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Strategic Toeholds in Takeovers

Abstract

Theoretical literature predicts that raiders should hold part of the shares - a so-called toehold - before a takeover operation. Whereas theoretical results predict that the toehold should be maximal, empirical results reveals heterogeneity in the observed levels of toeholds. Our study explains this gap. We develop a tender offer model with atomistic target shareholders and asymmetric information. We find that it is optimal to acquire a toehold prior to the announcement of the takeover and we determine the optimal level of the toehold. Some particular environments may reduce the optimal level of toeholds: strong dilution mechanisms, soft financial constraints for the bidder, low financial frictions, a high legal protection for investors and not all-cash payment methods. We provide empirical evidence that support our predictions.

Keywords: Toeholds, Takeover, Asymmetric Information, LBO, Financial Constraints, Investor.

JEL codes: D82, O12, Q15.

1 Introduction

Acquiring target shares in the market prior to launching bids is often viewed as an effective strategy to increase the probability of success. Although toehold bidding has been on the decline for many years now, it has not entirely disappeared. For example, toeholds are still important particularly in hostile takeovers (Betton et al. (2009)) or in difficult takeovers with strong resistance from the target (Dai et al. (2021)). However, there is a gap between theoretical literature, predicting that the toehold should be maximal, and the empirical literature, showing disparity in the observed level of toeholds.

This article provides theoretical results that can explain the level of a toehold as an optimal strategy in a takeover contest. We develop a tender offer model with atomistic target shareholders and asymmetric information. The offer is made by a single bidder who has private information about her ability to create value. Target shareholders know that the takeover will increase the value of their shares if it succeeds but they have only beliefs about the realized shares value. The bid price must at least equal the expected post-takeover share value because of shareholders' free-rider behavior. Within this framework, value-increasing takeovers fail if bids are costly (Grossman and Hart, 1980; Bradley, 1980). Costly bids are feasible because the bidder can acquire a toehold prior to the announcement of the takeover. This toehold gives her a source of gains that can compensate the takeover costs (Shleifer and Vishny, 1986; Hirshleifer and Titman, 1990). As acquiring a toehold is costly, we find that there exists an optimal toehold. We introduce different environments affecting the optimal level of the toehold.

We consider dilution mechanisms in the sense of Grossman and Hart (1980). The bidder can appropriate some of the post-takeover value, inducing shareholders to revise their expectations lowering the equilibrium bid price. As a toehold is costly, we find a negative relation between the optimal toehold and the dilution factors. We focus on two applications that are equivalent to dilution factors: antitakeover measures (e.g. poison pills) and LBOs. The first can be viewed as a means to prevent dilution; the second as a legal dilution mechanism.

We incorporate financial constraints. The bidder has to raise outside funds from investors who are reluctant to lend an amount equal to the post-takeover share value. Financial frictions measured by the difference between the funds and the post-takeover share value, strengthen the budget constraint. Acquiring a larger toehold mitigates this negative effect. Considering that legal investor protection relaxes financing constraints (see for instance McLean et al. (2012)), we find that toeholds are lower when firms face high levels of legal protection.

We focus on the payment method, i.e. all-cash, all-stock or some combination of cash and stock. As shown by Eckbo et al. (2018), bidders prefer stock payments when the target shareholders are better informed. As asymmetric information aggravates the free-rider problem, we find that cash payments are associated with higher toeholds.

Another contribution of this paper is to provide empirical evidence about the effective toehold levels. While the majority of empirical studies analyze the consequences of toeholds (see for instance Dai et al. (2021)), a few focus on the determinants of the level of the toehold. Our article fills this gap by exploring in greater detail the elements that influence this level. We use a Tobit model that particularly fits the structure of the toehold variable: a truncated variable with a minority of non-zero values. We use data on 20,828 M&A operations in both Europe and the US from 2009 to 2018 in order to test empirical implications drawn from the theoretical model.

Our main empirical contributions lie in the following results: the bidder lowers the toehold when a LBO funds the operation; when the investors' protection is high in the target's country; on the contrary, the bidder increases her toehold when she faces financial constraints and when the operation is paid for in cash. We confirm that the toeholds are larger when the target is protected by a poison pills mechanism. Alternative models show the robustness of our results.

The paper is organized as follows. Section 2 presents the related literature. Section 3 introduces the model. Section 4 describes the takeover game. Section 5 determines the optimal toehold and shows how some particular environments influence it. Section 6 provides empirical evidence of the theoretical predictions. Section 7 concludes.

2 Related literature

The theoretical literature and the empirical literature on toeholds are relatively abundant. In particular, many articles seek to explain the effects of toehold acquisition on takeover outcomes and most empirical analyses focus on the impact of toeholds on the abnormal returns generated by the M&A operation or the premium paid by the bidder (See Vladimirov (2015), Cheng et al. (2016) or Dai et al. (2021)).

Some theoretical articles explain advantages and drawbacks of using a toehold in a takeover process. Toeholds are useful in resolving asymmetric information issue (Lacerda et al., 2021) and for mitigating the free-riding problem (Shleifer and Vishny, 1986; Hirshleifer and Titman, 1990). With dispersed and uncooperative target shareholders, a takeover may fail because shareholders refuse to sell at below post-takeover value (Grossman and Hart, 1980; Bradley, 1980). By acquiring a toehold, a bidder may gain on this toehold while making zero profit on the remaining shares. Whatever the result of the takeover, the bidder benefits from her toehold. If she wins, she shares the premium paid with the target shareholders; if she loses the takeover contest, she sells her stake to the rival at a higher premium. Hence, overbidding for the controlling stake can become profitable (Burkart, 1995; Singh, 1998). Additionally in the presence of a first bidder's toehold, the probability of competition decreases as shown by theoretical analysis of Bulow et al. (1999) and the empirical study of Betton and Eckbo (2000).

Toeholds may also convey information to the bidder about the possible synergies with the target. Thanks to her toehold, a potential acquirer can interact with the target. For example, she has an easier access to financial information or she can secure representation on the board. Hence, as a block-holder she improves her information about the benefits of a takeover (Ouimet, 2013; Povel and Sertsios, 2014). Povel and Sertsios (2014) provide empirical evidence that toeholds are more frequent when information about bidders is opaque. Furthermore, as method of payment conveys information about the target value, the empirical literature finds a significant link between the level of the toehold and the nature of payment from the acquirer: for instance Betton et al. (2009) shows that presence of a toehold is more likely when the payment method is all-cash.

Other theoretical articles address the evidence of low toehold acquisitions. Ravid and Spiegel (1999) show that with no competing bidders, a toehold should not be purchased because information about the target's value is disclosed leading to a higher stock price. In a low-liquid market, Bris (2002) finds that the informed bidder cannot hide her trade prior to the announcement of a public offering revealing the potential synergies of the transaction to the market. The theoretical model provided by Goldman and Qian (2005) consider that the value of the target may decline following a failed takeover. The initial bidder's toehold investment generates profits if the takeover succeeds but it may result in a loss if the takeover fails. Hence, the potential acquirer faces this trade-off when selecting the size of her toehold. Betton et al. (2009) consider the target resistance as a potential source of costs for a toehold bidder. Their theoretical analysis shows that the target facing a toehold bidder might become uncooperative and reject friendly merger negotiations. Rejection can be costly because for example the target may refuse to open its books or enforce poison pills. Empirically, Betton et al. (2009) find a link between the toehold and the existence of a poison pill covenant in the target as the poison pill is a tool signaling strong resistance from the target and reinforces the difficulty of the takeover operation: in the presence of poison pills the probability of a toehold is higher but then the toehold is smaller. This result is confirmed by the empirical results of Dai et al. (2021).

Our article is related to this literature by highlighting in a theoretical model and an empirical analysis the determinants of the level of toeholds in takeover operations.

3 Model

The following basic model uses a framework similar to that of At et al. (2011). Consider a representative firm with value normalized to zero. The shares are dispersed among many small homogenous shareholders. The firm faces a single potential buyer, the bidder B who generates revenues X if she gains control. The revenues X are not observable by the target shareholders but they know that X is uniformly distributed on $[\underline{X}, \overline{X}]$. We focus on value-increasing takeovers by assuming that $\underline{X} \geq 0$. Target shareholders are atomistic, *i.e.* no individual shareholder perceives himself as pivotal for the outcome of the tender offer.

The sequence of events, illustrated in figure 1, comprises four stages.

At $t = 0$, the bidder observes her value X and buys a toehold α. We assume that the toehold acquisition process occurs in a partially revealing market, i.e. acquiring a toehold conveys information to the market involving an increase in the stock price.[1] There is a legal maximum level $\bar{\alpha}$ over which the bidder must disclose her intentions. We consider that the transaction costs of acquiring a toehold of α, noted $c(\alpha)$ is increasing and convex.[2] Moreover we assume $c(0) = 0$, $c'(0) = 0$ and c'' high enough to ensure concavity of the problem.

At $t = 1$ the bidder makes a take-it-or-leave-it bid, conditional, unrestricted tender offer, she offers to purchase the fraction $1 - \alpha$ of the firm's shares, provided that at least the fraction $1/2 - \alpha$ of the shares are tendered.

At $t = 2$, the target shareholders decide non-cooperatively whether to tender their shares.

At $t = 3$, if the takeover succeeds, the bidder incurs a fixed cost K of administrating the takeover, which is independent of her type and is common knowledge.

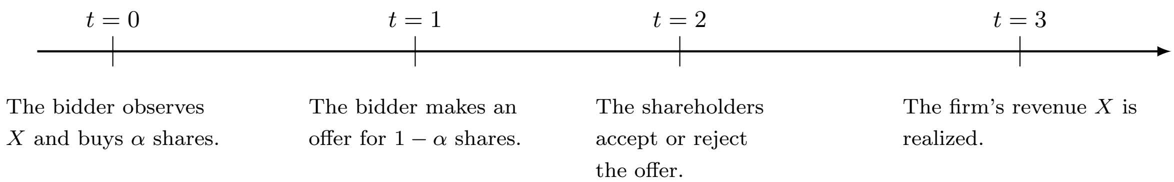

Figure 1: The sequence of events.

To avoid trivial outcomes where either all or no bidder types make an offer, we impose the following assumptions about the parameters of the model.

Assumption 1. $\frac{(1+\bar{\alpha})\underline{X} - (1-\bar{\alpha})\overline{X}}{2} < K + c(\bar{\alpha}) < \bar{\alpha}\overline{X}$

[1]See Kyle and Vila (1991) or Bris (2002) for models of toehold acquisition.
[2]Several sources of toehold costs are identified in the takeover literature. That can be market illiquidity (Ravid and Spiegel (1999)) and/or information disclosure (Bris (2002)). Betton et al. (2009) note that toehold costs are increasing because large toeholds can trigger significance costs associated with less liquidity and information disclosure.

Assumption 2. $c'(\alpha) < \overline{X}$

Assumption 2 insures that the marginal benefit of acquiring a toehold is greater than its marginal cost for the best bidder at least.

4 Takeover Game

If the bidder gains control, her payoff U_B is the revenues X net of the offered price P for $1-\alpha$ shares, the takeover cost K, and the cost of acquiring a toehold $c(\alpha)$

$$U_B = X - (1-\alpha)P - K - c(\alpha). \tag{1}$$

As shareholders are atomistic, each of them tenders at stage 2 only if the offered price at least matches the expected security benefits. Shareholders condition their expectations on P, K, and α. Moreover, they infer from observing a bid that it may come from any type who makes a non-negative payoff at that price. A bid $P^\star$ is therefore made and succeeds in equilibrium if the free-rider condition and the bidder's participation constraint hold, which are written respectively

$$P^\star \geq E(X|P^\star, K, \alpha), \tag{2}$$

$$U_B\left(P^\star, K, \alpha\right) \geq 0. \tag{3}$$

The minimum bid equilibrium is given by [3]

$$P^\star = E(X|U_B\left(P^\star, K, \alpha\right) \geq 0). \tag{4}$$

Lemma 1. *For $\alpha \in [\underline{\alpha}, \overline{\alpha}]$, only types $X \in \left[\hat{X}, \overline{X}\right]$ make a bid at the same price $P^\star(\alpha)$ where*

$$K + c(\underline{\alpha}) - \underline{\alpha}\overline{X} = 0, \hat{X} = \frac{(1-\alpha)\overline{X} + 2K + 2c(\alpha)}{1+\alpha} \text{ and } P^\star(\alpha) = \frac{\overline{X} + K + c(\alpha)}{1+\alpha}.$$

[3] Multiple equilibria in which offers succeed at different prices exist, and so constitute Perfect Bayesian Equilibria of the tender offer game. Following Shleifer and Vishny (1986) and At et al. (2011) we select the minimum bid equilibrium which is the unique equilibrium satisfying the credible beliefs criterion of Grossman and Perry (1986).

Proof.

As X is uniformly distributed on $\left[\underline{X}, \overline{X}\right]$, we have:

$$E(X|X \geq (1-\alpha)P^\star + K + c(\alpha)) = \frac{\overline{X} + (1-\alpha)P^\star + K + c(\alpha)}{2}.$$

Solving equation (4) according to $P^\star$ gives the unique solution:

$$P^\star(\alpha) = \frac{\overline{X} + K + c(\alpha)}{1+\alpha}.$$

The bidder's participation constraint written in terms of the cut-off value and after replacing $P^\star$ by its value, is $X \geq \hat{X} \equiv \frac{(1-\alpha)\overline{X}+2K+2c(\alpha)}{1+\alpha}$.

To observe takeovers we must have $\underline{X} \leq \hat{X} \leq \overline{X}$ or $\frac{(1+\bar{\alpha})\underline{X}-(1-\bar{\alpha})\overline{X}}{2} \leq K + c(\bar{\alpha}) \leq \bar{\alpha}\overline{X}$, which is verified with assumption 1. Note $f(\alpha) = K + c(\alpha) - \alpha\overline{X}$, we have $f(0) = K > 0$ and by assumption $f(\overline{\alpha}) < 0$. As $f'(\alpha) = c'(\alpha) - \overline{X} < 0$ we deduce that there exists one solution to $f(\alpha) = 0$. By noting this solution $\underline{\alpha}$ we have $f(\alpha) > 0$ for $\alpha \in [0, \underline{\alpha})$ and $f(\alpha) \leq 0$ for $\alpha \in [\underline{\alpha}, \overline{\alpha}]$ ■

In our framework, because of free-rider behavior, no more value-increasing bids succeed in equilibrium without a minimum toehold. We note that a toehold above this minimum threshold decreases the offered price by relaxing the bidder's participation constraint, and increases the probability of a successful single bid, which is consistent with the empirical evidence.[4] [5] However, as acquiring a toehold is costly, the premium as a function of the toehold is not monotonic.

At stage 0, the bidder chooses the size of the toehold to maximize her utility:

$$\max_{\alpha \leq \bar{\alpha}} U_B(\alpha) = X - (1-\alpha)P^\star(\alpha) - c(\alpha) - K. \tag{5}$$

Proposition 1. *It is optimal for a bidder to acquire a toehold $\alpha^\star \in (\underline{\alpha}, \bar{\alpha}]$ prior to the announcement of a takeover.*

Proof. The first order condition of the maximization program (5) is $-(1-\alpha)P'^\star(\alpha) + P^\star(\alpha) = c'(\alpha)$. We have $U'_B(\underline{\alpha}) = -(1-\underline{\alpha})P'^\star(\underline{\alpha}) + P^\star(\underline{\alpha}) - c'(\underline{\alpha}) = -\left(c'(\underline{\alpha}) - \overline{X}\right)\frac{2}{1+\underline{\alpha}} > 0$ because $P^\star(\underline{\alpha}) = \overline{X}$ and

[4] See Betton and Eckbo (2000) and Betton et al. (2009))

[5] We have $\frac{dP^\star(\alpha)}{d\alpha}|_{\alpha=\underline{\alpha}} = \frac{1}{1+\underline{\alpha}}(c'(\underline{\alpha}) - \overline{X}) < 0$.

$P'^{\star}(\underline{\alpha}) = \frac{1}{1+\underline{\alpha}}(c'(\underline{\alpha}) - \overline{X}) < 0$. Hence, we deduce that the optimal toehold $\alpha^{\star} \in (\underline{\alpha}, \bar{\alpha}]$. Note that the program is concave by assumption (c'' high enough) ■

Note that the probability of the takeover occuring is $\int_{\hat{X}}^{\overline{X}} \frac{1}{\overline{X}-\underline{X}} dX = 2\frac{K+c(\alpha)-\alpha\overline{X}}{(1+\alpha)(\overline{X}-\underline{X})}$, which is first increasing and then decreasing in α. The following implication arises

Proposition 2. *The probability of a takeover succeeding is not monotonic, it first increases with the toehold size and then decreases.*

We find the well-known result that a toehold is a necessary condition for value-increasing takeovers because it reduces the takeover premium mitigating the free-rider issue (Shleifer and Vishny, 1986). However, we observe a limited use of toeholds. In the following we offer new explanations to this puzzling observation highlighted by Betton et al. (2009).

5 Optimal Toehold

5.1 Dilution mechanisms

Dilution mechanisms in the sense of Grossman and Hart (1980) mitigate the free-rider problem as the bidder can appropriate some of the value he creates after the takeover. The value of minority shares is lower, decreasing incentives for target shareholders to become minority shareholders under the bidder's control. To model a dilution mechanism, we assume that the revenues X are lowered by $1-\phi$ where the dilution factor $\phi \in (0,1)$, at the expense of the shareholders and to the bidder's benefit.

The shareholders' conditional expectations about the post-takeover security benefits becomes

$$E(X|P^{\star}, K, \alpha, \phi) = (1-\phi)E(X|X \geq (1-\alpha)P^{\star} + K + c(\alpha)). \tag{6}$$

By using the same analysis in the basic model, we deduce the equilibrium offered price

$$P^{\star}(\alpha, \phi) = \frac{(1-\phi)\left(\overline{X} + K + c(\alpha)\right)}{1+\phi+\alpha(1-\phi)} \tag{7}$$

Without dilution a minimum toehold is a necessary condition to overcome the free riding problem. With dilution, some bidders can succeed in equilibrium despite free-rider behavior by the shareholders.

Hence, for a high enough dilution factor, i.e. $\phi \geq K/\overline{X}$ no minimum toehold is required.[6]

Proposition 3. *The optimal toehold decreases when the dilution factor increases.*

Proof.

The bidder's (concave) maximization program at $t = 0$ is

$$\max_{\alpha \leq \bar{\alpha}} U_B(\alpha) = X - (1-\alpha)P^\star(\alpha, \phi) - c(\alpha) - K.$$

The first order condition is $-(1-\alpha)\frac{dP^\star(\alpha,\phi)}{d\alpha} + P^\star(\alpha,\phi) = c'(\alpha)$. Differentiation gives $\frac{d\alpha^\star}{d\phi} = -\frac{\frac{\partial^2 U_B(\alpha,\phi)}{\partial\alpha\partial\phi}}{\frac{\partial^2 U_B(\alpha,\phi)}{\partial\alpha^2}}$ where $\frac{\partial^2 U_B(\alpha,\phi)}{\partial\alpha\partial\phi} = -(1-\alpha)\frac{\partial^2 P^\star(\alpha,\phi)}{\partial\alpha\partial\phi} + \frac{\partial P^\star(\alpha,\phi)}{\partial\phi}$.

We have $\frac{\partial^2 U_B(\alpha,\phi)}{\partial\alpha\partial\phi} = 2\frac{-(3-\alpha(1-\phi)-\phi)(K+c(\alpha))-(3-\alpha(1-\phi)-\phi)\overline{X}+(1-\alpha)(1+\alpha(1-\phi)+\phi)c'(\alpha)}{(1+\alpha+\phi(1-\alpha))^3}$. Assume that $c'(\alpha) = \overline{X}$ and consider the function $g(\alpha,\phi) = -(3-\alpha(1-\phi)-\phi) + (1-\alpha)(1+\alpha(1-\phi)+\phi)$.

As $\sup_{\alpha\in[0,\bar{\alpha}],\phi\in(0,1)} g(\alpha,\phi) = 0$, $g(\alpha,\phi) \leq 0$ for all (α,ϕ). We deduce that $(3-\alpha(1-\phi)-\phi)\overline{X} > (1-\alpha)(1+\alpha(1-\phi)+\phi)\overline{X}$. As $c'(\alpha) < \overline{X}$ by assumption, we have $(3-\alpha(1-\phi)-\phi)\overline{X} > (1-\alpha)(1+\alpha(1-\phi)+\phi)c'(\alpha)$

We deduce that $\frac{\partial^2 U_B(\alpha,\phi)}{\partial\alpha\partial\phi} < 0$ and so, $\frac{d\alpha^\star}{d\phi} < 0$ ■

As increasing the dilution factor increases the marginal effect of the toehold on the equilibrium offered price, this decreases the marginal benefit of a toehold. Hence, we find a negative correlation between the optimal toehold and the dilution factor. This model can be applied to two applications that are economically identical to the dilution mechanism. The first ones are the antitakeover measures, and the second one is the use of strategic debt through leveraged buyout.

5.1.1. Antitakeover measures

Our model captures the effects of antitakeover measures (*e.g.* poison pills) on the optimal toehold. These measures lead to a more protective environment for the target's shareholders. Hence, it is equivalent to a decrease in ϕ. We find that antitakeover measures are associated with higher takeover premiums, $\frac{\partial P^\star(\alpha,\phi)}{\partial\phi} = -\frac{2\left(\overline{X}+K+c(\alpha)\right)}{(1+\phi+\alpha(1-\phi))^2} < 0$, which is consistent with the findings of Cain et al. (2017).

Proposition 4. *In the presence of antitakeover measures the toeholds are larger.*

[6]Some takeovers can take place if the cut-off value $\hat{X} = -\overline{X} + 2\frac{c(\alpha)+K+\overline{X}}{1+\alpha+\phi(1-\alpha)}$ verifies $\hat{X} \leq \overline{X}$. This condition holds for $\alpha = 0$ if $\phi \geq K/\overline{X}$.

5.1.2. LBO

Consider the following strategic use of debt: the bidder raises funds by issuing debt backed by the target's revenues, i.e. a leveraged buyout investment. The bidder gains control of a majority of the target's equity through the use of debt. As shown in Müller and Panunzi (2004), an LBO allows the bidder to appropriate privately a part of the target's revenues mitigating the free-rider behaviors. That can be viewed as a legal dilution mechanism. Hence, the model can capture the effect of LBOs on the optimal toehold:

Proposition 5. *Firms with LBO investment have smaller toeholds.*

5.2 Financial Constraint

Consider now that the bidder is financially constrained. Like Burkart et al. (2014), we assume that if the bidder decides to bid, she can raise from competitive investors outside funds F against her security benefits only up to $F = (1-\pi)X$ where π represents the financial frictions.[7]. To avoid trivial outcomes we consider that $\pi < 1/2$.

The participation constraint is $U_B = X - (1-\alpha)P - K - c(\alpha) \geq 0$ and her budget constraint $(1-\pi)X - (1-\alpha)P - K - c(\alpha) \geq 0$ (note that because the bidder has no internal funds, if the budget constraint is satisfied, the participation constraint is too).

Shareholders infer from observing a bid that it may come from any type who satisfies the budget constraint

$$E(X|P^F, K, \alpha, \pi) = E\left(X|X \geq \frac{(1-\alpha)P^F + K + c(\alpha)}{1-\pi}\right), \tag{8}$$

which gives the minimum bid equilibrium

$$P^F(\alpha, \pi) = \frac{(1-\pi)\overline{X} + K + c(\alpha)}{1+\alpha-2\pi}. \tag{9}$$

Note that to mitigate the free-riding problem, a minimum toehold is required that increases as the financial frictions increase.[8]

[7]The investor can face moral hazard and/or adverse selection issues. There exists a large literature on these information asymmetries questions that are beyond this paper, e.g. At and Thomas (2017). To ensure tractability of our model, we assume that the investor knows the revenue X

[8]Some takeovers can take place if the cut-off value $\hat{X} = \frac{2c(\alpha)+2K+(1-\alpha)\overline{X}}{1+\alpha-2\pi}$ verifies $\hat{X} \leq \overline{X}$. This condition holds if $K + c(\alpha) \leq \overline{X}(\alpha - \pi)$.

Proposition 6. *When the bidder is financially constrained and the financial frictions increase, the optimal toehold is larger.*

Proof.

The bidder's (concave) maximization program at $t = 0$ is

$$\max_{\alpha \leq \bar{\alpha}} U_B(\alpha) = X - (1-\alpha)P^F(\alpha, \pi) - c(\alpha) - K.$$

The first order condition is $-(1-\alpha)\frac{dP^F(\alpha,\pi)}{d\alpha} + P^F(\alpha,\pi) = c'(\alpha)$. Similarly to the previous proof, we compute $\frac{\partial^2 U_B(\alpha,\pi)}{\partial\alpha\partial\pi} = -(1-\alpha)\frac{\partial^2 P^F(\alpha,\pi)}{\partial\alpha\partial\pi} + \frac{\partial P^F(\alpha,\pi)}{\partial\pi} = \frac{2}{(1+\alpha-2\pi)^3}((3-\alpha-2\pi)(K+c(\alpha)) + (1-\alpha)(2(1-\pi)\overline{X} - (1+\alpha-2\pi)c'(\alpha)))$. As $2(1-\pi) > 1+\alpha-2\pi$ and by assumption $\overline{X} > c'(\alpha)$ we deduce that $\frac{\partial^2 U_B(\alpha,\pi)}{\partial\alpha\partial\pi} > 0$ and so, $\frac{d\alpha^F}{d\pi} > 0$. ■

When the financial frictions increase, more bidder types are below the cut-off value and are frustrated. Acquiring a larger toehold mitigates this negative effect.

Following the empirical studies of La Porta et al. (1997) or McLean et al. (2012), legal investor protection relaxes financing constraints leading to better access to external finance.[9] In the model this effect is captured by a decrease in financial frictions π. We deduce the following implication

Proposition 7. *Firms facing low levels of legal investor protection have larger toeholds.*

5.3 Payment Method

The choice of payment method, all-cash, all-stock, or some combination of cash and stock, is an important question in mergers and acquisitions. Under asymmetric information, this choice is not irrelevant. According to Eckbo et al. (2018) when the target is able to value the bidder's shares more precisely, the likelihood of a bidder stock payment is higher. We can adapt the model by assuming that the revenues X are uniformly distributed on $[x-\epsilon, x+\epsilon]$ where $\{x, \epsilon\} \in \mathbb{R}^2_+$. A decrease in ϵ means better information about the bidder's revenues X. As before we have sign $\frac{d\alpha^\star}{d\epsilon}$ = sign $(-(1-\alpha)\frac{\partial^2 P^\star(\alpha,\epsilon)}{\partial\alpha\partial\epsilon} + \frac{\partial P^\star(\alpha,\epsilon)}{\partial\epsilon} = \frac{2}{(1+\alpha)^2} > 0)$. We deduce

Proposition 8. *All cash payments are associated with large toeholds.*

[9] There are different ways to model legal investor protection and takeovers. For example, Burkart et al. (1998), Shleifer and Wolfenzon (2002) or Burkart et al. (2014) consider the legal investor protection as a constraint that limits the ability to expropriate the firm's resources as private benefits.

As in At et al. (2011), asymmetric information aggravates the free-rider problem because the cut-off value under asymmetric information exceeds that under full information.[10] All-cash payments are observed more when the target knows less about the bidder, i.e. when the asymmetry of information is higher. Hence, then large toeholds have to be associated with all-cash payment to mitigate the free-rider problem.

6 Empirical Evidence

6.1 Data and Description of Deals

One contribution of this paper is to provide empirical evidence about the propositions and implications of the theoretical model, in order to provide explanations for the effective level of the toeholds. We consider takeover operations from 2009 to 2018. Detailed data on takeover bids and accounting data on the bidder are obtained from Refinitiv. We impose several restrictions in our sample. First, we ignore operations for which the information about toehold is not available. We also eliminate the countries (of the bidders) for which there were on average fewer than five operations per year. Furthermore, we remove deals considered as acquisitions of remaining interest by Refinitiv. Finally, our sample contains 20,828 takeovers from 2009 to 2018; 61.9% of them are initiated by a US bidder and 38.1% by a European bidder. 1.89% of them are initiated by a bidder from Switzerland and 36.2% by a bidder from the European Union (19.5% from the Euro area, 13.2% from UK, 2.6% from Sweden and 0.9% from Denmark).

Of the 20,828 operations, 19,785 were initiated without a toehold, and 1,043 with a toehold (5%), quite in line with Betton et al. (2009) who documented percentages equal to about 10% since the end of the 1990s, and with Vladimirov (2015) who documents a percentage of 12% over the period 1980-2014. When considering these 1,043 operations, the average toehold represents 30.52% of the shares (See Table 1). This average value is in line with Dai et al. (2021): in the US, on the same period, the average toehold equals 29.33% of the share. Toeholds are more used in Europe than in the US: the percentage of operations with toeholds is higher (8.04% vs. 3.14%) and, moreover, the average toehold, if any, is a bit larger (31.25% vs. 29.38%). This is even more pronounced in the Euro Area: a toehold is present in 10.11% of the deals and the average toehold, when any, equals 31.91%. The average value of the deals is equal to USD 719.03 millions, with a median value of USD 170.47 millions. This is in line with Betton et al. (2009) whose sample is characterized by a mean of USD 715 millions and a median of USD 89 millions. The mean is substantially higher than the median, as in their paper, meaning that the

[10] The cut-off value $\hat{X} = \frac{(1-\alpha)\overline{X}+2K+2c(\alpha)}{1+\alpha}$ under asymmetric information is greater than the cut-off under full information $\frac{K+c(\alpha)}{\alpha}$ because we have $K + c(\alpha) - \alpha\overline{X} \leq 0$ when a takeover occurs.

distribution is skewed. The deal value is higher in the US than in Europe: USD 788.00 millions vs. USD 606.87 millions.

Table 1: CHARACTERISTICS OF THE DEALS.The table gives characteristics on the deals (20,828 operations from 2009 to 2018). Details are given following the bidders' country. The Europe sub-sample contains all the countries except the US. The Euro Area sub-sample contains France, Germany, Italy, Spain, Netherlands, Greece, Belgium, Finland, Australia and Portugal.

Bidder's country	**Number of deals**		**Toehold value** (% of total shares)		**Deal Value (MUSD)**	
	Total	With toehold	Mean	Median	Mean	Median
US	12,897	405 (3.14%)	29.38	30	788.00	182.50
Europe	7,931	638 (8.04%)	31.25	31.85	606.87	155.00
UK	2,743	138 (5.03%)	31.29	30.41	485.49	134.46
Euro area	4,077	412 (10.11%)	31.91	33.10	655.52	170.00
Switzerland	393	39 (9.92%)	28.15	29.92	1306.00	226.78
Sweden	537	34 (6.33%)	29.11	29.53	349.42	126.41
Denmark	181	15 (8.29%)	25.69	32.00	468.78	147.43
Total sample	20,828	1043 (5.00%)	30.52	30.65	719.03	170.47

6.2 Empirical Implications, Variables and Model Specification

The theoretical results provide determinants of the level of the optimal toehold. In order to test these theoretical propositions, we consider the effective level of the toehold as a dependent variable: `Toehold` is the percentage of shares owned by the bidder on the day of the announcement of her bid. On average, `Toehold` equals 30.5% (when non null).

Proposition 3 states that the dilution effect has a negative impact on the effective toehold. The dilution effect may be assessed by antitakeover measures, leading to proposition 4, and by the presence of a LBO, leading to proposition 5. Proposition 4 states that when the target shareholders are protected by antitakeover mechanisms, the effective toehold is larger. The antitakeover mechanism we consider is the presence of poison pills, in accordance with the literature.[11] `Poison_Pill` is a dummy equal to 1 if the target is protected by a poison pill mechanism, and 0 otherwise. Proposition 5 states that when the bid is funded by a LBO operation, the effective toehold is larger. This implication is directly tested thanks to `LBO`, a dummy equal to 1 if a LBO funds the operation, and 0 otherwise.

Proposition 6 shows that the greater the financial constraints faced by the bidder, the larger the toehold. Financial constraints can be measured at firm level. We first consider `Bidder_Debt`, equal to

[11] See Betton et al. (2009), Vladimirov (2015) or Dai et al. (2021).

the ratio (Total Assets - Common Equity)/(Total Assets) of the bidder. The higher a company's level of debt, the less able it will be to take on more debt: we consider that Bidder_Debt is a proxy of financial constraints the bidder faces, in line with the literature.[12]

On average, bidder's debt is equal to 51.76% of the total assets (see Table 2). However, accounting variables of financial constraints are subject to numerous endogeneity biases, as Hadlock and Pierce (2010) show very well. For this reason, and following their work, we also consider the size of the bidder (Bidder Size): Hadlock and Pierce (2010) show that larger firms are less likely to be financially constrained. On average, bidder's size is equal to USD 25,202 millions.

In order to capture financial constraints and to address the endogeneity issue, we also focus on macroeconomic conditions of funding. Overall, the period under consideration is one of accommodative monetary policy, abundant liquidity and relatively low interest rates. Nonetheless, particularly towards the end of the period, financing opportunities became more difficult, leading to a rise in long-term interest rates and a rise between the long-term rates and the short-term rates. In order to capture these funding constraints, we use the 10-year sovereign interest rates (Sovereign_Yield, equal to 2.29% in average) and the spread between 10-year sovereign interest rates and the 3-month interbank market rate for the monetary zone of the bidder, on the day of the announcement (Spread, equal to 1.74% on average).

A second way to test the role played by financial constraints is to focus on legal investor protection in the target's country, as it relaxes them and thus reduces the toehold (proposition 7). Legal investors protection varies from one country to another. We proxy it using the Strength of Investor Protection index, measured by the World Bank.[13] This index represents a combination of three sub-indices. The first measures the degree of mandatory disclosure to investors; the second measures the ability of investors to protect themselves against damages caused by the board of directors (law suits, fines, jail etc.); the third measures the quality of the legal proceedings (and therefore of the lawsuits) that can be undertaken by shareholders. The Strength of Investor Protection index ranges from 0 (the least protective) to 10 (the most protective). The variable SIP equals the value of the index in the target's country on the year of the operation. On average, SIP equals 6.5.[14]

The last theoretical result, proposition 8, states that when the operation is fully paid in cash, the effective toehold is larger. We test this implication using Pure_Cash, a dummy variable equal to one if the operation is fully paid in cash (73.56% of the bids) and 0 otherwise. This variable differs widely from one paper to another. For instance, in the period 1994-2000 and for US acquirors, Dai et al. (2021) reports that only 21% of bids are fully paid in cash. Betton et al. (2009) reports 39% (for US targets

[12]See for instance Hadlock and Pierce (2010).
[13]See Zhou and Lan (2018) or Gassebner et al. (2020).
[14]The highest value is 9 (Hong-Kong) and the smallest value is 2.7 (Albania).

from 1973 to 2002) and Moeller et al. (2004) reports 40% (from 1980 to 2001 on US M&As). Vladimirov (2015) reports a percentage nearest to ours: 62%, among 44 countries from 1980 to 2014.

Finally, we consider several control variables. `USA` is dummy equal to 1 if the bidder is an American firm (61.9% of the operations), and 0 otherwise. `GB` is dummy equal to 1 if the bidder is a British firm (13.2% of the operations), and 0 otherwise. `Horizontal` is a dummy variable equal to 1 if the target and the bidder have the same SIC code, and 0 otherwise. In our sample 27% of the operations are horizontal, in line with Betton et al. (2009) (27%). To control for the size effect, we consider the value of the transaction (`Transaction_Value`), equal to USD 719.03 millions on average.

As robustness checks, we consider three other control variables. In line with the literature,[15] we check whether the fact that the acquirer has been subject to competition during the transaction plays a role: `Multi_bidder` is a dummy variable equals to 1 if that is the case (4.2% of the operations), 0 otherwise. We also insert a dummy `Euro_Zone` equal to 1 if the bidder is from the Euro area (19.5% of the sample), 0 otherwise. At last, we consider `Same_Nationality`, a dummy equal to 1 if the bidder and the target have the same nationality (71.29% of the sample).

We consider the following empirical model:

$$\begin{aligned}\texttt{Toehold}_i = \beta_0 + \beta_1\texttt{Poison-Pill}_i + \beta_2\texttt{LBO}_i + \beta_3\texttt{Financial\_Constraints}_i \\ + \beta_4\texttt{Investors\_Protection}_i + \beta_5\texttt{Cash\_Payment}_i + \beta_6\texttt{Control}_i + \epsilon_i\end{aligned}$$

We run a TOBIT analysis, as the toehold is left-censored. We estimate the coefficients with a robust estimators method that corrects for heteroskedasticity. We insert time fixed effects. As robustness checks, we also consider country fixed effects. Goodness of fit is assessed by the likelihood-ratio test.

6.3 Results and Comments

The baseline model includes four control variables and time fixed effects. First, we run the baseline model with `Poison_Pill` (Proposition 4), `LBO` (Proposition 5), `SIP` (Proposition 7) and `Pure_Cash` (Proposition 8) (See table 3).

INSERT TABLE 3

Alternative measures for macroeconomic financial constraints and microeconomic financial constraints are inserted in order to test Proposition 6 (see Table 4). The global model is presented Table 5 (Column

[15] See for instance Vladimirov (2015).

Table 2: SUMMARY STATISTICS OF DEPENDENT AND INDEPENDENT VARIABLES.The sample consists of 20,828 bids from 01/01/2009 to 12/31/2018. This table reports mean, median, first decile, last decile and standard deviation. `Toehold` is the percentage of shares owned by the bidder at the beginning of the operation. `Bidder_Debt` is the ratio between Total debt and Total Assets for the bidder. `Bidder_Size` is the bidder total assets. `Sovereign_Yield` is the 10-year sovereign yield in the bidder's country. `Spread` is the difference between the 10-year sovereign yield and the 3-months rate on interbank market in the bidder's country. `SIP` is "Strength of Investor Protection" index for the target country the year of the bid. `Transaction_Value` is the value of the deal.

Variable	Obs.	Mean	Median	First decile	Last decile	St. Dev.
`Toehold` if > 0 (%)	1,043	30.52	30.65	6.72	50.00	24.83
`Bidder_Debt` (%)	11,298	56.65	51.76	18.58	88.92	103.19
`Bidder_Size` (MUSD)	11,355	25,202.00	2,279.50	175.24	33,593.50	126,291.00
`Sovereign_Yield`	20,828	2.32	2.29	1.20	3.43	1.05
`Spread`	20,828	1.74	1.61	0.69	2.98	1.02
`SIP`	20,828	6.56	6.50	5.00	8.00	1.13
`Transaction_Value` (MUSD)	20,828	719.03	170.47	52.22	1,315.15	2,836.50

Global (a)). In this global model, in order to reduce endogeneity issue, we assess the financial constraints by the proxy Bidder Size. Finally, Global (b), Global (c) and Global (d) present robustness checks for control variables (see Table 5). At last, as robustness checks, we insert bidder country and target country effect, separately then together (see Table 6).

INSERT TABLES 4, 5 AND 6

First, we show that the dilution factors lead to lower toeholds, as set out in theoretical proposition 3. Dilution factors are captured by poison pills and LBO funding. According to proposition 4, antitakeover measures increase the toehold: the toehold is larger when the shareholders of the target are protected by poison pills. More precisely, the toehold size is about 4 points higher in the presence of poison pills than without. This result is robust as shown by tables 5 and 6 (all columns), and in line with Dai et al. (2021) who find a positive link between toeholds and poison pills, and especially with Betton et al. (2009) who show that poison pills increase the toehold size. Our results also show that firms with LBO investment buy lower toeholds, in accordance with proposition 5 (see Tables 3, 5 and 6). The toehold size is about 1 point lower for the operations funded by LBO than for the other operations.

Second, we provide empirical evidence of the role played by financial constraints. Financial constraints are first considered as a consequence of investors' protection - see Proposition 7 (La Porta et al. (1997) or McLean et al. (2012)). Investors' protection measured by the `SIP` variable, softening the financial constraints on the bidder, has a negative impact on the level of toeholds, as predicted by the theoretical Proposition 7 (see Tables 3, 5 and 6). Proposition 6 establishes that softened financial constraints have a negative impact on the toehold. This theoretical result is confirmed by the coefficient of the two macroeconomic variables we consider (Table 4, columns Proposition 6(a) and Proposition 6(b)). The sovereign yield and the spread between the 10-year sovereign yield and the 3-month rate on interbank market (`Sovereign_Yield` and `Spread`) both have a positive effect on the toehold (see Table 4). A 1-point increase in `Sovereign_Yield` or in `Spread`, leads to about a 0.1-point increase in the value of the toehold. Our first proxy of microeconomic financial constraint confirms this result: a 1-point increase of the Debt/Total Assets ratio of the bidder (`Bidder_Debt`) leads to a less than 0.01-point increase in the toehold.

The role played by these three variables show that the more the bidder is constrained, the larger the toehold is, according to proposition 6. However, when the proxy for financial constraints is the bidder's size, the result is the opposite: the higher the bidder's total assets (and therefore the lower the financial constraints), the higher the toehold. This result can be explained by the fact that size probably reflects determinants other than financial constraints.

Third, the mode of payment of the operation influences toehold. Corroborating proposition 8, all cash payment operations are associated with larger toeholds (see Tables 3, 5 and 6). The toehold is about 0.4 points lower for the bids fully funded in cash (`Pure_Cash`) than for the other bids. Our results are in line with Dai et al. (2021) who show that cash payments are more frequent when there is a toehold.

Our results are robust to changes in control variables, particularly those related to the bidder's geographical location and to the presence of several bidders (see Table 5). Our results are also robust to the fixed effect specifications (see Table 6).

7 Conclusion

Theoretical literature establishes that a toehold may be necessary for a successful takeover operation. In line with this literature, our model shows that because of the free-riding problem, a takeover bid can be profitable for the bidder only if she holds part of the shares prior to her offer. Our contribution is to analyze how different environments influence the optimal level of toehold.

Dilution mechanisms play a role as they mitigate the free-riding problem. Considering two factors of dilution, antitakeover measures and LBOs, our theoretical model shows that they reduce the optimal level of toehold. In a more original way, we show the impact of the financial constraints and financial frictions incurred by the bidder and the impact of the payment method. Financial constraints prevent the bidder from obtaining all the funds needed to capture the final profit of the operation. To offset this negative aspect, the bidder increases the toehold when facing financial constraints. As legal investors' protection facilitates access to financing, it also reduces the optimal toehold. Finally, we establish that a pure cash payment, a sign of a strong information asymmetry between the target and the bidder, increases the toehold.

Our empirical analysis corroborates our theoretical results. As expected, the presence of poison pill increases the level of the toeholds and LBOs reduce them. The Strength of Investor Protection, index used as a proxy of the legal investors' protection in the target country, has a negative impact on the toeholds. Furthermore, operations integrally funded by cash present a higher level of toehold, as predicted by our model. Directly capturing the individual financial constraints of suppliers is complex and poses problems of endogeneity, standard in the literature. Nevertheless, using measures of macroeconomic financial constraints may be a satisfactory solution. For this reason, we consider two measures of macroeconomic financial constraints: as expected, they have a positive impact on the toehold.

Our theoretical and empirical results thus provide a better understanding of the reasons for toeholds when they are used. Intuitively, a toehold before an M&A means a long term and strategic view of the target. Today, toeholds seem to be motivated more by financial than strategic reasons and our paper is informative about these financial motivations. An interesting extension of the article would be to analyze the change over time in the use and level of toeholds in order to directly explain the decrease in use.

Table 3: Baseline Model (Propositions 4,5,7 and 8). The full sample consists of 20,828 bids from 01/01/2009 to 12/31/2018. The dependent variable is the toehold. Variable definitions are provided in Table 7. The TOBIT regressions are based on the robust estimators method QML (heteroskedasticity-consistent covariance matrix estimator). Stars denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

	Proposition 4	**Proposition 5**	**Proposition 7**	**Proposition 8**
`Poison_Pill`	104.19*** (7.10)			
`LBO`		-9.95** (-2.44)		
`SIP`			-1.89* (-1.90)	
`Pure_Cash`				6.10* (1.96)
`USA`	-35.94*** (-17.55)	-34.38*** (-17.33)	-33.60*** (-14.32)	-35.53*** (-12.78)
`GB`	-21.04*** (-7.04)	-20.57*** (-6.85)	-18.42*** (-5.59)	-17.60*** (-4.64)
`Horizontal`	2.02 (0.94)	1.00 (0.46)	1.92 (0.89)	-6.16** (-2.20)
`Transaction_Value`	0.58** (2.37)	0.58** (2.38)	0.58** (2.36)	0.59** (2.02)
Constant	-86.96*** (-22.46)	-86.18*** (-22.32)	-74.72*** (-9.86)	-71.00*** (-12.86)
Year Fixed Effect	yes	yes	yes	yes
Nb. of obs.	20,824	20,824	20,824	10,443
Likelihood ratio	7.06%	2.00%	2.00%	49.25%

Table 4: Baseline Model and Financial Constraints (Proposition 6). The full sample consists of 20,828 bids from 01/01/2009 to 12/31/2018. The dependent variable is the toehold. Variable definitions are provided in Table 7. The TOBIT regressions are based on the robust estimator method QML (heteroskedasticity-consistent covariance matrix estimator). Stars denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

	Proposition 6(a)	**Proposition 6(b)**	**Proposition 6(c)**	**Proposition 6(d)**
`Sovereign_Yield`	2.11***			
	(2.62)			
`Spread`		1.75**		
		(2.04)		
`Bidder_Debt`			0.14**	
			(2.20)	
`Bidder_Size`				0.03***
				(5.43)
`USA`	-36.28***	-35.67***	-35.57***	-33.93***
	(-17.62)	(-17.44)	(-12.76)	(-12.13)
`GB`	-20.91***	-20.40***	-19.93***	-18.93***
	(-6.99)	(-6.81)	(-4.87).	(-4.62)
`Horizontal`	1.74	1.74	4.42	4.67*
	(0.80)	(0.81)	(1.58)	(1.67)
`Transaction_Value`	0.58**	0.58**	0.75***	0.66**
	(2.36)	(2.37)	(2.80)	(2.45)
Constant	-90.87***	-88.71***	-88.94***	-90.46***
	(-21.97)	(-22.43)	(-17.09)	(-17.34)
Year Fixed Effect	yes	yes	yes	yes
Nb. of obs.	20,824	20,824	11,298	11,353
Likelihood ratio	2.00%	1.99%	43.42%	43.32%

Table 5: Global Model - Baseline and Robustness Check. Control Variable. The full sample consists of 20,828 bids from 01/01/2009 to 12/31/2018. The dependent variable is the toehold. Variable definitions are provided in Table 7. The TOBIT regressions are based on the robust estimators method QML (heteroskedasticity-consistent covariance matrix estimator). Stars denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

	Global(a)	**Global(b)**	**Global(c)**	**Global(d)**
`Poison_Pill`	82.55**	82.17**	82.82**	81.37**
	(2.51)	(2.50)	(2.52)	(2.48)
`LBO`	-23.84**	-21.69**	-22.91**	-23.71**
	(-2.21)	(-2.01)	(-2.14)	(-2.21)
`Bidder_Size`	0.05***	0.05***	0.05***	0.05***
	(5.73)	(5.78)	(5.63)	(5.76)
`SIP`	-10.62***	-6.59***	-6.58***	-6.82***
	(-3.93)	(-3.95)	(-4.08)	(-3.93)
`Pure_Cash`	8.45**	8.57**	8.23**	8.84**
	(2.10)	(2.14)	(2.05)	(2.21)
`USA`	-28.78***	-29.39***	-20.88***	-30.09***
	(-6.68)	(-6.83)	(-4.62)	(-6.33)
`GB`	-7.32	-7.54		-6.97
	(-1.62)	(-1.30)		(-1.19)
`Horizontal`	-0.68			
	(-0.18)			
`Transaction_Value`	0.55*	0.59*	0.55*	0.56*
	(1.76)	(1.91)	(1.72)	(1.79)
`Multi_Bidder`		-21.57**		
		(-2.16)		
`Euro-Zone`			10.75**	
			(2.05)	
`Same_Nationality`				4.67
				(1.08)
Constant	-38.23***	-37.02***	-45.59***	-38.51***
	(-2.87)	(-2.78)	(-3.28)	(-2.85)
Year Fixed Effect	yes	yes		yes
Nb. of obs.	5,946	5,946	5,946	6,101
Likelihood ratio	71.89%	71.91%	71.82%	72.28%

Table 6: Global Model - Baseline and Robustness Check. Country Fixed Effect. The full sample consists of 20,828 bids from 01/01/2009 to 12/31/2018. The dependent variable is the toehold. Variable definitions are provided in Table 7. The TOBIT regressions are based on the robust estimators method QML (heteroskedasticity-consistent covariance matrix estimator). Stars denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

	Global(e)	**Global(f)**	**Global(g)**
`Poison_Pill`	81.41** (2.50)	86.17*** (2.71)	85.38*** (2.70)
`LBO`	-20.27* (-1.92)	-25.84** (-2.50)	-23.05** (-2.25)
`Bidder_Size`	0.05*** (5.49)	0.04*** (4.41)	0.04*** (4.19)
`SIP`	-6.77*** (-4.00)	-12.46*** (-2.65)	-12.80*** (-2.72)
`Pure_Cash`	8.23** (2.07)	8.57** (2.14)	6.13 (1.55)
`USA`		-13.48*** (-3.01)	
`GB`		-8.64 (-1.43)	
`Horizontal`	-1.22 (-0.32)	-1.03 (-0.27)	
`Transaction_Value`	0.57* (1.81)	0.59* (1.91)	0.67** (2.18)
Constant	37.42 (1.57)	-323.61 (-0.11)	-264.96 (-0.07)
Year Fixed Effect	yes	yes	yes
Bidder Country Fixed Effect	yes		yes
Target Country Fixed Effect		yes	no
Nb. of obs.	5,946	5,946	5,946
Likelihood ratio	72.00%	72.48%	72.57%

Table 7: Variables Description

Status	Variable Name	Definition	Expected sign	Source
Dependent variable	Toehold	Percentage of shares owned by the bidder at the beginning of the operation.		Refinitiv
Proposition 4 (anti-takeover protection)	Poison_Pill	Dummy equal to 1 if the target is protected by a poison pill mechanism, and 0 otherwise.	Positive	Refinitiv
Proposition 5 (LBO)	LBO	Dummy variable equal to 1 if an LBO funds the operation, and 0 otherwise.	Negative	Refinitiv
Proposition 6 (Financial constraints)	Bidder_Debt	(Total Assets - Common Equity)/(Total Assets) for the bidder.	Positive	Refinitiv
	Bidder_Size	Bidder total assets.	Negative	Refinitiv
	Sovereign_Yield	10-years sovereign yield (Bidders country)	Positive	Refinitiv
	Spread	Spread between the 10-year sovereign yield and the 3-months rate on interbank market (Bidders country and monetary zone).	Positive	Eurostat, NSB website
Proposition 7 (Legal investor protection)	SIP	"Strength of Investor Protection" Index for the target country the year of the bid.	Negative	World Bank website
Proposition 8 (Cash payment)	Pure_Cash	Dummy variable equal to 1 if cash fully funds the operation and equal to 0 otherwise.	Positive	Refinitiv
Control variables	USA	Dummy variable equal to 1 if the bidder is an American firm, and 0 otherwise.		Refinitiv
	GB	Dummy variable equal to 1 if the bidder is a British firm, and 0 otherwise.		Refinitiv
	Horizontal	Dummy variable equal to 1 if the target and the bidder have the same SIC code, and 0 otherwise.		Refinitiv
	Transaction_Value	Value of the deal.		Refinitiv
	Same_Nationality	Dummy variable equal to 1 if the bidder and the target have the same nationality, and 0 otherwise.		Refinitiv
	Multi_Bidder	Dummy variable equal to 1 if the acquirer was in competition with others, 0 otherwise.		Refinitiv
	Euro_Zone	Dummy variable equal to 1 if the bidder is from the Euro Zone, and 0 otherwise.		Refinitiv

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