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Does all firms' productive investment benefit from real estate price increases?

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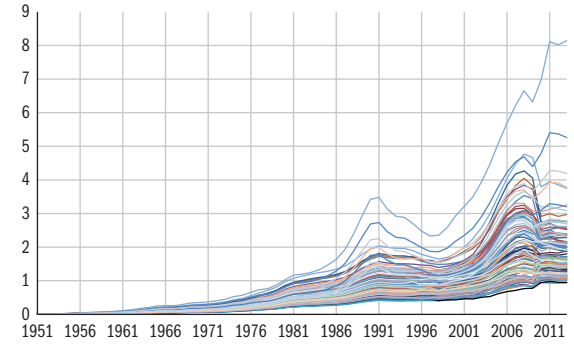
An increase in real estate prices both raises the value of pledgeable assets and lowers the return on investment due to the increase in the cost of inputs. These two channels draw productive investment in opposite directions. Using a large French database, this Rue de la Banque *shows that prices have heterogeneous effects on productive investment depending on the firms' real estate holdings. Older, less productive firms benefit most from increases in real estate prices.*

This Rue de la Banque *presents the findings of research carried out at the Banque de France. The views expressed in this post are those of the authors and do not necessarily reflect the position of the Banque de France. Any errors or omissions are the responsibility of the authors.*

From the late nineties to the financial crisis, real estate prices in many advanced countries experienced a boom, unprecedented in size and duration. This has led analysts to question the impact of this boom on productive investment. In countries like Spain where a bust followed the boom, the adjustment revealed a significant capital misallocation and led to a rebalancing towards the exporting sector (Cette, Fernald and Mojon, 2016). On the other hand, in France, real estate prices did not correct significantly and remained higher than in the nineties relative to consumer or equipment prices. However, France is also subject to question as regard the impact of the boom in real estate prices (see Chart 1) on sectoral allocation and on productive investment (Askenazy, 2013): did the real estate boom alter the allocation of investment towards less productive sectors or firms?

C1 Real estate prices at the department level
(in thousands of euro 2013 per square metre)



Source: Fougère and Poulhes (2012), based on Notaires-INSEE.
Note: each line represents one French département out of the 95 available. The top two curves show the Île-de-France and the Hauts-de-Seine region. They represent prices of existing housing.

The collateral effect of real estate price increases is mitigated by a negative profitability effect

The literature has focused so far on the collateral channel. In an imperfect credit market, collateral pledging enhances firms' borrowing capacities. The ability of the lenders to seize pledged collateral increases the debt capacity of the borrowers as it mitigates the agency problem in this external financing relationship. The extent to which the borrowing constraint is relaxed by collateral pledging depends on the collateral's

liquidation value. Real estate assets often constitute the bulk of firms' pledgeable assets since they are easily redeployable and have a long lifespan.

The positive causal relationship between real estate prices and corporate investment, channelled by the collateral value, has been empirically examined using firm-level data. Chaney, Sraer and Thesmar (2012) study the sensitivity of investment to real estate collateral value by using data from a sample of US publicly listed firms observed between 1993 and 2007. They find a substantial causal relationship between collateral value and business investment at the firm level. Interestingly enough, Wu, Gyourko and Deng (2015) find no evidence of such a mechanism for Chinese firms, suggesting that the transmission mechanism from real estate prices to corporate investment essentially works through credit market frictions. Indeed, the authors argue that the collateral channel may be altered in the Chinese case by the role played by state-owned enterprises and government-controlled banks.

In these empirical studies, real estate prices are regarded as mere shifters of the pledgeable assets' value, which determines the borrowing capacities of firms. This view relies on the credit rationing mechanism, put forward by Hart and Moore (1990), built around the idea that because loan agreements can be renegotiated and the entrepreneur is required for the completion of the project, the borrowing capacity only depends on the anticipated liquidation value of the asset that the lender can seize. In this framework, asset prices have an unambiguous positive effect on the borrowing capacities of firms.

However, an increase in real estate prices both raises the value of the pledgeable assets and mitigates the agency problem, but simultaneously lowers profit due to the increase in the cost of inputs. In order to formalise the link between real estate prices and productive investment, Fougère, Lecat and Ray (2017) propose a simple partial equilibrium model of investment subject to a credit rationing that results from moral hazard and where real estate assets are both pledged and used as an input in the production process. When the investment is determined by the endogenous borrowing capacity, they show that the sign and the magnitude of the effect of real estate prices on investment are determined by the volume of real estate holdings of the firm. When prices increase, firms owning few real estate assets suffer from a negative profit channel without significantly benefiting from a positive collateral channel. Conversely, firms owning more real estate assets face a less stringent profit channel and amply benefit from the collateral channel.

A heterogeneous impact of real estate prices on investment, negative for firms holding little real estate

Fougère, Lecat and Ray (2017) use a large French firm database, which includes about 1.5 million observations over the 1994-2013 period (FIBEN) to confront these predictions with the data. France is a particularly relevant case to test these theoretical predictions as it experienced both a very steep, and yet uncorrected, increase in real estate prices (see Chart 1), while it registered growing signs of misallocation, in particular through increasing productivity dispersion across firms (Cette, Corde and Lecat, 2017). When estimating the effect of real estate prices on productive investment, there is an identification issue resulting from the fact that real estate prices comove with the business cycle. Thus, real estate prices are correlated with invest-ent opportunities. According to Case, Quigley and Shiller (2005) and Chaney, Sraer and Thesmar (2012), their identification strategy is twofold. First, they analyse the effect of real estate prices at the department level on investment. Second, within a department where firms face the same local economic conditions and thus similar investment opportunities, they can compare the impact of real estate prices on productive investment across firms with varying levels of real estate holdings.

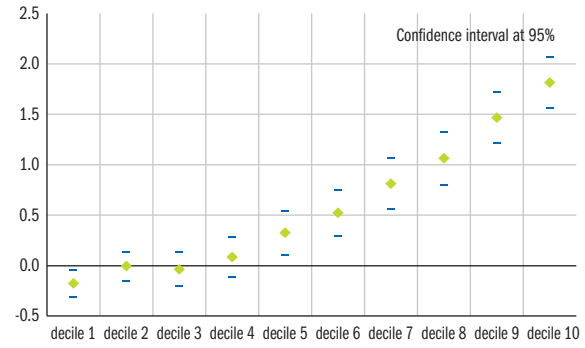
Fougère, Lecat and Ray (2017) show that, in accordance with the results derived from a theoretical model with an endogenous borrowing constraint taking into account the firms' profit, the sign and the magnitude of the effect of real estate prices on productive investment are driven by real estate holdings. They notably show that real estate prices have heterogeneous effects on productive investment depending on the position of the firms in the two-digit sectoral distributions of a normalised measure of real estate holdings. They find a negative impact of an increase in real estate prices on productive investment at the bottom of the distribution, while the effect is highly positive at the upper end of the distribution (see Chart 2). The estimates indicate that a 1% increase in real estate prices causes a 0.2% decrease in the investment rate of firms in the first decile of the distribution but a 1.8% increase in the investment rate of firms belonging to the last decile. The empirical results also suggest that the impact of an increase in real estate prices on aggregate productive capital is positive.

A potentially negative impact of real estate price on capital allocation

The link between real estate prices and the allocation of capital between firms can be analysed in the light of the heterogeneous effects documented in Fougère, Lecat and Ray (2017). The firms that benefit from an increase in real estate prices are those that have significant ex ante real estate holdings. However, firms belonging to the highest deciles of real estate holdings are older and less productive than the median firm in the first deciles (see Chart 3). This could entail a negative relationship between real estate price dynamics and productivity dynamics.

C2 Investment rate elasticity to real estate prices increase with real estate holdings

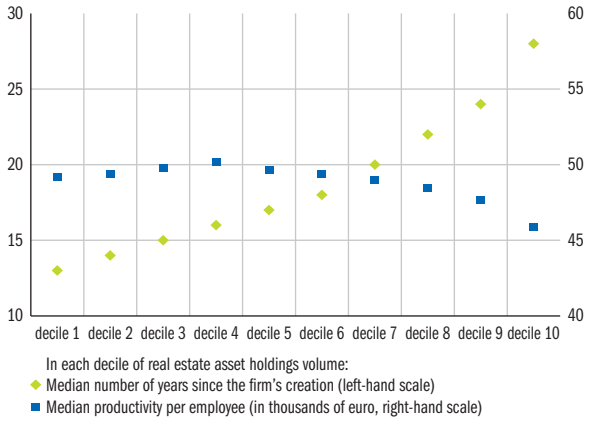
(%)



Source: Fougère, Lecat and Ray (2017).
Note: Estimates of the percentage change in the decile median investment rate associated with a 1% increase in real estate prices in each decile of real estate asset holdings volume.

C3 Age and labour productivity of the median firm in each decile of real estate holdings

(decile of real estate asset holdings volume)



Source: Fougère, Lecat and Ray (2017).

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