



Housing boom, real estate diversification, and capital structure: Evidence from China



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ABSTRACT

By exploiting the unique situation in China that numbers of listed firms diversified into the real estate industry during the recent housing boom period, we find that firms' real estate diversification positively influences their subsequent leverage ratios. Further investigations suggest that such an increase in leverage mainly comes from short-term debt instead of long-term debt. We also find that housing price growth and state ownership are underlying mechanisms through which real estate diversification stimulates leverage. Last, we find that firms with real estate diversification enjoy less financing cost deterioration and less market value deterioration when they raise more debt.

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1. Introduction

In a growing strand of literature, collateral is regarded as a main determinant of capital structure; that is, tangible assets, such as real estate, can be pledged as collateral, thus allowing firms to raise more debt from lenders (Rampini and Viswanathan, 2013). Studies generally document a positive relationship between asset tangibility and firm borrowing.² Housing booms thus can lead to firms' higher leverage through raising the value of firm-owned real estate, as documented by Cvijanovic (2014). Other than the collateral channel, this paper attempts to propose a less acknowledged but relevant channel through which housing booms can influence firms' capital structure; that is, as housing booms generate high returns on real estate investment, firms diversify into the real estate industry and thus raise more debt.

According to the literature on assets bubbles and economic growth (Grossman and Yanagawa, 1993; King and Ferguson, 1993; Saint-Paul, 1992; Olivier, 2000; Miao and Wang, 2014), resource reallocation due to assets bubbles may have important macroeconomic consequences. Particularly, when bubbles occur in sectors without innovation (e.g., housing price bubbles in the real estate industry),³ capital would be diverted away from sectors with innovation (e.g., the manufacturing industry), thereby leading to less innovation and thus subsequent economic slowdown (Miao and Wang, 2014). Though a resource reallocation effect of housing price bubbles has been postulated, little evidence has been provided so far. Our paper attempts to fill the gap by

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² See Titman and Wessels (1988), Rajan and Zingales (1995), MacKay and Phillips (2005), Faulkender and Petersen (2006), Almeida and Campello (2007), Eisfeldt and Rampini (2009), Bharath et al. (2009), and Rampini and Viswanathan (2010).

³ The real estate industry is mature, thus leaving little room for innovation.

documenting the presence of such a resource reallocation at the firm level. Specifically, we examine to what extent firms' capital structure was influenced by their real estate diversification during the recent housing boom in China.

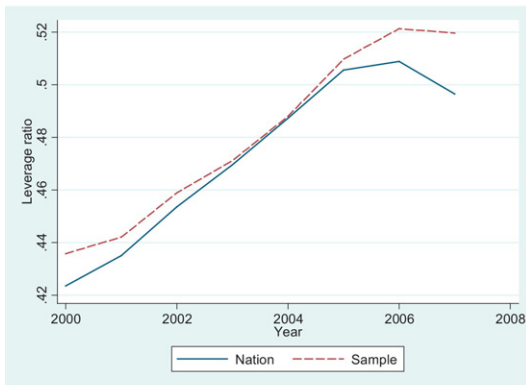
Similar to the U.S., China also experienced a surge of housing prices in the period 2000–2007. During this period, housing prices surged in China's major cities, with the highest annual growth rate being 20%. Moreover, many studies document that housing price surges in several big cities can hardly be explained by changes in fundamentals, indicating a high risk of housing price bubbles in these cities (e.g., Peng et al., 2008; Wu et al., 2011; Wang and Zhang, 2012).

Unlike the U.S., housing booms in China have stimulated listed non-real estate firms to diversify into the real estate industry (Rong et al., 2015). As a result, more than half of listed non-real estate firms have entered the real estate industry by 2007. This diversification might have substantially changed the landscape of capital structure among these firms. It has been witnessed that China's listed non-real estate firms experienced a substantial increase in leverage ratios during this period. As shown in panel A of Fig. 1, the average leverage ratio of listed non-real estate firms increased by 7.4 percentage points from 2000 to 2007.

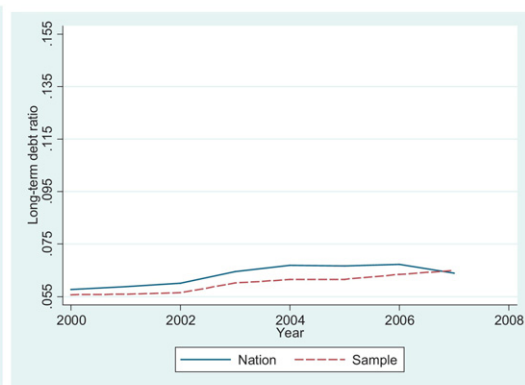
We examine listed non-real estate firms in 35 major cities in China for 2000–2007. To better exploit the exogenous variation in real estate diversification generated by the housing boom, we only include firms that did not diversify into the real estate industry in 2000 and we adopt a difference-in-differences (DID) method to analyze how leverage changes surrounding real estate diversification by taking those firms without such diversification as the control group. The parallel trends assumption is essential to the validity of the DID approach, which requires that there is no specific trend in the treatment group compared to the control group. Our diagnostic tests show that this assumption is satisfied. By using both a univariate comparison and a multivariate regression framework, we find a positive and causal effect of real estate diversification on leverage ratios. Particularly, the univariate comparison indicates that real estate diversification leads to an increase of 4.5 percentage points in leverage ratios, among which there was an increase of 5.5 percentage points in short-term debt ratios (short-term debt over total assets) but no significant change in long-term debt ratios (long-term debt over total assets). Therefore, the increase in leverage ratios subsequent to real estate diversification mainly came from the increase in short-term debt, and thus debt maturities tended to be shortened in response to real estate diversification.

We next perform a robustness test for the DID approach. Although the housing boom provided plausible exogenous shocks to real estate diversification, it is still possible that our results are driven by reverse causality; that is, changes in leverage ratios may

A. Trend of leverage ratio



B. Trend of long-term debt ratio



C. Trend of short-term debt ratio

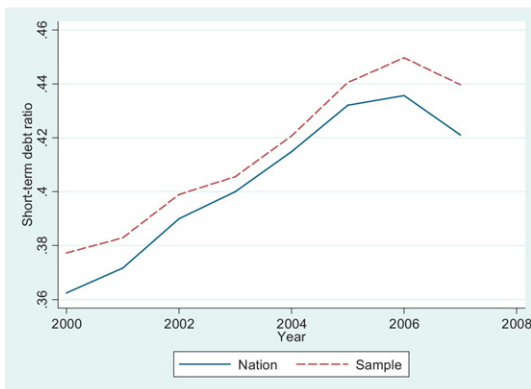


Fig. 1. Time trend of debt ratio. This figure shows, for each year between 2000 and 2007, the average leverage ratio (panel A), long-term debt ratio (panel B), and short-term debt ratio (panel C) of our sample firms and all non-real estate listed firms, respectively. Our sample firms only include listed non-real estate firms in 35 major cities.

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