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# The Quarterly Review of Economics and Finance

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



# Information acquisition, foreign bank entry, and credit allocation<sup>☆</sup>



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### ARTICLE INFO

Article history: Received 3 June 2013 Received in revised form 11 March 2014 Accepted 17 April 2014 Available online 4 May 2014

Keywords: Foreign entry Credit allocation SMEs

#### ABSTRACT

This paper presents a theoretical framework to understand the impact of foreign bank entry on the access to and the price of credit for different types of firms. A major point of departure from the previous literature is that incumbents' information about firms is endogenous in the model; previous screenings and lending relations of incumbents determine which type(s) of firms they can identify. I show that incumbents' information is negatively correlated with the quality of borrowers. Moreover, although a priori entrants have a comparative advantage in lending to transparent firms, previous lending relations of incumbents might reverse this relation. In particular, given that transparent firms are the only type screened before the entry and therefore they are the only type distinguishable by incumbents, entrants might have a comparative advantage in lending to opaque firms. The analysis provides new insights into the inconclusive evidence of the literature regarding entrants' credit allocation.

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## 1. Introduction

After about three decades since the progressive liberalization of banking industries, the impact of foreign bank entry on credit allocation, especially for small and medium enterprises (SMEs), is far from well understood. While scholars have addressed the (aggregate) benefits of entry, such as increased supply of credit and/or reduced interest rates due to an increase in competition, critics argue that entrants tend to pick the largest and the most informationally transparent firms (cherry picking), ignoring small and medium enterprises (SMEs) (see Stiglitz, 2000). As SMEs account for most of employment in the world and because of the evidence that these firms are financially constrained, such a critic is highly relevant and calls for a more careful examination of the process of foreign entry and its impact on different types of firms. Furthermore, although the theoretical literature supports the cherry-picking behavior of entrants, the empirical literature

regarding this issue is inconclusive and has failed to establish a consistent inference regarding credit allocation of entrants towards SMEs.<sup>2</sup>

This paper presents a theoretical framework to understand the observed inconsistent behavior of entrants towards opaque and small firms. I show that the level of information asymmetries, resulting from previous relations of the incumbent with firms, and the effect of foreign entry on competitive dynamics in the local credit market provide an answer. In this paper, entrants enjoy an advantage in the cost of funds but a disadvantage in screening firms than incumbents. Within this framework, although 'cherry picking' is one potential outcome of entry, it is possible to identify situations where entrants fund opaque firms, whereas incumbents lend to transparent firms. In other words, the model provides predictions on when entrants can overcome their informational disadvantage and attract opaque firms. Hence, the model provides insights to reconcile the contradictory results of the literature regarding credit allocation of entrants.

The model focuses on the important role of information obtained by incumbents through previous lending relations. The

conference. All errors and omissions are my own.

<sup>†</sup> I thank Mike Burkart, Mariassunta Giannetti, and Francesco Sangiorgi for their invaluable comments and encouragement. I am also grateful to Todd A. Gormley, Mikko Leppämäki, and seminar participants at Stockholm School of Economics, Nordic Finance Network workshop, and Banking and the Globalization of Finance

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<sup>&</sup>lt;sup>1</sup> According to Ayyagari, Beck, and Demirguc-Kunt (2007) and Beck and Demirguc-Kunt (2006), SMEs account for close to 60% of manufacturing employment on average across 76 developed and developing countries. Furthermore, studies have found that not only SMEs are more financially constrained but also

banks are the main source of external finance for SMEs across countries (Beck, Demirg-Kunt, & Maksimovic, 2008).

<sup>&</sup>lt;sup>2</sup> For evidence supporting cherry picking behavior of entrants, see Mian (2006), Berger, Klapper, and Udell (2001), and for evidence of funding SMEs by entrants, see de la Torre, Pera, and Schmukler (2010), Beck, Demirguc-Kunt, and Martinez Peria (2010), and Haas, Ferreira, and Taci (2010). The empirical literature will be discussed in detail in Section 6.

literature on relationship lending suggests that repeated interactions can reduce information asymmetries between banks and borrowers (see references in Boot, 2000). In this paper, incumbents gain knowledge about borrowers' credit worthiness during the course of a lending relationship in a competitive market. This private information determines the information of incumbents about firms when competing with entrants. The entry and bank competition are then modeled as the competition between incumbents with an informational advantage and entrants with worse information but with a cost of funds' advantage. Dell'Ariccia and Marquez (2004) and Sengupta (2007) demonstrate how information asymmetry and cost of funds' difference between the incumbent and the entrant affect the overall distribution of credit. In both models, the incumbent is assumed to have perfect information about (a fraction of) firms, whereas the entrant has no information about them and no chance to obtain information, but has a cost of funds advantage. Under these assumptions, Dell'Ariccia and Marguez (2004) and Sengupta (2007) show that entry induces a segmented credit market; entrants concentrate on the segments characterized by the most transparent and profitable firms. In this paper, similar to Gormley (2011), I assume that incumbents do not have costless access to information about firms and that entrants have the option to invest in costly screening technologies. 3 However, unlike Gormley (2011), the information set of incumbents at the time of foreign entry is derived endogenously and it depends on the previous screening of domestic banks. In other words, incumbents can costlessly distinguish firms that have been already screened but not the others.

While the screening cost of transparent firms is the same for both entrants and incumbents, sorting opaque firms is more expensive for entrants. The reason is that screening of opaque firms, to a large extent, requires soft information gathering and processing, the task at which entrants are disadvantaged. This could be because of greater hierarchical structure of entrants (Stein, 2002), or cultural and geographical distance (Mian, 2006). However, better legal environments mitigate the entrants' disadvantage in screening opaque firms in that entrants can rely on collateral as a signal to distinguish firms' type, whereas a poor legal protection prevents the use of collateral as an effective technology to successfully sort borrowers. Hence, although entrants, compared to incumbents, are always disadvantaged in screening opaque firms, a better legal environment provides more reliable hard information about opaque firms and, as a result, improves entrants' competitiveness in capturing them.

The model is a two-period game. The first period includes only one type of lenders (domestic). The equilibrium prevailing in the first period drives the information of incumbents at the beginning of the second period, when entry happens. Specifically, those types of firms screened in the first period will be known to incumbents in the second period. In the first period, different equilibria are shown to exist, implying various levels of information asymmetry between incumbents and entrants in the second period, the time of entry. Three major results are summarized here.

First, in markets characterized by a moderately high proportion of 'bad' firms, transparent firms accept a screening contract (rather than a pooling) to sort themselves out. Profitable opaque firms, however, will not apply for a screening contract as the pooling rate offered to all opaque firms is lower because the proportion of bad firms is not too high. Therefore, all opaque firms (profitable and non-profitable) will receive a pooling contract. The acquired information about transparent firms helps incumbents retain all of them (in the second period) while cost efficient entrants attract opaque firms by offering a cheaper pooling contract. In this case, opaque firms benefit from entry through reduced spread, whereas transparent firms are not affected by the entry. Moreover, the loan portfolios of entrants are riskier than those of incumbents in that all non-profitable firms are funded by them. This result that opaque firms are funded by entrants while domestic banks finance transparent firms is new to the literature.

Second, in markets characterized by a high proportion of 'bad' firms, the adverse selection cost of pooling opaque firms is too high so that not only transparent firms but also opaque firms apply for screening contracts. As a result, all profitable firms are screened before entry. In this case, at the time of entry, incumbents can perfectly identify all types of firms. Since the entrants' screening cost of opaque firms is higher, they will have a comparative advantage in picking transparent firms. This result corresponds to what most of the literature has also found and is referred as 'cherry picking' or 'cream-skimming' behavior of entrants. Consistent with the study of Dell'Ariccia and Marquez (2004), the model of this paper indicates that in presence of a very large information asymmetry between the incumbent and the entrant, the former shifts its loan portfolio towards more captured (more opaque) borrowers when faced with cost efficient entrants.

Third, in markets characterized by a relatively high proportion of 'bad' firms and relatively large screening cost of opaque firms (compared to the return on projects), transparent firms are screened and received credit, whereas other types are not funded (before entry). This is a 'credit constrained' situation in which opaque firms including the profitable ones do not have access to credit. Moreover, while having no information about opaque firms, incumbents can costlessly distinguish transparent firms when competing with entrants. In this case, entrants might have a comparative advantage in screening and funding opaque firms if the legal environment of the host country is relatively rich so that the informational disadvantage of entrants is not too large.

The most important contribution of this paper is showing how foreign lenders might lend to SMEs in markets where both domestic and foreign lenders are present (the first and third results presented above). Although empirical studies find evidence that entry of large competitors such as foreign banks directly improves access to credit for SMEs (e.g., Beck et al., 2010; De Haas & Naaborg, 2006; de la Torre et al., 2010), theoretical studies have had difficulty generating such an outcome. An exception is Gormley (2011) who implies that SMEs might be funded (together will transparent firms) by entrants but it happens only if the entrants prevail the market so that all domestic lenders exit. However, as discussed in Claessens and van Horen (2012), prevailing the domestic market by entrants is not what we observe in the data. Moreover, Beck et al. (2010) show that SMEs are frequently funded by entrants although domestic lenders have most of the market share. In this paper, I show how previous lending relations of incumbents can change

<sup>&</sup>lt;sup>3</sup> See Aleem (1990) for empirical evidence showing that incumbents do not enjoy costless access to firms' information.

<sup>&</sup>lt;sup>4</sup> Hard information is quantitative and impersonal information, whereas soft information is qualitative and subjective. See Petersen (2004) for more discussion of soft and hard information in financial transactions.

<sup>&</sup>lt;sup>5</sup> For the works suggestive of the information content in collateral requirements, see Boot and Thakor (1994) and Sharpe (1990).

<sup>&</sup>lt;sup>6</sup> As another example, entrants can use credit scoring in lending to screen opaque firms, yet a strong legal and institutional framework is critical for establishing and well functioning of credit bureaus. For a detailed discussion of this issue, see Berger and Udell (2006) and Cre (2007).

 $<sup>^7</sup>$  Transparent firms are all assumed to be profitable. Opaque firms, however, could be profitable or not. Non-profitable opaque firms are called "bad" firms.

<sup>&</sup>lt;sup>8</sup> See Dell'Ariccia and Marquez (2004), Sengupta (2007), and Detragiache, Tressel, and Gupta (2008).

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