 1988).

Firms in the US, Europe, and Asia responded to the financial crisis by cutting employment and capital spending, depleting cash and selling assets to finance their operations (Campello et al., 2010). Sudden squeeze in the supply of external capital due to the financial crisis may also have negative effects on corporate investment. For example, using quarterly information of the Standard & Poor's firms during 2006–2009, Duchin et al. (2010) find that corporate investment declines significantly following the onset of the crisis. In addition, they find that investment declines more for the firms that have less internal financial resources (measured by cash reserve and net short debt), are financially constrained, and are in the industries which are more dependent on external financing, confirming the theory of investment under financial constraints and capital market imperfections. Kahle and Stulz (2013) suggest, however, that the real effect of the financial crisis is conducted not by the lack of credit but by two other mechanisms, i.e. the demand factor and the risk factor. They argue that the contraction in demand causes the firm to lose investment opportunities and weaken the firm's balance sheet, which leads to lower investment; this is exacerbated by uncertainty. By examining the relative economic importance of the above three factors in explaining financial and investment policies of US firms during the financial crisis, Kahle and Stulz (2013) document that both the demand channel and the uncertainty channel are important.

Most existing studies examining the effect of the financial crisis are mainly based on firms in mature market economies; little is known about how Chinese firms respond to the crisis. Previous studies on corporate investment behaviour of Chinese firms mainly focused on how state ownership influences the degree of financing constraints faced by the firm (e.g. Lin & Bo, 2011; Poncet, Steingress, & Vandenbussche, 2010). In addition, Firth, Malatesta, Xin, and Xu (2012) document that for Chinese listed firms, the investment–cash flow sensitivity differs between government-controlled firms and private firms and that government-controlled firms tend to overinvest even when investment opportunities are poor and when cash flow is decreasing.

An important feature of our paper is to consider the impact of capital gains (arising from the firm's financial assets) on the firm's fixed investment decision. The inclusion of capital gains from financial assets held

[1] A piece of evidence is the boom of the Chinese property market during the financial crisis. According to IMF, WEO (2012) the boom in China's property market during 2009–2010 was attributed to the 2008 stimulus packages. Many state-owned firms used additional loans to invest in the property market. In addition, Quantitative Easing in the US also resulted in looser monetary conditions in emerging markets.

[2] Standard references include Tobin (1969), Jorgenson (1971), Hayashi (1982), Fazzari et al. (1988). In the Asian context sales are often dominated by export demand (Asian Development Bank, 2009).