



Product market effects of real estate collateral[☆]



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ABSTRACT

This paper exploits shocks to the value of real estate collateral to study how exogenous changes in firms' external financing capacity affect their competitive performance and industry dynamics. Firms with appreciating collateral tend to gain market share relative to their product market rivals. Shocks to collateral lead to less competitive product markets. The effects of collateral are stronger in markets where firms compete in strategic substitutes or face competitors with restricted access to external financing, and when real estate prices are instrumented with the interaction between housing supply constraints and mortgage rates. These results highlight the strategic importance of collateral.

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1. Introduction

Understanding the major factors affecting a firm's competitive performance in its product market is central to scholars in the corporate finance and industrial organization fields. The role of a firm's financial strength, in particular, has long been an important research topic. Prior empirical research has mostly focused on the competitive implications of corporate leverage and cash holdings (e.g., Campello, 2006; Fresard, 2010; Phillips, 1995; Zingales, 1998). In contrast, little is known about the implications of many other important corporate assets and policies. This study partially fills this gap by documenting the competitive effects of one such important corporate asset—real estate holdings. In particular, building on the models of the strategic effects of firm financial resources (e.g., Telser, 1966; Bolton and Scharfstein, 1990), I develop and test the hypothesis that fluctuations in real estate prices, by affecting a firm's ability to raise external funds when needed, systematically affect the firm's product market behavior and performance.

Focusing on real estate assets allows me to identify plausibly exogenous shocks to the market value of a firm's collateral, which theoretically and empirically have been shown to enhance its capacity for external finance. For example, Barro (1976), Stiglitz and Weiss (1981), Hart and Moore (1994), and Rampini and Viswanathan (2013) theoretically show that collateralizable assets, such as real estate, play an important role in mitigating external financing constraints and increasing firms' ability to raise external

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funds. Empirically, Chaney et al. (2012) and Gan (2007) find that fluctuations in the value of firms' real estate holdings have significant impact on their financing and investment policies. I also document that real estate assets represent a significant portion of a typical U.S. firm's assets and that increases in real estate collateral value enhance the firm's financial strength relative to its product market rivals.

My identification strategy exploits variation in the value of a firm's real estate assets caused by movements in local real estate prices and thus plausibly exogenous to any individual firm and are separate from shifts in industry or state-wide conditions. Accordingly, this research setting allows me to identify the potentially causal effects of changes in firms' external financing capacity on product market outcomes. As discussed below, I further apply a number of econometric approaches to provide reasonable confidence in the results.

The methodology of this paper follows Chaney et al. (2012) and is similar to a difference-in-differences strategy. All results come from regressions with firm and year (as well as state-by-year, industry-by-year and state-by-industry) fixed effects that produce estimates that reflect average, within-firm changes in competitive performance when local real estate prices increase or decrease. A key advantage of this empirical strategy is that it not only captures variation in exogenous shocks to financing capacity, but also ensures that my results are robust to the many types of unobserved omitted variables concern that might bias the estimates. I measure product market performance using relative-to-rivals market share growth and define a set of product market rivals according to the new Text-based Network Industry Classification (TNIC) developed by Hoberg and Phillips (2010 and 2015). These authors use text-based analysis of product descriptions in firms' 10-K filings to determine a set of *distinct* product rivals for each firm in each year.

Using a panel data of U.S. public firms from 1996 to 2013, I find that the typical firm experiencing positive shocks to the market value of its collateral subsequently gains market share at the expense of its product market rivals. The economic magnitude of the estimated effect is substantial: A one-standard deviation increase in the firm's real estate value leads to a 6 percentage point increase in the firm's market share, which corresponds to about 12% of the market share growth's sample standard deviation.

The positive relation between real estate value and product market performance is robust to inclusion of a demanding set of fixed effects, alternative definitions of product market peers and sample composition. However, there still may be lingering econometric concerns, such as that changes in real estate prices and firm product market performance may be jointly determined by an unobservable omitted variable such as local economic shock. To control for the remaining unobserved correlation between a firm's product market performance and real estate prices, I implement an instrumental variables strategy. Following Chaney et al. (2012) and Mian and Sufi (2011), I instrument for real estate prices using the interaction of nationwide real mortgage interest rates with the MSA-level housing supply elasticity measure introduced by Saiz (2010). This instrument exploits geographic and regulatory constraints to local housing supply to differentiate MSAs where a decrease in nationwide interest rates (and thus increase in housing demand) translates into higher real estate prices or just into higher construction volume. As such, the instrument isolates a component of variation in real estate prices that is unrelated to firms' financing and product market choices. The I.V. regressions confirm that the typical firm located in metro areas with rising real estate prices (and thus increasing collateral value) expands its product market share. Importantly, this competitive effect is also present in the tradable and manufacturing sector, where, as argued by Mian and Sufi (2014) and Adelino et al. (2015), the results are less likely to be driven by local demand and firms' real estate assets tend to be concentrated in their headquarters' state or MSA.

Next, I narrow in on the importance of competitive effects of collateral-driven financing capacity by asking whether these results exhibit heterogeneity in ways that are consistent with the strategic competition theories (e.g., Bolton and Scharfstein, 1990; Bulow et al., 1985). These theories predict that the competitive effects of increased access to external capital should be, on average, more prevalent for firms that compete in markets where: (i) their rivals produce similar products (i.e., compete on the basis of strategic substitutes); and (ii) their rivals face ex-ante difficulties in raising external capital. The results follow exactly the predicted pattern: increases in collateral value lead to market share gains mostly when: a) the firm has greater product similarity relative to rivals, or b) faces competitors that have harder time raising external funds. These findings thus confirm the importance of strategic effects of real estate collateral.

The effects of the collateral on product market performance naturally depend on the specific strategies that firms might fund with enhanced ability to raise external capital. I find that firms appear to gain competitive advantage by spending more on advertising and R&D expenditures than their industry rivals, which should increase their product differentiation relative to rivals.

Given these findings, it is natural to ask whether changes in collateral value influence not only the typical firm's competitive conduct but also the overall product market structure. I find that they do: the industry concentration increases while the number of distinct rivals decreases following positive shocks to the typical firm's collateral value.

Taken together, the results in this paper consistently indicate that a typical firm uses the increased financing capacity caused by the appreciation of its real estate collateral to gain competitive advantage, differentiate themselves and expand market share at the expense of its product rivals. The evidence therefore is consistent with predation-based theories that increased access to financial resources leads to more aggressive product market behavior.

This article contributes to two areas of research. First, it contributes to a large and growing literature on the interplay between firms' financing decisions and their product market conduct (Phillips, 1995; Campello, 2003 and 2006; Zingales, 1998; Chevalier, 1995a, b; Chevalier and Scharfstein, 1996; Khanna and Tice, 2000 and 2005; Fresard, 2010). The predominant finding in these studies is that a firm's *chosen* level of cash tends to be positively and a *chosen* level of debt tends to be negatively associated with its product market performance. In contrast, this paper identifies plausibly exogenous shocks to a firm's ex-ante ability to raise external funds and documents that increased financing strength (in the form of increased external financing capacity) *boosts* the firm's performance in the product market.

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