Journal of Financial Economics 120 (2016) 561–584

Contents lists available at ScienceDirect

Journal of Financial Economics

journal homepage: www.elsevier.com/locate/finec

The commitment problem of secured lending☆

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ARTICLE INFO

Article history:
Received 17 October 2013
Revised 26 June 2015
Accepted 16 July 2015
Available online 20 February 2016

JEL classification:
G32
G33
K22
L14

Keywords:
Collateral
Commitment
Trade credit
Bank financing

ABSTRACT

The paper presents a new theory of trade credit in which firms buy inputs on credit from suppliers to restore the benefits of secured bank financing impaired by contract incompleteness. In a setting where investment is endogenous and unobservable to financiers, we show that a bank-secured credit contract is time-inconsistent. Upon being granted credit, the entrepreneur has an incentive to alter the original input combination, jeopardizing the bank's revenues. Anticipating the entrepreneur's opportunism, the bank offers an unsecured credit contract, reducing the surplus from the venture. One way for the entrepreneur to commit to the contract terms is to purchase inputs on credit from the supplier. The supplier observes the input investment and acts as a guarantor that inputs will be purchased as contracted, thus facilitating access to secured bank financing. The commitment role of trade credit still holds in a multi-period extension that investigates the impact of bank relationship lending on secured debt and trade credit. Our model provides novel testable predictions on optimal financial contracts in both one-period and repeated lending relationships.

1. Introduction

Firms procure funds not only from specialized financial intermediaries but also from suppliers, which generally delay payments of inputs. Trade credit is an important source of external financing for firms of all sizes across both developed and developing countries (Beck, Demirgüç-Kunt, and Vojislav Maksimovic, 2008; Giannetti, Burkart, and Ellingsen, 2011; Petersen and Rajan, 1997) and across both domestic and foreign markets (Auboin and Engemann, 2014; Manova, 2013). Researchers have mostly rationalized and shown the substitution effect of trade credit, arguing that firms rely on trade credit when they are constrained on bank financing (e.g., Burkart and Ellingsen, 2004; Calomiris, Himmelberg, and Wachtel, 1995; Love, Preve, and Sarria-Allende, 2007; Petersen and Rajan, 1997, among others). Recent empirical evidence, however, indicates that the complementarity effects of trade credit are also relevant. Giannetti, Burkart, and Ellingsen (2011) show that US firms obtaining credit from suppliers can secure financing from relatively uninformed banks. Garcia-Appendini (2010) finds that small, nonfinancial firms in the US are more likely to secure bank

☆ We are especially grateful to Anjan Thakor for the numerous suggestions that enormously improved the paper. We are also grateful to the editor (William Schwert) and to Stefan Ambec, Alberto Bennardo, Arnoud Boot, Mike Burkart, Murillo Campello, Giuseppe Coco, Andrew Ellul, Emilia Garcia-Appendini, Gustavo Manso, Robert Marquez, Holger Mueller, Anthony Neuberger, Marco Pagano, Adriano Rampini, Maria Grazia Romano, Enrique Schroth, Peter Simmons, Paolo Volpin, Lucy White, Toni Whited, and the participants in seminars at the University of Amsterdam, Bocconi University, and Cass Business School, and in the 2010 European Economic Association (EEA) Congress in Glasgow, Scotland, the Seventh CSEF-IGIER (Centre for Studies in Economics and Finance and Innocenzo Gasparini Insitute for Economic Research) Symposium in Economics and Institutions in Capri, Italy, and the 2011 European Finance Association (EFA) Congress in Stockholm, Sweden, for useful discussions.

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http://dx.doi.org/10.1016/j.jfineco.2016.02.009
S0304-405X(16)30009-5/

credit if they have been granted trade credit from their suppliers.[1]

We propose a new theory of trade credit that can be used to explain these stylized facts. Firms buy capital inputs on account to restore the benefits of secured bank financing impaired by the borrower's inability to credibly commit to investment in pledgeable assets. We show that if the investment in a given asset is not contractible, pledging it as collateral fails to increase external financing. Collateral introduces a problem of moral hazard in the form of asset substitution (i.e., the entrepreneur has an ex post incentive to alter the input mix), making secured bank credit unfeasible. We show that the entrepreneur can use trade credit to mitigate this problem. It follows that when investment is non-contractible, buying inputs on account facilitates access to secured bank lending.[2]

We construct a one-period model in which an entrepreneur produces a good with uncertain demand. The entrepreneur uses two inputs, capital and labor, whose purchase is entirely financed by external financiers. The inputs have different collateral values. For simplicity, only capital can be pledged to financiers. Being specialized financial intermediaries, banks typically offer the cheapest source of financing. If banks observe the amount of inputs purchased and thus invested, the optimal contract is secured debt. The input combination is tilted toward capital, which is fully pledged as collateral. Collateral gives the bank protection against losses in default, thereby increasing the amount of external financing and the total surplus of the lending relation. However, the value of the collateral is not exogenous: it can be affected by the borrower's input choice. So, if the investment is not observable, upon receiving the bank loan, the entrepreneur has an incentive to alter the original input combination toward the input with the lowest collateral value and higher productivity. This jeopardizes the bank's expected revenues by reducing the liquidation income in case of default. Anticipating that it will not break even, the bank abandons the secured contract, thus causing an efficiency loss.

One way to avoid this is for the entrepreneur to purchase the capital input on credit and pledge it to the supplier in case of default. As the provider of the input, the supplier observes the input investment. Knowing the investment level and having a stake in the default state, he implicitly guarantees purchase of the quantity of inputs specified in the financial contracts and, thus, available for liquidation to all creditors, thereby restoring the benefits of secured bank financing.

This commitment effect of trade credit is robust to the possibility of a costly collusive agreement between the entrepreneur and the supplier and to repeated entrepreneur-bank interactions. We extend our static baseline model to a multi-period setting to investigate how trade credit and secured debt are affected by relationship lending, i.e., a long-term contract with credit amounts and repayment obligations contingent on some information about the borrower's past behavior (e.g., Boot and Thakor, 1994; 2000). We show that trade credit is still the best way to solve the commitment problem if projects are not too lengthy. We also find that entrepreneurs are more likely to use trade credit than relationship lending when inputs have high collateral value and low-quality information is collected by the relationship lender.

In practice, entrepreneurs largely use secured loans, many of which are sensitive to the commitment problem. Asset-based lending (ABL) is one important source of short-term financing (typically with a three-year maturity) that many firms in the US and Canada use to fund their working capital. In 2002, ABL in the US was $326 billion, almost a quarter of total short-term credit, which increased to $590 billion in 2008.[3] In ABL, the bank lends funds to a firm in exchange for collateral, which generally includes equipment, small machinery, inventory, and accounts receivable. Because the value of the asset pledged as collateral is clearly affected by input purchases that are not easily observable by the bank, ABL is particularly vulnerable to the commitment problem analyzed in this paper. Moreover, the firm likely purchases most of these assets on credit, which is consistent with our theoretical setting. Our model is less suited for situations in which the assets pledged as collateral are registered, such as in real estate–based lending.[4] However, even in these cases, the 2007–2009 financial crisis demonstrated that creditors could be unable to identify ex ante the appropriate value of the collateral underlying mortgage loans and asset-backed securities. This suggests that the non-contractibility of the collateral, a key ingredient of our model, could be commonplace.

Our paper is related to two strands of the literature. The first focuses on the role of collateral in lending, and the second examines the determinants of trade credit use. Collateral is often a key element of lending arrangements. Berger and Udell (1990) and Harhoff and Körting (1998) find that nearly 70% of commercial industrial loans in the US, the UK, and Germany are secured. More recent papers report similar evidence for Spain (Jimenez, Salas, and Saurina, 2006), Germany, the UK, and France (Davydenko and Franks, 2008; Qian and Strahan, 2007). Several theoretical reasons can be cited for collateral use.[5] First,

[1] Cook (1999) finds that accounts payable raise the likelihood of a Russian firm obtaining a bank loan. Alphonse, Ducret, and Severin (2006) show that the more trade credit US firms use, the more indebted they are to banks, more so for firms with short-term banking relations. Along the same lines, Gama, Mateus, and Teixera (2010) find that the use of payables allows younger and smaller firms in Spain and Portugal to increase the availability of bank financing.

[2] A secured loan is a loan backed by a specific asset whose existence, ownership, and value are known to the lender before signing the contract (i.e., real estate–based lending). In our paper, we use a slightly wider interpretation, which includes loans backed by a pool of assets, like inventories, that can be seized by the creditor in the event of nonpayment.

[3] See Udell (2004) for a detailed description of the characteristics of ABL.

[4] Real estate–based lending or loans secured by movable goods (cars, trucks, etc.) have characteristics that depart from our theoretical setting. First, the problem of investment non-observability is not so relevant in this case, because the goods are registered and their actual purchase is accordingly certifiable to the bank. Second, the credit is generally granted directly to the seller of the asset, to the notary (for real assets), or to the leasing company (for movable goods). This implies that the entrepreneur cannot misuse the loan.

[5] See Coco (2000) for a survey.