



## Financial leverage and export quality: Evidence from France



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### ABSTRACT

Does corporate financial structure matter for a firm's ability to compete in international markets through output quality? This study answers this question by using firm-level export and balance sheet data covering a large sample of French manufacturing exporters over the period 1997–2007. The main result is that there is a negative causal relation between a firm's leverage and export quality, where quality is inferred from the estimation of a discrete choice model of foreign consumers' demand. This result is robust across different specifications and estimation techniques. In addition, by estimating investment models we find that the negative impact of leverage on quality is consistent with theories predicting that the agency cost of debt determines suboptimal investment.

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### 1. Introduction

Departing from the Modigliani and Miller (1958) theorem, a number of empirical studies questions the irrelevance of corporate financial structure for real activities by showing that leverage, as a measure of debt financing, affects investment patterns and productivity growth (e.g., Lang et al., 1996; Ahn et al., 2006; Coricelli et al., 2012). Contributions to the international trade literature show that a firm's export activity depends on financial factors, and several papers suggest that exporters are less leveraged and more liquid than non-exporters (e.g., Bellone et al., 2010; Minetti and Zhu, 2011).

The present study provides new elements to understand the relation between a company's financial structure and export performance by investigating whether leverage affects a firm's ability to compete in foreign markets through output quality. This research question is relevant from a policy perspective. On the

one hand, the promotion of quality as a dimension of international competitiveness is an objective of high-income economies facing price competition from low-wage countries. On the other hand, because corporate financial structure is sensitive to policy parameters, the debt-quality nexus should be considered when evaluating the implications of policies that may affect a firm's financial structure. For example, the relation between debt financing and output quality can be a channel through which corporate tax reforms affect exporters' performance, if their level of debt respond to changes in profit taxation.

A possible link between financial leverage and output quality emerges by observing that debt financing redirects investment toward short-term projects (Maksimovic and Titman, 1991; Peyer and Shivdasani, 2001), while quality upgrading requires upfront investment delivering higher returns in the long-term (Shapiro, 1983). In addition, upgrading output quality requires firm-specific activities such as market research and R&D that generate few collateralizable assets. Hence, these activities are more difficult to monitor by bondholders, who may therefore require a higher premium on the cost of debt to bear the risk of default and moral hazard (Long and Malitz, 1985). Hence, *ceteris paribus* firms with high levels of debt should find it more costly and have less incentive to invest in quality upgrading. By signaling higher risk of bankruptcy, high leverage may also discourage a firm's

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suppliers from making relationship-specific investment, or it may compromise the expectations of its customers on the provision of post-sale services (Titman, 1984; Kale and Shahrur, 2007). It is then possible that these channels further reduce the perceived or real quality of a highly leveraged firm's products.

However, the intense use of debt financing may also result from a profit optimizing choice of the company or from the strategic use of financial leverage to acquire advantages over the competitors (Jensen and Meckling, 1976; Myers and Majluf, 1984; Brander and Lewis, 1986). In these cases, we expect high leverage to be chosen also by firms with sufficient internal liquidity because the negative effect of leverage on quality is offset by its positive effects on efficiency and market position. On the basis of these theoretical premises, we formulate three hypotheses on the impact of debt on export quality. First, more leveraged firms export lower quality varieties within narrowly defined product categories. Second, the effect of leverage on quality is stronger for illiquid exporters that have less ability to substitute internal funds for debt. Third, the negative impact of leverage is stronger in less concentrated industries with less scope for strategic interactions among competitors.

These hypotheses are investigated by using a rich dataset combining flow-level export data with firm-level balance sheet data on French companies. This dataset covers a large sample of exporters over the period 1997–2007, and it allows to conduct panel analyses both at the level of the individual export flow (i.e., firm-product-destination) and at the level of individual exporters. Because leverage is expected to impact output quality through investment, this premise is tested by estimating an investment equation augmented with an indicator of financial leverage. The relation between leverage and export quality is then investigated by estimating a model where the dependent variable is either a firm-level or a flow-level proxy for export quality. This proxy is obtained from the estimation of a discrete choice model of foreign consumer demand that exploits information on market shares and prices to infer the relative quality of each exported variety *vis-a-vis* the varieties exported by other firms targeting the same export destination within the same product category (Berry, 1994; Khandelwal, 2010). A negative correlation between quality and leverage is first obtained from an OLS model exploiting quality variations across varieties of the same product exported to a single market by companies with different levels of debt. A causal claim on this relation is supported by the use of a Two Stage Least Squares (2SLS) and Instrumental Variable Fixed Effect models introducing external instruments to address the endogeneity of leverage in regressions on quality, while controlling for firm-level unobserved heterogeneity and industry-level factors.

Our paper relates closely to the financial literature that investigates the nexus between a firm's capital structure and the product market. In the model of Brander and Lewis (1986) financial leverage is used by Cournot oligopolists to commit to higher levels of output at the expense of the competitors. While there is some evidence that industry concentration leads to higher levels of leverage and to the strategic use of debt among competitors (MacKay and Phillips, 2005), there is no clear empirical support for a positive relationship between leverage, investment and market performance (e.g., Campello, 2003, 2006). A recent extension of the original model of Brander and Lewis rationalizes this conflicting evidence, by showing that the limited liability of debt may also decrease a firm's incentive to invest when a firm's investment decision is introduced explicitly in the theoretical setup (Clayton, 2009).

By investigating the impact of a firm's level of debt on its export quality our contribution to the financial literature is twofold. First, we empirically identify a specific channel through which capital structure affects a firm's competitive position in foreign markets. To our knowledge, this is the first study that investigates the

impact of leverage on quality for a large sample of companies from different manufacturing industries. Second, our empirical setting is favorable to address the ambiguous direction of causality between a firm's capital structure and the nature of the competitive environment. If a firm's financial leverage responds strategically to changes in the structure of the product market, it is expected to respond more sensitively to changes in the domestic market because this constitutes the single most important market for the majority of firms. Because our measure of quality is based on foreign sales, we can convincingly control for cross-industry heterogeneity in market structure (i.e., with industry-level or firm-level fixed effects), changes in the concentration of the domestic market (i.e., with time varying indices of market structure) while still retaining sufficient variation in the dependent variable to identify the impact of a firm's financial structure on quality.

The remainder of the paper is structured as follows. Section 2 introduces the conceptual framework underpinning the relation between leverage and quality. Section 3 describes the dataset and details the construction of the main variables. Section 4 illustrates the econometric specifications of the investment and the quality equation and motivates the choice of estimation methods. Section 5 describes the results and introduces robustness checks. Section 6 concludes.

## 2. Leverage, investment and quality

The milestone result of Modigliani and Miller (1958, 1963) that a firm's financial structure is irrelevant for investment depends crucially on the Arrow–Debreu setting of complete markets without information asymmetries, taxes, transaction or bankruptcy costs. In contrast, Myers (1977) shows that debt financing may induce suboptimal investment in the presence of uncertain returns and conflicting interests between creditors and stockholders. Despite the distortive effect of debt on investment, the 'pecking order theory' of capital structure suggests that this source of financing is used by companies with insufficient internal funds when information asymmetries between current and perspective stockholders increase the cost of equity financing above the cost of debt (Myers and Majluf, 1984). Jointly taken these results suggest that firms with greater dependence on debt are more subject to underinvestment. To the extent that investment is required to upgrade product quality, highly leveraged companies may be less capable to adjust output quality to seize demand opportunities arising from cross-sectional and longitudinal variations in consumers' preferences.

In addition, quality upgrading requires more intangible assets than alternative projects. The model of Long and Malitz (1985) shows that the agency cost of debt financing is relatively higher for investments in intangibles such as R&D and advertisement because these assets cannot be pledged as collateral and it is more difficult for bondholders to monitor the use of resources. Consistently with the predictions of their model, they observe that US firms undertaking more advertising and R&D choose a less leveraged financial structure. This result is largely supported by the empirical literature on R&D financing that provides strong evidence that this kind of investment is particularly sensitive to the availability of internal resources (e.g., Hall, 2002).

An alternative story on the negative relation between leverage and quality emphasizes the short-term bias determined by debt financing on a firm's investment choice. In the presence of bankruptcy costs, a highly leveraged company may prefer low-risk investment opportunities that in the short-term generate sufficient cash-flow for debt service. Along this line of argument, Maksimovic and Titman (1991) present a model in which investment in product quality develops 'reputation capital' that allows a firm to

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