

Investor Protection and the Coasian View*

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Abstract

The corporate charters of a sample of Mexican firms show that private firms often significantly enhance the legal protection offered to investors, but public firms rarely do so. We construct a model that endogenizes the degree of investor protection that firms provide, using as a springboard the assumption that legal regimes differ in their ability to enforce *precisely filtering contracts* that provide protection only in those cases where expropriation can occur. Our model generates predictions about the types of contracts that would be employed and the levels of investor protection that would prevail across different legal regimes in both private and public firms.

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1. Introduction

Much evidence suggests that the level of investor protection provided by a legal system has important economic consequences. The higher is investor protection provided by the law, the more developed are the financial markets (La Porta et al. 1997, 1999), and the faster is economic growth (King and Levine, 1993; Beck et al., 2000; Mahoney, 2001).

This evidence is at odds with some basic theoretical considerations. A direct application of the Coase Theorem yields that, absent significant transaction costs, capital suppliers and users should negotiate, agree, and privately contract on the efficient level of investor protection, when that level is not provided by the law.¹ The possibility of filling in the gap left by the law by contractually “opting out” of it should, in principle, make the resultant investor protection efficient across all legal systems. This, in turn, should render immaterial the level of investor protection provided by the law, contrary to the findings.

This ostensible Coasian puzzle assumes, however, that different legal systems are equally adept at strict enforcement of contracts. A possible resolution to the puzzle then suggests that a legal system with low investor protection provided by law is associated with courts that are anemic in the enforcement of contracts that enhance investor protection (see Glaeser et al., 2001; La Porta et al., 1999; Djankov et al., 2003).

We begin this paper by taking the previous argument to the testing ground of the Mexican legal system.² We first note that Mexican law provides scant protection to its investors and, therefore, leaves a need for contractual opting out to supply that protection privately. Now, if the Mexican legal system is also inept at enforcing contracts, then opting out of the law should rarely be observed; it would be of little use anyway. If, on the other hand, the Mexican legal system is adept at enforcing contracts, then opting out by private contracting should accompany virtually all types of capital supplied by investors to users. We find neither.

We construct a sample of firms that went public in the Mexican stock exchange from 1992 to 2000. For each firm in the sample, we examine the charter that was in effect at the time of the IPO and the charter preceding it.

We observe three regularities.

First observation: When privately held, over half the firms offer their investors significant protection beyond that provided by Mexican law. This is a clear manifestation of contractual opting out from the law. It also indicates a reliance of the contracting parties on the Mexican courts to enforce those contracts.

¹Easterbrook and Fischel (1991) provide an extensive discussion.

²Due to the natural importance of contractual opting out as a mechanism of improving investor protection, we do not focus on other means of achieving the same end, such as ADRs, takeovers, and pyramidal structures (see, e.g., Benos and Weisbach, 2004; Almeida and Wolfenzon, 2006).

Second observation: When going public, virtually no firm provides significant investor protection to its public investors beyond that provided by the law. This seems to contradict the first observation. If supplemental private contracting of investor protection is needed in Mexico, and if the Mexican courts are relied upon to enforce such contracts in private offerings, then why are similar contracts not written when Mexican firms go public?

Third observation: When providing protection to investors, the contingencies on which Mexican firms contract are relatively straightforward, especially when compared to U.S. investor protection contract provisions, which tend to be distinctly more intricate.³ For example, Mexican firms employ simple financial restrictions on their behavior, while U.S. firms employ more sophisticated accounting-based restrictions. Thus, whereas a Mexican firm would provide veto power to investors in cases of capital expenditures greater than a certain amount, a U.S. firm would include provisions that prohibit capital expenditures when the ratio of tangible to intangible assets falls below a certain level. Additionally, U.S. investor protection contracts employ inexplicit restrictions on firm actions that seem to rely on the courts' aptitude to enforce them judiciously in order to fulfill their protective purpose in a way that would not have been possible had those contracts, and therefore the courts, been restricted to consider only simple, explicit contingencies. By contrast, Mexican firms in our sample do not use similar inexplicit contingencies in their investor protection contracts. Instead, they contract on clearly delineated descriptions of firm behavior. To illustrate, U.S. firms would prohibit transactions with affiliates, unless their terms are at least as favorable as those obtainable in an arm's length transaction. On the other hand, when Mexican firms try to commit not to expropriate investors in sales that are unfavorable to the firm, they simply give veto power to investors in all transactions involving the sale or purchase of assets, brand names, technological know-how, or patents.

Based on this motivational evidence, we present a model that endogenizes the degree of investor protection that firms provide in order to explain firm contracting behavior and to resolve the aforementioned Coasian puzzle. We consider a single agent, an insider, who initially wholly owns and controls a firm, through which he tries to raise equity from investors in order to finance a new project. To do so, the insider may want to commit ex ante not to expropriate investors ex post by offering them an investor protection contract.

Rather than assume, as is commonly done in the literature, that legal regimes differ in the default level of protection that the law provides to investors, we assume instead that each regime is characterized by the set of contracts that it can enforce. Motivated by the observed difference in intricateness between U.S. and Mexican investor protection contracts, we assume

³For evidence on U.S. investor protection contract provisions, see Berlin and Mester (1992), Kahan and Tuckman (1993), and Smith and Warner (1979).

that legal regimes differ in their ability to enforce what we call *precisely filtering contracts*. These contracts provide protection to investors only when it is necessary: i.e. in the eventualities that expropriation can occur, and only in these eventualities. Precisely filtering contracts, therefore, bar expropriation without barring firms from performing other, possibly efficient actions. In this sense, they act as a filter, blocking expropriation while allowing other firm actions to be taken. A legal regime that is more adept at enforcing precisely filtering contracts will be said to have a higher filtering-precision.

For example, certain legal regimes can enforce a precisely filtering contract that provides rights to investors in all cases when “tunneling of assets occurs.”⁴ In other legal regimes, however, the only investor protection contract that is enforceable is that which provides rights whenever “assets are sold.” As another example, to protect investors from some forms of managerial opportunism, certain legal regimes can enforce a precisely filtering contract that states that after raising capital from investors, “a firm may only engage in activities which are consistent with its normal business practices.” This contract may not be enforceable in other legal regimes, so that instead, investors must rely on contracts that provide them with rights whenever their firm “engages in an investment above a certain monetary value.” This characterization of legal regimes according to their enforceable contract set is very much in the spirit of Coffee (2001), who refers to a “smell test” that courts in common law legal regimes can perform to detect expropriation, unlike civil law legal regimes that cannot.

It should be emphasized that the filtering-precision of a contract is distinct from contract incompleteness. An incomplete contract is one that specifies decision making rights in a proper subset of the state space, leaving out states of the world about which the contract is silent. In contrast to the notion of contract completeness, filtering-precision of a contract is defined by how fine the partition is of the state space into events that a contract can distinguish when it provides parties with decision-making rights. Accordingly, each contract is associated with a particular partition of the state space, so that any two states of the world belonging to the same partition cell must assign the same decision-making rights to the parties. We say that filtering-precision increases when the partition associated with the contract becomes finer and the contract can then distinguish between states that it could not distinguish before. Thus, contract completeness refers to a contract’s coverage of the state space, while contract filtering-precision refers to its partition of the state space.

As an illustration, a contract stating that “no acquisitions will be conducted” is a complete contract since the contract is never silent in any state of the world; indeed, in all states of the

⁴Johnson et al. (2000) define tunneling as “the transfer of assets and profits out of firms for the benefit of those who control them.”

world, the contract denies all parties the right to undertake acquisitions.⁵ Such a contract, however, is not precisely filtering, as the partition associated with it is made up of only one cell consisting of the entire state space.

Imprecisely filtering investor protection contracts can generate errors of two types. One type of error occurs when investors should have been protected by the contract, but are not; an under-inclusion problem. The other type of error arises when investors are granted staying power over beneficial firm actions in eventualities when there is no danger of expropriation; an overinclusion problem. For example, a contract that, in order to protect investors, indiscriminately bars all sales of assets would also prevent efficient sales.

Thus, with only imprecisely filtering contracts at his disposal, the insider faces a tradeoff in choosing the level of investor protection. On one hand, increasing investor protection generates two benefits: it increases the firm's pledgeable income, preventing possible ex ante costs of underinvestment. It also reduces the extent of expropriation which, in and of itself, is assumed to be inefficient. On the other hand, increasing investor protection also generates costs by preventing the firm from taking efficient actions in some cases.

We propose then that in a low filtering-precision legal regime, when *a small number of investors* provide capital *privately* to the firm, the insider, constrained to choose from a menu of imprecisely filtering contracts, would tend to offer to them contracts that are overinclusive. By doing so, the insider captures the attendant benefits without incurring the costs of preventing efficient actions due to the possibility of renegotiation that a small number of private investors presents. Once a situation arises in which the contract empowers investors to block the firm from taking an efficient action, renegotiation ensues, appropriate side-payments are made, and efficient actions are taken.

By contrast, when the number of investors is prohibitively large to allow successful renegotiation, as in a publicly held firm, the overinclusion cost associated with imprecisely filtering contracts remains. Insiders would then tend to shun overinclusion and they would tend to underinclude instead. These implications of the model are consistent with our findings that firms in Mexico are more likely to provide rights to their private investors than to their public ones.

We use our model to predict cross-country variation in investor protection provisions, like those aforementioned that are observed between Mexico and the U.S. We compare the types of investor protection contracts that are expected to be employed across different legal regimes for public and for private firms.

Our model implies that due to their inability to renegotiate contracts, public firms are disadvantaged by being constrained to using imprecisely filtering contracts, and hence the level of

⁵More precisely, the contract is complete with regards to decision making rights associated with acquisitions.

investor protection that they provide would be sensitive to the filtering-precision of the legal regime in which they operate. As filtering-precision decreases, the level of contractual protection provided by public firms will decrease as well. In contrast, since private firms are able to renegotiate their contracts, they find imprecisely filtering contracts to be good substitutes for precisely filtering contracts. Thus, private firms would tend to provide high levels of investor protection regardless of the filtering-precision of the legal regime in which they operate.

As the underlying filtering-precision of legal regimes would be difficult to observe directly, it is important to operationalize our theoretical predictions. First, our assumption about the variation in filtering-precision across different legal regimes should be reflected in a cross-country variation in the filtering-precision of contracts that firms actually use to provide protection to their investors.

Second, the level of contractual protection provided by public firms should be positively correlated with the filtering-precision of the contracts with which this protection is provided. That is, if we observe a legal regime in which public firms provide high levels of investor protection through private contracts, we would expect this protection to be provided through precisely filtering contracts. Moreover, while private firms should provide more protection to investors than public firms, the difference between the amount of investor protection provided by private firms and public firms should be smaller in legal regimes where precisely filtering contracts are employed.

To explain variation in investor protection provision by private firms, we introduce more structure in our model by considering the provision of effort by the insider. While the ability to renegotiate contracts solves all ex post inefficiencies and hence allows all efficient actions to be taken, the use of renegotiable, imprecisely filtering investor protection contracts would dampen the insider's ex ante incentive to exert effort. The reason, in the spirit of Aghion and Tirole (1997), is that due to the power over firm actions accorded to them by the imprecisely filtering contract, investors would be able to extract during ex post renegotiation some of the rents created by the insider's ex ante effort. Essentially, investors are holding up the insider in those eventualities where, although no expropriation occurs, the imprecisely filtering contract provides them with overinclusive rights.

Thus, when managerial initiative is important, an additional consideration is introduced when private firms decide what level of investor protection to offer. Providing protection through the use of imprecisely filtering contracts will increase the insider's pledgeable income and allow all efficient actions to be taken after renegotiation, but this comes at the cost of diminishing ex ante insider effort. In private firms, it is no longer the case that withholding investor protection is dominated by providing it, regardless of the filtering-precision of the legal regime. Indeed, as the

filtering-precision of the legal regime decreases, private firms will tend to provide less protection to investors. This is because as firms can employ only less precisely filtering contracts, investors' ability to extract rents by holding up the firm increases, and therefore the cost of insider effort reduction increases.

With this refinement of the model in mind, it is instructive to compare the disadvantage firms experience in raising capital along their lifetime when operating in legal regimes with low filtering-precision. The model suggests that it is the young and the mature firms who would be particularly disadvantaged by the constraints of a low filtering-precision legal regime. Young firms will be disadvantaged because managerial initiative is likely to be of particular importance to them. But since the only way to increase their pledgeable income when raising capital is to provide investors with imprecisely filtering contracts, managerial initiative would be dampened. Mature firms would also be particularly affected by low filtering-precision because the option of selling equity in the public markets, for example, for large additional capital expenditures or for diversification purposes, will be costly to them. This is due to their inability to renegotiate imprecisely filtering contracts with large numbers of investors.

On the other hand, the model suggests that during the middle of their life cycle, when the importance of managerial initiative decreases, firms will not be as disadvantaged when operating in legal regimes with low filtering-precision. Indeed, by renegotiating imprecisely filtering contracts they do not suffer the loss of forgone opportunities, and since managerial initiative is of lower importance, its dampening is not as costly.

Taken together, in line with Rajan and Zingales (1998), the analysis suggests that being constrained to imprecisely filtering contracts will disproportionately affect the prospects of young and mature firms, while in contrast, it will have a lesser impact on middle-aged firms or firms where managerial initiative is less importance.

1.1. Relation to existing literature

Much of the related research regarding the endogenous provision of investor protection by firms relates to the market for corporate control. This includes empirical studies such as Daines and Klausner (2001) and Field and Karpoff (2002), and theoretical studies such as Grossman and Hart (1988) and Bebchuk (1994). However, this branch of literature does not focus on the enhancement of investor protection through contractual opting out in legal regimes that provide lax investor protection.

Easterbrook and Fischel's (1991) classic treatment of the analysis of corporate law stresses the importance of the private provision of investor protection. In analyzing a firm's decision to provide investor protection, they refer to the cost of opportunistic holdup problems, exacerbated

by large numbers of investors. Ehrlich and Posner (1974) deal with the choice of promulgating legal rules as standards or bright-line rules, focusing among other issues on the overinclusion costs associated with the use of such rules. As in our model, Coffee (1999) refers to these overinclusion costs as related to the choice of the degree of investor protection provided by firms. In addition, consistent with lower renegotiation costs, DeAngelo and DeAngelo (1994) provide evidence that private debt covenants are more restrictive than those of public debt in the United States. Unlike these studies, the focus of our paper is on the cross-country determinants of the type of investor protection contracts that will be used and the level of protection that they provide, in both private and public firms.

As stated above, several studies (see, e.g., Glaeser et al., 2001; La Porta et al., 1999; Djankov et al., 2003) cite the importance of enforcement in enhancing investor protection. The main focus of these studies is on factors other than private contracting that affect investor protection when enforcement of contracts is poor. These studies do not, however, consider the implications of different contracting technologies and varying abilities to enforce precisely filtering contracts across different legal regimes for the tradeoffs facing firms in providing contractual investor protection.

Lerner and Schoar (2005) analyze private equity investments showing that characteristics of these transactions vary across a sample of developing countries. They find that in common law countries, such transactions are more likely to use convertible preferred stock with covenants, while in civil law countries they are more likely to rely on common stock and debt with equity and board control. Unlike the current study, the focus of the paper is not on a theoretical analysis of private and public firms' endogenous choice of contractual enhancement of investor protection in different legal regimes.

Reese and Weisbach (2002), Doidge et al. (2004), Siegel (2005), and others analyze the use of ADRs by firms in countries with weak legal institutions. Bennedsen and Wolfenzon (2000) and Gomes and Novaes (2001) study the benefits of joint control of firm actions in scenarios with poor investor protection. Again, these papers do not analyze the varying ability of legal regimes to enforce precisely filtering contracts, and the implications this has on firm behavior.

Ayotte and Yun (2006) analyze how the expertise of judges and the quality of contract enforcement may affect the design of bankruptcy law. Finally, Glaeser and Shleifer (2002) provide an historical explanation for the reason that legal regimes might differ in the set of contracts that their courts can enforce, discussing the different use of bright-line rules and standards in common law and civil law legal regimes.

The paper proceeds as follows. Section 2 presents the motivational empirical evidence; based on it, Section 3 presents the theoretical model of cross-country firm contracting behavior; and Section 4 concludes.

2. Empirical evidence

Mexican law provides scant protection to investors. This is manifest in the low measure of protection offered by law to equity investors which places Mexico in the bottom 15% in the sample of 49 countries of La Porta et al. (1998).⁶ Therefore, when Mexican insiders join investors in writing the corporate charters of constitution that stipulate their governance, it should be expected that many will include opting out rules that aim to fill the gap between the existing and optimal levels of investor protection.

In order to examine that, we assemble an initial sample comprising all the firms that went public between 1992 and 2000. Excluding financial and government-owned firms leaves 63 firms. By law, any firm undertaking an IPO in Mexico must file its charter of constitution and all modifications to it with the Mexican stock exchange (Bolsa Mexicana de Valores). For each firm in the sample, we look at the charter that was in effect just before the IPO. We call it the “private charter,” as it provides rights to private investors. We also look at the charter that replaced the private charter at the time of the IPO. This charter provides rights to the public investors, and therefore we call it the “public charter.” In addition, each charter contains data on the ownership structure that was in effect at the time of the writing of the charter.

We discard another 16 firms from the sample because information about them was lacking, leaving a final sample of 47 firms for which we have both the public and private charters.⁷ Due to the sample size, our empirical findings should be viewed as providing motivation for the theoretical analysis presented in the next section.

Table 1 provides some sample descriptive statistics. While privately held, the mean (median) number of individual investors owning shares in a firm is 4.3 (3.5), while the mean number of families owning shares in a firm is 3 (2). Additionally, at the IPO, the mean (median) share of the firm sold to public investors is 24.49% (22.17%). After going public, the firms in our sample have mean (median) assets of \$352.61 million (\$113.83 million), mean sales of \$221.02 million (\$86.37 million), and mean net income of \$16.94 million (\$3.84 million).⁸

⁶Mexico obtains a score of 1 out of 6 in their measure of equity protection. The average for countries with common law origin is 4, while for countries with French civil law origin it is 2.33. Mexico is part of the latter group. In June 2001, the Mexican law was reformed to provide additional protection to investors; firms in our sample were not operating under this new legal regime.

⁷Additionally, we did not include the single case in which a public firm spun off a subsidiary.

⁸All values are in U.S. dollars.

The analysis of contractual opting out in the private charters is aided by the fact that the distribution of the degree of investor protection beyond that provided by law is bimodal in the sense that in almost all cases there is either a significant degree of opting out or no opting out at all.

The following is an example of a case in which the private charter provides additional investor protection (two additional examples are included in Appendix A):

In December 1996, GAMI Investments Inc., a subsidiary of Equity Group Investment Inc., purchases 8.3% of Grupo Azucarero Mexicano S.A. de C.V. for \$25 million. GAMI Investments is issued a special class of shares — C shares. The charter states that a resolution in a shareholder meeting dealing with any of the following issues must be approved by the C shares:

- Merger or acquisition by Grupo Azucarero or any of its subsidiaries in one or more related transactions for an amount greater than \$30 million
- Sale, rent, or transfer of more than 10% of Grupo Azucarero's or any of its subsidiaries' consolidated assets in one or more related transactions
- Share repurchase
- Modification to the charter
- Long term debt issuance
- Liquidation of the firm
- Removal or appointment of comptrollers or external auditors
- Voting shares of subsidiaries in any of the above issues

In addition, the C shareholders will appoint three members of the board, a majority of which must approve any board resolution dealing with the above issues.

We thus classify a firm as contractually opting out through its private charter when investors are provided substantial information and control rights, affording them redress against opportunistic insider behavior. These contractual opting out provisions include veto powers provided to specific classes; board representation; rights to appoint external auditors and comptrollers; supermajority attendance-quorum requirements and resolution-quorum requirements for shareholder meetings and board meetings; and supermajority requirements for resolutions dealing with specific cases such as capital expenditures, sale of assets, acquisitions, financing, compensation, general operational activities, and contract approvals.⁹

In addition, we examine ownership structures to identify firms with minority investors, because only those are expected to exhibit contractual opting out. As expected from studies such

⁹There are six firms that provide only informational rights (mainly board representation to investors that would not have been provided by law). We do not classify these as cases of contractually opting out.

as La Porta et al. (1999), in many cases shareholders of the firms in our sample include a diverse group of family members.¹⁰ In classifying minority investors, we therefore need to take a position on the treatment of investors who hold minority positions in a firm that their family collectively controls. One view is that intrafamily relationships are sufficient to assure family members owning minority positions that they will not be expropriated, so that contractual protection between related shareholders would be unnecessary. Instead, though, we take the conservative view that familial ties are insufficient to eliminate intrafamily agency costs and expropriation amongst family members.¹¹ Thus, we treat family members owning minority positions in a firm controlled by their family similarly to unrelated minority investors. Formally, we mark a firm as having minority investors if there are either two shareholders that do not belong to the same family, or else, if no shareholder owns more than 95% of the shares. It should be noted that a firm jointly owned by two brothers, say, one with 90% of the shares and the other with the remaining 10%, is still defined to have a minority investor who might demand investor protection rights.¹²

Using this definition, we find that of the 47 firms in our sample, 39 had minority investors when they were privately held. Of these 39 firms, we find that 20—just over 50%—exhibit contractual opting out providing investor protection that is not granted by the law.^{13, 14}

One concern regarding such use of contracts to enhance investor protection is that, although contracts are written between investors and firms, they will not be enforced and their provisions will not be binding. We first note that the great detail within charter provisions and the high variability between them provides prima facie evidence that this is not the case. Indeed, contractual rights are written in such a way as to strongly suggest that they were adopted to alleviate investors' concerns about insider expropriation. As an example, when investing in a firm, minority investors might be provided with a special class of shares that enjoys strict veto powers over firm activities commonly associated with expropriation (raising capital, selling assets, etc.). Alternatively, the charter might raise majority requirements in shareholder and board meeting

¹⁰In related work, La Porta et al 2003 find that 20 percent of bank loans in Mexico are provided to related parties – i.e. to firms which are controlled by the banks' owners.

¹¹Bertrand et al. (2005) provides support for this view, showing that in Thailand, larger families owning business groups seem to engage in more tunneling from one another.

¹²In contrast, as would be natural, a firm owned by a father with 98% of the equity, and two sons, each with a token 1% of the equity, will not be defined as having a minority investor.

¹³Interestingly, of these 20 firms, there are two cases in which a firm owned by a group of brothers attempts to decrease intrafamily agency costs by adding supermajority requirements to its charter. Also, of the 19 firms that we classify as having minority investors and that did not provide contractual protection, seven firms are each entirely owned by members of the same family. Thus, while conservatively defined as minority investors, family members owning minority positions in these firms may be relying on familial ties to reduce expropriation instead of relying on formal contractual protection.

¹⁴We find that six of the 20 firms that provide rights to private investors do so with charters written in 1996, i.e., the year after the Mexican Tequila crisis. While only suggestive, this increased incidence of shareholder protection could be a result of the increased awareness of expropriation following the crisis.

votes from the level designated by Mexican law to a level that provides minority investors with an ability to block firm actions.

To further explore the issue of contract enforceability, we conducted numerous interviews with prominent corporate lawyers and private equity investors in Mexico. These corporate sources confirm that contract provisions and the possibility of their court enforcement are very important in determining the off-equilibrium-path threats during contractual disputes between parties. Thus, as theory would suggest, since the costs of going to court are prohibitive, parties often negotiate and settle disputes, but the threat of contract enforcement affects the parties and their actions during renegotiation. Contract provisions, therefore, do indeed influence actual outcomes. Consistent with this, we are told by private equity investors that their requests for contractual protections are quite deliberate, as they know that these protections will provide them de facto power over firm behavior.^{15, 16}

To illustrate the importance of contractual investor protection rights, we briefly describe two examples of corporate disputes provided by our Mexican corporate sources in which contract provisions and the threat of their enforcement affected firm behavior and actual outcomes.¹⁷ For the interested reader, we provide additional examples in Appendix B.

The first example involves a family-controlled firm with a private equity investor who was provided with veto powers over firm borrowing. After a period of deteriorating cash flows, both the controlling family and the private equity investor agreed that the firm would need to raise additional financing. The private equity investor agreed to invest this additional capital into the firm in the form of equity. Because the value of the firm had deteriorated since the initial investment, this equity infusion would involve a large dilution of the family's ownership share and reduced control over the firm. The controlling family, therefore, refused to accept the equity capital, and instead proposed to borrow the required funds from a bank. Thinking that the resultant capital structure would be inefficient, the private equity investor then utilized his contractually provided veto powers to block the proposed borrowing. Following the invocation of the veto clause, the firm could not borrow, and the parties began negotiations to resolve the dispute. These negotiations resulted in the private equity investor being bought out by the family.

¹⁵Indeed, one private equity investor commented that "There is no way we'll put \$200M in a firm without strong contracts which can protect us. We live by these contracts and turn to them every day." The investor went on to explain how much of his job involves sending contract interpretations to his portfolio firms advising them on what they can and cannot do. It is also interesting to note that the lawyers we spoke with commonly refer to contract disputes arising from contractually provided investor protection rights as cases of "abusive minority shareholder activities." These "abusive" investors are deemed by controlling shareholders and the lawyers they later hire to have employed contractually provided rights to the detriment of the firm.

¹⁶For a general overview of private equity in Mexico, see Charvel and Carlos de Yeregui (2002).

¹⁷Due to the sensitive nature of disputes involving privately held firms, our sources have requested that the identity of the firms and investors involved remain confidential.

The second example involves a manufacturing firm that obtained financing from three private equity investors. At the time of financing, these equity investors were granted veto powers over various firm activities, including the right to raise capital. A number of years after the initial round of investment, all parties involved agreed that the firm would require additional financing to avoid financial distress. At this time, though, one of the private equity investors was also experiencing financial difficulties. This equity investor therefore demanded that the firm pay out a dividend, and used his veto powers to block the firm from raising additional capital until this demand was met. Once the veto power was invoked, the firm did not raise the additional capital, and, as of the time of this writing, the parties are in negotiations to resolve the dispute.¹⁸

A second concern regarding the evidence on contractual investor protection arises from the fact that data limitations are such that private charters of firms are observed only after the firm has gone public. This could lead to a sample selection bias that we cannot completely rule out; for example, firms might be adding contractual provisions right before their IPO for reasons unrelated to investor protection. Alleviating these concerns is the fact that the average time from the writing of the private charter that provides rights to investors to the time of the IPO is 3.65 years. This is an underestimate of the time between the provision of rights and the IPO, since we define the private charter to be the last charter written prior to the IPO, and in many cases, rights are provided in earlier charters as well. Further alleviating sample selection concerns is the fact that just over half of the private firms that provided investor protection rights (11 of 20) did so during or prior to the year 1993, when going public in Mexico was difficult. Finally, the observation that investors deliberately request additional contractual rights when purchasing shares in a firm provides additional support for the argument that these rights are indeed added to protect investors and affect firm behavior.

When the 47 firms in our sample went public, their private charters were replaced by public charters. In all but five of those public charters, firms did not provide any protection to public investors beyond what was provided by law. Of those five firms, one firm provided significant additional rights to its investors, two firms provided moderate levels of investor protection, and the final two provided negligible levels of investor protection.¹⁹

In addition, we find that 15 firms issued ADRs on top of the shares issued in the Mexican stock exchange. We do not consider these to be significant cases of contractual opting out.

¹⁸Interestingly, this investor was vetoing even the provision of capital to the firm by its *other* investors – an example of the prevention of propping as defined in Friedman et al. (2003).

¹⁹The charter of the first firm included significant investor protection provisions such as supermajority requirements and a right to arbitration according to the rules of the International Commerce Chamber. The charter of the second firm required a mandatory tender offer for 100% of the shares in case of a transfer of 51% of the shares, while the charter of the third firm stated that it would not lend or provide loan guarantees to its parents. The charters of the final two firms provided a single right stating that shareholders are not required to deposit shares prior to a shareholder meeting.

This is because, first, the rights provided by ADRs as written “on the books” impose limited constraints on insiders, focusing mainly on disclosure requirements (see, e.g., La Porta et al., 2000).²⁰ Second, as Siegel (2005) demonstrates, the actual history of SEC enforcement actions against foreign listed firms is extremely weak, even when confronted with clear examples of insider opportunistic behavior. In the six-and-a-half year period between January 1, 1995 to June 30, 2002 the SEC took legal action against only 13 cross-listed foreign firms, none of which were from Mexico. Furthermore, Siegel shows that “the SEC did not often succeed in prosecuting the small number of firms that it did, in fact, pursue,” with insiders simply ignoring the judgments against them or settling with the SEC for relatively negligible amounts.²¹

Siegel (2005) continues by providing evidence that, even without U.S. law enforcement, ADRs are useful in allowing firms to establish market-based “reputational bonding.” According to this, firms with ADRs guarantee continued access to U.S. capital markets by voluntarily establishing a reputation for treating their investors fairly. Still, as providing rights that, in and of themselves, constrain controlling shareholder expropriation, ADRs seem to be quite weak.²² In contrast, the actual rights written into charters of Mexican firms (such as veto powers over asset sales, corporate lending, and acquisitions) are more constraining of insider opportunistic behavior than the rights provided by law by ADRs. Further, as interviews with Mexican corporate sources and the examples above indicate, these investor-demanded, charter-provided rights do indeed serve as de facto constraints on firm behavior.

In sum, only one out of the 47 firms in our sample significantly enhanced the protection offered to its public investors through contractual opting-out provisions, and two additional firms enhanced this protection in a non-negligible manner. Thus, while just over half of the private firms use contractual provisions to significantly enhance the protection offered to their investors, practically no public firm does the same for its public investors.²³

²⁰The most important rights provided by ADRs are disclosure of large shareholders, timely disclosure of material information, restrictions on insider trading, U.S. disclosure and procedural rules during tender offers, and “fair price” payment to minority shareholders in going private transactions (Coffee, 1999).

²¹This is very much in the spirit of La Porta et al. (2000) and others who argue that assets located in a particular country generally remain under the jurisdiction of that country’s laws.

²²As confirmation, our Mexican corporate sources were quite dismissive of the use of ADRs as a mechanism to reduce expropriation, stating that “Mexican companies are Mexican companies, and Mexican law is Mexican law.” We should add that even in the case where ADR rights are not enforced, there might still exist an interesting interaction between ADRs and contractual protection in that there are strong complementarities between information about firm actions and the power to affect these actions. According to this view, ADRs are effective in improving disclosure to investors, say because of reputational concerns as in Siegel (2005), while contractual rights allow investors to utilize the knowledge gained through this increased disclosure to affect firm behavior and reduce expropriation. (For more on this, see Section 6 of Glaeser et al., 2001.)

²³We find that in most cases the outside investors of the private firms do not leave the firm when the firm goes public. Out of the aforementioned 20 private firms that provided significant investor protection, five firms still provide significant protection to their private investors in their public charters. We do not know whether the remaining 15 firms stripped their investors of their rights since it is possible that these rights were transferred to a private shareholders’ agreement. It should be added that the possibility of a private shareholders’ agreement only

These findings suggest that in a country where the legal system provides poor investor protection, firms do contractually opt out. Second, courts in such countries appear to be able to enforce at least some types of contracts that enhance investor protection.

To gain further intuition about firm contracting behavior, it is instructive to compare the contracts found in our sample of Mexican firms to existing evidence on investor protection contracts used by firms in the U.S.²⁴ In general, it appears that U.S. contract provisions are far more complex than their Mexican counterparts, relying as they do on more sophisticated contingencies.

U.S. contracts often employ sophisticated accounting-based restrictions on firm activities such as investment, asset sales, dividend payments, and borrowing. For example, a provision might forbid an acquisition in which the post-acquisition ratio of intangible assets to tangible assets exceeds a certain level, or restrict dividend payments as a function of earnings. In contrast, Mexican contracts in our sample rely on straightforward value-based contingencies: a minority shareholder is provided power whenever an acquisition is conducted for an amount greater than a certain level, when capital expenditures exceed a certain level, or when the firm enters into a contract of a duration exceeding a certain minimum. Additionally, while a U.S. firm would place a limit on dividend payments based on firm earnings, a Mexican firm would provide power to minority shareholders in all cases of dividend payments.

Further, U.S. contracts employ vaguely defined restrictions on firm actions, which when properly enforced by courts, enable firms to provide power to investors in complex contingencies that would be difficult to describe contractually. In contrast, Mexican firms in our sample do not employ similar vague contingencies, contracting instead on clearly delineated descriptions of firm behavior. Thus, while a U.S. contract might allow asset sales only in the course of normal business activity, a Mexican contract will provide veto power to minority shareholders whenever the firm sells more than a specified percentage of its assets, or whenever assets are sold for a value greater than a certain amount. Moreover, while a U.S. firm might place restrictions on affiliated transactions by demanding that they occur at terms that are at least as favorable as what could be obtained by an arm's length transaction, Mexican contracts provide power to minority investors in any purchase or sale of brand name, know-how, or patent by the firm.

The finding that different contract provisions are used in the U.S. and Mexico may suggest that courts in different legal regimes differ in their ability to enforce contracts, and hence firms might be constrained to different sets of contracts when providing protection to their investors. In the next section we present a model motivated by these observations that endogenizes the

enforces our finding that contractual opting out does occur with private investors. Of course, private shareholder agreements cannot be written with public investors, so we observe all rights provided to these investors.

²⁴See Footnote 3 above for sources.

choices of investor protection enhancement across different legal regimes in private and in public firms.

3. The model

Consider a firm faced with an opportunity to invest in a positive NPV project. Choosing to invest an amount $I > 0$ in the project yields a return of $g(I)$, with $g' > 0$, $g'' < 0$, $g(0) = 0$, and $g'(0) > 1$. We assume that the firm is cash constrained, so that any amount invested must be raised through outside equity.²⁵ For simplicity, we assume that the firm is initially wholly owned by a single agent, whom we call the insider. We also assume that all agents are risk neutral, that the discount factor is 1, and that capital markets are perfectly competitive.

After having sold the equity, the insider has the opportunity to expropriate firm funds. We assume, as is standard in the literature, that expropriation is wasteful and therefore inefficient (see Burkart et al., 1997; Shleifer and Wolfenzon, 2002). Formally, we assume that the insider can divert a fixed fraction s of the return, from which a part that is equal to a fixed fraction c of the return is wasted.

We further assume that the insider can expropriate wealth from the firm only when he takes a certain action \mathbf{A} , which, in itself, could well be efficient in some states of nature. For example, \mathbf{A} could be the sale of firm assets, which is efficient in many situations, but also presents the insider with the opportunity to expropriate through the practice of tunneling. Alternatively, \mathbf{A} could be the raising of capital through equity or debt issues. Again, while these actions are clearly efficient in certain situations, they can also be used by the insider to expropriate minority shareholders by simply selling underpriced securities to related parties. Formally, we assume that with probability p the action \mathbf{A} is efficient, and if taken, it yields an additional positive gross return of B . To simplify the analysis, we assume that the insider cannot expropriate from the additional benefit B . Obviously, when the firm forgoes an efficient action it does not get the attendant benefit. We will call this the *cost of forgone opportunities*.

As a benchmark to the analysis that follows, we spell out the first best outcome of our model. Clearly, the first best level of investment I^{FB} solves $g'(I^{FB}) = 1$. Next, since expropriation is inefficient, it never occurs in the first best outcome. Also, the first best outcome dictates that action \mathbf{A} is taken whenever it is efficient. Finally, since, as we assume, capital markets are perfectly competitive, the insider captures the full NPV of the project, yielding him an expected payoff of $g(I^{FB}) - I^{FB} + pB$. Due to the simplifying assumption that the insider

²⁵While we focus on equity financing, allowing the firm to raise external capital by issuing debt does not change the results.

cannot expropriate from the additional benefit B , we make the assumption that $I^{FB} > pB$, so that the insider cannot raise and invest I^{FB} by issuing equity against the benefit B .

Continuing with the setup of the model, our main assumption is that every legal regime is characterized by a different set of contracts that can be enforced in a court of law. In each regime, the only contracts that are used are from this set, which we call the enforceable contract set. This is relevant to the insider who might benefit from committing not to expropriate. In that case, the insider will offer to his investors a contract from the enforceable set describing the degree of protection he is ready to grant them.

We consider a continuum of legal regimes indexed by a filtering-precision parameter φ that can take values between 0 and 1. In a legal regime with filtering-precision φ , courts can enforce what we term the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract. This contract effectively bans expropriation altogether by restricting the insider's ability to act freely within the firm. However, the restriction could also have the undesired effect of preventing the firm from taking action \mathbf{A} when it is efficient to do so. When enforcing $\neg\mathbb{E}\mathbb{X}(\varphi)$, a court in a legal regime of filtering-precision φ is adept at passing through, or filtering, an efficient action \mathbf{A} with probability φ , so that the firm can take that action while still banning expropriation. Consequently, we will say that a legal regime is *more precisely filtering* than another, if its filtering-precision parameter is greater than that of the other. We will similarly say about the contract in the former regime that it is more precisely filtering than the contract in the latter regime.

In the extreme, in a regime with $\varphi = 0$, the only enforceable investor protection contracts are those that completely ban action \mathbf{A} , efficient or otherwise. In the other extreme, in a regime with $\varphi = 1$, courts can verify when expropriation occurs, and can enforce contracts that specifically ban expropriation without banning the action \mathbf{A} . For example, in a $\varphi = 0$ legal regime, the only contract that is enforceable is one that bans asset sales above a certain amount. On the other hand, a contract banning affiliated transactions at favorable conditions would only be enforceable in a legal regime with higher filtering-precision. It should be noted that the set of enforceable contracts changes with φ , which is reflected in the dependence on φ of the formulation of the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract.

We assume that the insider can also choose not to offer investor protection at all. To ease notation, we identify this choice with the null contract that allows the firm to take the action \mathbf{A} unfettered, and we designate it by \mathbb{A} . In sum, when operating in a legal regime with filtering-precision φ , the insider can choose between two contracts to provide investors: the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract or the \mathbb{A} contract.

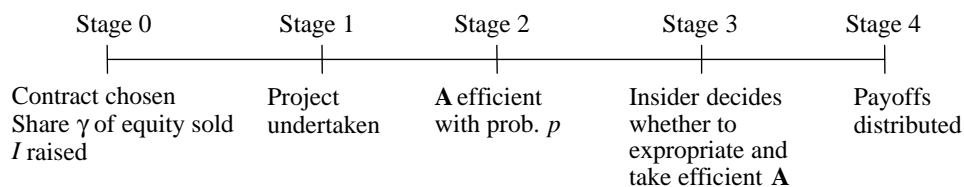
Using this setting, we analyze an insider's optimal decisions in a public firm and in a private firm across legal regimes with different filtering-precisions. In a public firm, equity is sold to a

dispersed group of atomistic investors, whereupon contract renegotiation is very difficult; it is ruled out in our model. In a private firm, on the other hand, equity is sold to a small number of investors—referred to in this paper as *the investor*—and therefore contracts can be renegotiated. In the case of both a private firm and a public firm, we examine how the insider folds back the corresponding decision tree, and then compare and contrast the solutions.

3.1. Public firm

Consider an insider operating in a legal regime with filtering-precision φ . The timeline is shown in Fig. 1, while the full decision tree is shown in Fig. 2. At Stage 0, the insider decides whether to offer the \mathbf{A} contract or the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract. He then offers for sale a share γ of the firm to outside investors. Being competitive by assumption, the investors react by bidding for that share an amount I that is equal to the amount that they expect to receive, which, in turn, is determined by the contract they are offered. This implies that the investors do not share in the project’s NPV, which goes entirely to the insider. We will call the equality between the investors’ payment and their return expectation the *competitive financing constraint*. The insider decides to sell that share γ of the firm that maximizes the NPV, which he fully captures, subject to the competitive financing constraint.²⁶

Figure 1. The timeline



At Stage 1, the firm invests the I it has raised in the project, and at Stage 2, Nature reveals whether taking action \mathbf{A} is efficient or is not.

At Stage 3, if no protection was offered via the contract \mathbf{A} at stage zero, the insider can either take action \mathbf{A} and expropriate from the returns; take \mathbf{A} and not expropriate; or refrain from taking \mathbf{A} , whereupon expropriation is impossible. If, on the other hand, contract $\neg\mathbb{E}\mathbb{X}(\varphi)$ was signed, then the insider cannot expropriate. Also, using the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract, when the action \mathbf{A} is efficient, and can thus lead to an additional benefit of B , then with probability φ the court can recognize that, and will allow the firm to take action \mathbf{A} and reap the additional benefit. Finally, at Stage 4, the firm prorates the funds that remain to its insider and outside shareholders.

We solve this decision tree by backward induction. At Stage 3, after a history that includes having written the contract $\neg\mathbb{E}\mathbb{X}(\varphi)$ and having sold a share γ of the firm for I , the insider is

²⁶The same is true in the other cases that we analyze below.

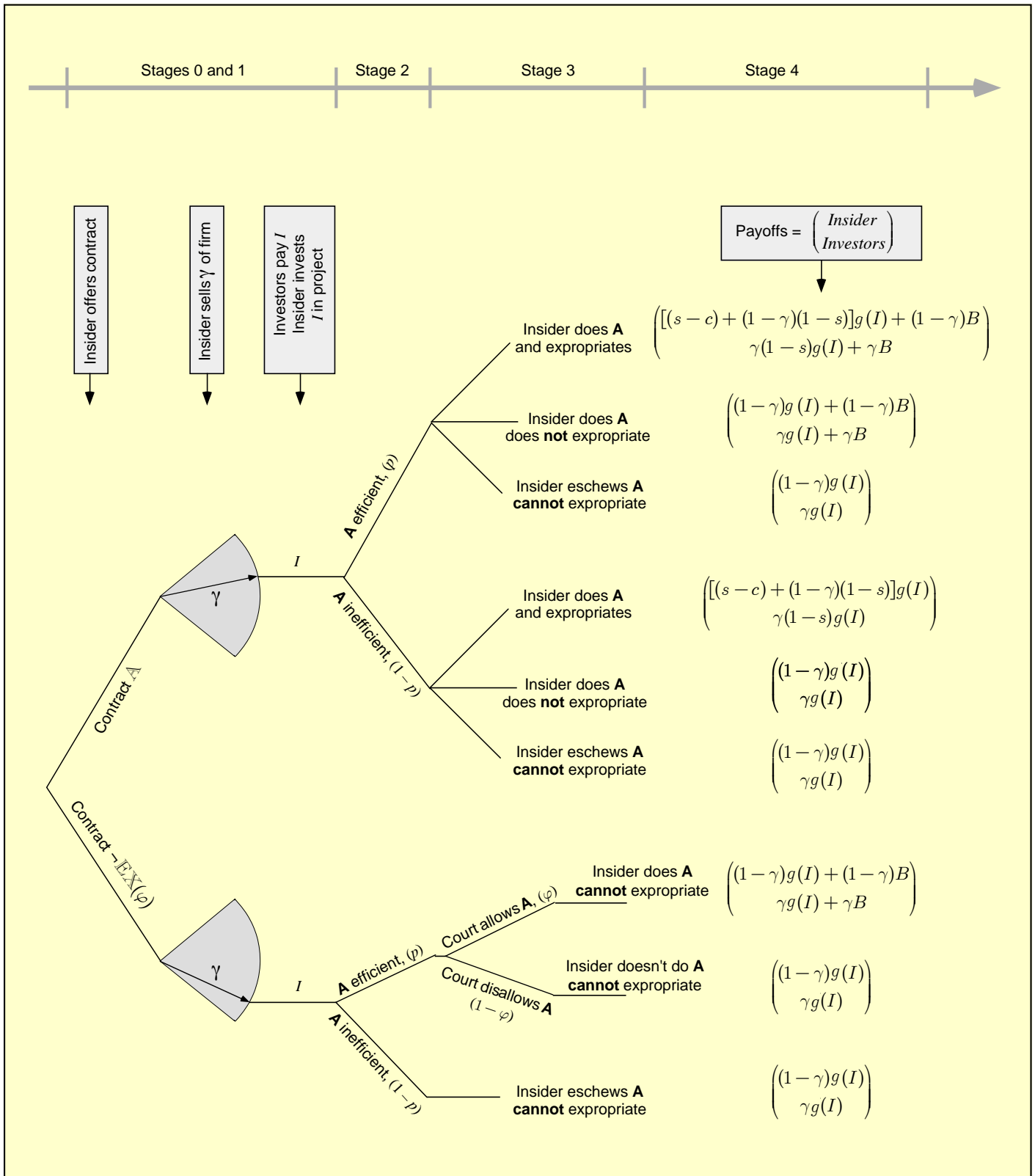


Figure 2. Insider's decision tree; public firm in a legal regime of filtering-precision φ . The Jensen-Meckling condition follows from comparing the insider's payoff on the uppermost branch to his payoff on the branch just below it.

barred from expropriation. When the action \mathbf{A} is efficient, the court allows the firm to take the efficient action with probability φ , and bans it with probability $(1 - \varphi)$. In the latter case, the firm would have liked to renegotiate the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract in order to implement action \mathbf{A} , but since the firm is public, it cannot do so. This is the cost of forgone opportunities imposed by the less than perfect filtering-precision of the legal regime. On the other hand, there is the benefit that the insider's commitment not to expropriate holds up, and the expropriation inefficiency is eliminated. The firm therefore earns in expectation $g(I) + p\varphi B$, and splits it; $(1 - \gamma)(g(I) + p\varphi B)$ goes to the insider, and $\gamma(g(I) + p\varphi B)$ goes to the investors.

We recede now to Stage 0. Anticipating their share in the returns, the investors agree to pay $I = \gamma(g(I) + p\varphi B)$ for their share γ of the firm. This competitive financing constraint makes I a function of γ , and implies that the insider gets $(1 - \gamma)(g(I) + p\varphi B) = g(I) - I + p\varphi B$; the whole NPV. The insider, therefore, selects a γ that maximizes the NPV subject to the constraint, i.e., he solves the problem

$$\begin{aligned} & \text{Max}_{\gamma} \{g(I) - I + p\varphi B\} \\ & \text{s.t. } I = \gamma(g(I) + p\varphi B). \end{aligned} \tag{1}$$

Since no expropriation occurs under the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract, the insider's pledgeable income is high, and hence we show that the insider will successfully raise and invest I^{FB} . Formally, we have

Proposition 1 *In a public firm, in a legal regime with filtering-precision φ , when using the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract to curb expropriation, the insider invests the first best amount, but takes action \mathbf{A} when it is efficient only with probability $p\varphi$, and, therefore, the NPV falls short of the first best by $p(1 - \varphi)B$, the cost of forgone opportunities.*

Proof See Appendix C.

To complete the solution of the decision tree, we go back to Stage 3 to the end of an alternative history that includes having written the \mathbb{A} contract (instead of the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract), and having sold a share γ of the firm for I . The insider is then allowed to implement action \mathbf{A} . The insider actually implements action \mathbf{A} whenever it is efficient, and, irrespective of its efficiency, exploits \mathbf{A} to expropriate if and only if

$$\gamma > \frac{c}{s}. \tag{2}$$

This is the standard Jensen-Meckling condition that states that an agency cost arises only when the insider owns a small enough fraction of the cash flow.²⁷

²⁷Eq. (2) follows from comparing the insider's payoff on the uppermost branch of Fig. 2 to his payoff on the branch below it.

Receding now to Stage 0, we solve for the insider's optimal share γ of the firm that he wants to sell. First, the insider has to maximize his expected payoffs by choosing γ under two alternatives: (a) $\gamma \in (c/s, 1]$, whence the insider plans to expropriate at Stage 3; or (b) $\gamma \in [0, c/s]$, whence the insider plans *not* to expropriate at Stage 3. The insider then compares his maximal payoffs under the two alternatives, and selects the greater of the two by choosing its corresponding γ .

Under alternative (a), the insider solves

$$\begin{aligned} \text{Max}_{\gamma \in (c/s, 1]} \{ & (1-c)g(I) - I + pB \} \\ \text{s.t. } I = & \gamma[(1-s)g(I) + pB], \end{aligned} \quad (3)$$

where the maximand is the insider's expected payoff, and the RHS of the competitive financing constraint is the expected payoff to the investors under the current alternative (a).

Expropriation is reflected in two ways in this maximization problem. First, the $(1-c)$ factor in the maximand represents the expropriation waste. Second, the competitive financing constraint becomes tighter. As reflected by the $(1-s)$ factor, investors know that they will be expropriated. Therefore, they are willing to provide less financing (smaller I) for any given firm share γ . When s is large enough, the tight financing constraint leads to an underinvestment problem.

Under alternative (b), the insider solves

$$\begin{aligned} \text{Max}_{\gamma \in [0, c/s]} \{ & g(I) - I + pB \} \\ \text{s.t. } I = & \gamma[g(I) + pB], \end{aligned} \quad (4)$$

where the maximand and the constraint are the analogs of those in alternative (a). In this case, there are obviously no inefficiencies associated with expropriation, since it does not occur. However, the financing ability of the insider is limited by the fact that the fraction of the firm sold may not exceed c/s .

For the rest of the paper, we assume that the parameters of the model are such that the insider is led to select the optimal γ in $(c/s, 1]$, i.e., that the more interesting alternative (a) obtains. The agency problem is then severe enough that selling a fraction γ of the firm that does not lead to subsequent expropriation causes a severe underinvestment problem.²⁸ We now have the following

Proposition 2 *In the public case, when using the \mathbb{A} contract, for all p and B there exists an \bar{s} such that for $s > \bar{s}$ the insider raises an amount less than I^{FB} .*

Proof See Appendix C.

²⁸Formally, for all s there exists a \bar{c} such that for $c < \bar{c}$, the insider selects at Stage 0 a γ greater than c/s . Thus, we require that c is small enough compared to s , so that expropriation is relatively efficient. Clearly, with $c = 0$ (expropriation ex-post efficient) the insider would always want to expropriate, regardless of γ .

Proposition 2 and maximization problem (3) indicate that not providing investor protection to investors in a public firm (i.e., using an \mathbb{A} contract) involves a cost and a benefit. The cost is the waste caused by expropriation (captured by the $(1 - c)$ factor in the maximand of (3)) and the possible ex ante cost of underinvestment. The benefit is that actions are taken whenever they are efficient, so that the insider captures the full value pB associated with the efficient action.²⁹

Thus, in choosing between the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract and the \mathbb{A} contract at Stage 0, the insider faces the following tradeoff: using the \mathbb{A} contract allows implementation of efficient actions capturing the attendant benefits, but it causes an underinvestment problem when expropriation is severe enough, and also wastes resources through expropriation. By contrast, using the imprecisely filtering $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract allows an efficient level of investment without wasting resources through expropriation. However, this contract will occasionally also prevent the execution of efficient actions. This cost of the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract, however, is decreasing in the filtering-precision φ of the legal regime. As filtering-precision increases, courts are more adept at enforcing contracts that distinguish eventualities in which expropriation has occurred from those in which the insider is undertaking an efficient action, and hence the insider will be prevented from implementing the efficient action with smaller probability.

We thus have the following proposition.

Proposition 3 *For every p , B , s , and c there exists a filtering-precision threshold level $\varphi^* \geq 0$ that satisfies:*

- (i) *For all $\varphi < \varphi^*$ the insider chooses the \mathbb{A} contract at Stage 0.*
- (ii) *For all $\varphi \geq \varphi^*$ the insider chooses the $\neg\mathbb{E}\mathbb{X}(\varphi)$ at Stage 0.*
- (iii) *$\frac{\partial \varphi^*}{\partial p} \geq 0$, $\frac{\partial \varphi^*}{\partial B} \geq 0$, $\frac{\partial \varphi^*}{\partial s} \leq 0$, and $\frac{\partial \varphi^*}{\partial c} \leq 0$.*

Proof See Appendix C.

Proposition 3 states that, on average, firms in legal regimes with higher filtering-precision will provide higher protection to their investors through the use of more precisely filtering contracts. The intuition is that the payoff from choosing the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract is increasing in φ , as the firm will be more likely to take the action \mathbb{A} when it is efficient, while the payoff from choosing the \mathbb{A} contract is independent of φ . Also, the comparative statics in part (iii) of the proposition are understood by the fact that the benefit of the \mathbb{A} contract increases whenever (a) the

²⁹ As an example, to the extent that ADRs do provide de facto legal constraints on insider behavior, firms might at times still choose to utilize them because the expected inefficiencies stemming from complying with ADR requirements—e.g., the increased disclosure rules—are relatively low. Thus, ADRs are equivalent to a contract forcing the firm to perform certain actions (e.g., disclosing information to the market) that may reduce expropriation, but that also involve a cost of forgone opportunities, pB (such as the cost of disclosing proprietary information to competitors.)

expected benefit to taking the efficient action is greater, (b) the underinvestment problem due to expropriation is less severe, and (c) the waste associated with expropriation decreases.³⁰

3.2. Private firm

The insider’s decision tree in this case is similar to that of the public firm in the same regime, except for the all-important possibility of contract renegotiation that we insert in the decision tree at Stage 2.5, between Stages 2 and 3. The solution is again by backward induction.

Once again, consider a firm operating in a legal regime with filtering-precision φ . After a history that comprises $\neg\text{EX}(\varphi)$, γ , and I , at Stages 0 and 1, and an efficient \mathbf{A} at Stage 2, the insider and the private investor face a joint surplus of B . With probability φ , the efficient action \mathbf{A} is allowed and the insider implements it. With probability $1 - \varphi$ the action \mathbf{A} is banned, but—unlike in a public firm—the insider and the investor can capture the surplus by renegotiating the $\neg\text{EX}(\varphi)$ contract. Indeed, they optimally do. After they successfully renegotiate, assuming Nash bargaining with power μ to the investor, they sign a new contract, which stipulates (i) that expropriation is generally still barred, but action \mathbf{A} is allowed on the specific occasion at hand for capturing the surplus B , and that (ii) the investor shall get a share μB from this surplus. In line with the incomplete contracting literature, we assume here that in contrast to when contracting ex ante (at Stage 1), the use of action \mathbf{A} in an efficient manner is verifiable ex post; see Hart (1995) for an extensive discussion.³¹

Effectively, the investor is relinquishing his right vis-à-vis the firm in return for a payoff. In doing so, he is providing slack in those cases in which the courts can only enforce a contract that is too stringent. Section 2 of the paper provides an example of a scenario very much along the lines described here: An equity investor who held contractually provided veto powers was blocking a firm from raising needed additional capital. Following the dispute, the parties commenced renegotiation of the veto clause.

Finally, since the $\neg\text{EX}(\varphi)$ contract bans it, the insider will never expropriate in this case.³²

³⁰It is noteworthy that we assumed that when a firm awards a $\neg\text{EX}(\varphi)$ contract to its atomistic public investors, they will, in fact, enforce it. This assumption needs some justification, as each small investor would prefer not to sue, when he bears the potentially substantial costs of doing so, while the benefits spread thinly to all other investors. One mechanism that can solve this free rider problem is the class action lawsuit. An alternative mechanism operates when investors accumulate shares at prices that do not fully incorporate the pending enforcement of the investor protection contract. This can be justified either by the assumption that shares can be accumulated secretly, or by the assumption that an accumulator can hide his order for shares within liquidity-induced trades as in Kyle (1985).

³¹For example, while it is impossible to stipulate ex ante in a contract all the contingencies whereupon the sale of firm assets is efficient and the fair prices for such transactions, it *is* possible to describe and contract ex post on the efficiency and sale prices in a particular case, once it materializes.

³²In modeling the negotiation outcome, we assume for simplicity that the cost of taking the contract to court is zero. Assuming a positive court cost does not change the main results, but serves to further reduce the insider’s pledgeable income. As in the model presented above, the insider and the investor will never actually take a contractual dispute to court. Instead, they will renegotiate over the surplus created by avoiding court action, while using the threat of contract enforcement as an outside option during renegotiation.

Receding now to Stage 0, the insider solves

$$\begin{aligned} & \text{Max}_{\gamma} \{g(I) - I + pB\} \\ \text{s.t. } & I = \gamma g(I) + pB[(1 - \varphi)\mu + \varphi\gamma], \end{aligned} \tag{5}$$

where the maximand is the insider's expected payoff (whole NPV), and the RHS of the competitive financing constraint is the expected payoff to the investor in the current situation. Similar to the proof of Proposition 1, it can be shown that the solution of this maximization problem is I^{FB} , the first best level of investment. This, together with no expropriation and taking action **A** whenever it is efficient, implies

Proposition 4 *Regardless of the filtering-precision of the legal regime φ , providing the $-\mathbb{E}\mathbb{X}(\varphi)$ contract to investors in a private firm achieves the first best outcome, because that contract is renegotiated when necessary.*

Proof See Appendix C.

Back to Stage 3, but after an alternative history that comprises contract **A** (instead of $-\mathbb{E}\mathbb{X}(\varphi)$), γ , and I , the situation is almost completely analogous to the case of the public firm in the same regime after the same history. We will assume then the interesting case in which the insider's optimal γ falls in $(c/s, 1]$, and therefore he would be expected to expropriate.

But he does not. The reason is that also in this situation, the insider and the investor can and do bargain over a surplus that is created as the investor convinces the insider not to expropriate and to save the associated waste $cg(I)$ for the benefit of both in return for a "bribe." Specifically, with Nash bargaining, assuming a bargaining power of μ to the investor, the expected payoff to the investor is $\gamma(1 - s)g(I) + \gamma pB + \mu cg(I)$, and to the insider it is $[(s - c) + (1 - \gamma)(1 - s)]g(I) + (1 - \gamma)pB + (1 - \mu)cg(I)$.³³

Receding now to Stage 0, the insider solves

$$\begin{aligned} & \text{Max}_{\gamma} \{g(I) - I + pB\} \\ \text{s.t. } & I = \gamma(1 - s)g(I) + \gamma pB + \mu cg(I), \end{aligned} \tag{6}$$

where the maximand is his expected payoff from the bargaining agreement, which is also equal to the whole NPV from the project, and where the RHS of the competitive financing constraint is the investor's expected payoff from the same bargaining agreement.

³³To see this, note that if bargaining breaks down the insider expropriates and his outside option payoff is $[(s - c) + (1 - \gamma)(1 - s)]g(I) + (1 - \gamma)pB$ in expectation, while that of the investor is $\gamma(1 - s)g(I) + \gamma pB$. But if they *do* agree, then the total pie becomes $g(I) + pB$, which is larger than the sum of the disagreement payoffs by a surplus of $cg(I)$.

It is clear why the expropriated fraction s would appear in the competitive financing constraint when expropriation materializes on the equilibrium path, as in (3) above. But here, expropriation never materializes on the equilibrium path. Nevertheless, s plays a role in (6). The reason is that at the time of renegotiation, the insider still has the outside option (as a credible threat off the equilibrium path) to expropriate $sg(I)$ at the cost of wasting $cg(I)$. Thus, through renegotiation, the insider gets $(s - c)g(I)$ while dividing $cg(I)$ with the investor.

As s increases, the insider's pledgeable income decreases, the financing constraint in (6) tightens, and an underinvestment problem arises. However, since no expropriation occurs, there is no ex post waste of resources. Formally, we have that

Proposition 5 *In a private firm, when using the \mathbb{A} contract, there exists a c^* such that for $c < c^*$, for all p and B , there exists an s^* such that for $s > s^*$ the insider invests an amount less than I^{FB} .*

Proof See Appendix C.

Proposition 5 states that whenever the expropriation problem is potentially severe (large s), providing no investor protection (using contract \mathbb{A}) generates an underinvestment problem. The requirement in the proposition for the expropriation technology to be efficient (i.e., a small c) stems from the competitive financing constraint in maximization problem (6): as c increases, the insider's pledgeable income increases due to the funds that investors obtain in the renegotiation to avert expropriation. If c is large enough, there will be cases in which the insider will be able to invest the first best amount. Following from Propositions 4 and 5 is

Proposition 6 *When selling securities to private investors, providing investor protection (using $\neg\mathbb{E}\mathbb{X}(\varphi)$) weakly dominates not providing it at all (using the \mathbb{A} contract). This dominance is strict when the \mathbb{A} contract involves an underinvestment problem.*

Proof See Appendix C.

Proposition 6 is a direct result of the fact that regardless of whether protection is provided to private investors (under both \mathbb{A} and $\neg\mathbb{E}\mathbb{X}(\varphi)$), the firm takes the efficient actions, and expropriation never occurs. The difference is that the first best level of investment is achieved with imprecisely-filtering investor protection (the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract), but an underinvestment problem can occur when investor protection is not provided (the \mathbb{A} contract).

3.3. Solution summary

The insider faces different tradeoffs when offering protection to investors depending on the filtering-precision of the legal regime in which he operates, and depending on whether equity

is sold to private or to public investors. An insider of a public firm, in a regime with filtering-precision φ , faces a tradeoff when deciding what investor protection to offer—imprecisely filtering protection (the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract) or no protection at all (the \mathbb{A} contract). Each has its own advantages and disadvantages. On the one hand, providing protection allows implementation of the first best level of investment and prevents expropriation and its associated waste, but it may preclude efficient actions and their attendant benefits. On the other hand, providing no protection at all entails the costs associated with expropriation—underinvestment and waste—but allows taking efficient actions more often than when the investors are protected, capturing their benefits. The optimal choice, to provide protection or not to do so, depends on the relative magnitudes of these effects. However, as the filtering-precision of the legal regime in which the firm operates increases, the loss from forgone opportunities associated with providing protection decreases since more precisely filtering contracts become available. Thus, the magnitude of the benefit of providing investor protection to public investors increases with the filtering-precision of the legal regime and hence more protection will be provided.

On the other hand, the insider of a private firm has a clear choice. Regardless of the investor protection he provides, either imprecisely filtering or none at all, due to the possibility of contract renegotiation, the firm eventually takes efficient actions and the insider does not expropriate. However, providing imprecisely filtering investor protection ($\neg\mathbb{E}\mathbb{X}(\varphi)$) is more attractive, since providing no protection (\mathbb{A}) can lead to an underinvestment problem. The insider would therefore choose to provide protection through the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract, and would do so regardless of the filtering-precision of the legal regime in which the firm operates.

This analysis explains our empirical findings in Mexico. Under the premise that the Mexican legal regime is of particularly low filtering-precision, firms can only offer investor protection contracts that filter very imprecisely (low φ). This premise is also consistent with the type of contracts that are employed by Mexican firms. In public firms the benefits of taking efficient actions will therefore tend to outweigh the costs of underinvestment and waste associated with expropriation, so that little investor protection will be provided. On the other hand, consistent with the model, firms will find it optimal to provide investor protection to their private investors even when constrained to the use of imprecisely-filtering contracts, since the possibility to renegotiate with private investors acts to supplement the deficient filtering capabilities of those contracts to allow taking of all efficient actions.

3.4. Predictions

Our model facilitates the comparison of the types of contracts that would be employed and the levels of investor protection that they would provide across different legal regimes in both private and in public firms.

Due to the possibility of renegotiation, private firms find imprecisely filtering contracts to be good substitutes for precisely filtering contracts. Thus, we predict that private firms will provide similar levels of investor protection in different legal regimes, but in doing so they will employ different types of contracts. As the filtering-precision of the legal regime in which the firm operates increases, they will use more precisely filtering contracts.

In contrast, public firms, which cannot easily renegotiate the terms of a contract in place, are disadvantaged when they are constrained to imprecisely filtering contracts, and therefore we predict that the level of investor protection provided by public firms will depend on the filtering-precision of the legal regime in which they operate, with more investor protection provided in higher filtering-precision legal regimes ($\varphi > \varphi^*$).

An alternative way to view our results is the following. Across all legal regimes, private firms will tend to provide more protection to investors than public firms. However, since the sensitivity of the level of investor protection to the filtering-precision of the legal regime is greater in public firms than in private firms, the difference in investor protection between private firms and public firms will be more pronounced in legal regimes that are less capable of enforcing precisely filtering contracts.

As the underlying filtering-precision of legal regimes would be difficult to observe directly, it is important to operationalize our theoretical predictions. First, our assumption that filtering-precision varies across legal regimes should be reflected in a cross-country variation in the filtering-precision of contracts that firms actually use to provide protection to their investors.

Second, the degree of contractual protection that public investors receive should be positively correlated with the filtering-precision of the contracts with which this protection is provided. That is, if we observe a legal regime in which public firms provide high levels of investor protection through private contracts, we would expect this protection to be provided through precisely filtering contracts. Further, while private firms should provide more protection to investors than public firms, the difference between the amount of investor protection provided by private firms and public firms should be smaller in legal regimes where precisely filtering contracts are employed.

Finally, we predict that if in a legal regime—denote it by X—public firms do not tend to provide protection to investors while private firms do provide protection, we would not expect to find a different legal regime—say legal regime Y—in which public firms provide protection

through contracts that are less precisely filtering than the contracts used in legal regime X. Indeed, such a finding would serve to contradict our theory: we would conclude that legal regime X is more precisely filtering than legal regime Y, and yet we could not explain why public firms in legal regime X chose not to use the same imprecisely filtering contracts used by public firms in legal regime Y.

It should be noted that, in order to streamline the analysis, our model assumes a perfect Coasian environment in which the law does not provide any investor protection by default, and all such protection is voluntarily provided through contracts. Therefore, when testing our predictions, one should control for the actual default level of investor protection provided by the law in the various legal regimes.³⁴

3.5. Insider initiative

We have shown that private firms will always weakly prefer to employ the $\neg EX(\varphi)$ contract, and regardless of the filtering-precision of the legal regime in which the firm operates, these contracts allow the insider to obtain the first best outcome. This is so because private firms can renegotiate the imprecisely filtering investor protection contracts when the need arises, and can clear their strictures to achieve the same first best outcome that can be achieved with more precisely filtering contracts. We have used this observation to explain why under the low filtering-precision Mexican legal regime a large proportion of private firms provide investor protection, while public firms virtually do not, and to generate predictions regarding the cross-country use of investor protection enhancement contracts by firms. However, it remains to be explained why some private firms do not find it optimal to provide investor protection contracts as we observe in our sample of Mexican firms. Further, although private firms can enhance investor protection with strict, imprecisely filtering contracts and then renegotiate these contracts when necessary, there is a large variation in the ability of private firms to raise capital across different countries. Indeed, Rajan and Zingales (1998) and Desai, Gompers, and Lerner (2005) show that countries with better institutions have larger firms, greater rates of firm creation, and faster firm growth. It is thus important to understand the limits of the use of contractual enhancement of investor protection by private firms.

To this end, we introduce more structure into the model in the form of insider initiative. When the returns to the firm's actions are sensitive to the amount of effort that the insider

³⁴It should also be noted that we do not model the insider's choice of taking the firm public. Therefore, as the model stands, the insider would prefer to keep the firm private, raising capital from private investors. However, at the cost of increased complexity, it would be possible to allow for a 'going public' decision on the part of the insider by grafting onto our model any standard setting that incorporates a benefit for firms to go public, e.g., the advantage of a reduced risk premium demanded by investors. The sole benefit of this exercise would then be the direct implication that legal regimes with lower filtering-precision should have smaller public financial markets.

decides to exert, his incentives will be dampened by the availability of only imprecisely filtering contracts, even when those can be renegotiated. In the spirit of Aghion and Tirole (1997) and Burkart et al. (1998), this effect is due to a hold-up problem, whereby the investor extracts some of the rents due to the insider's ex ante initiative during the bargaining over the surplus created by allowing the firm to take an efficient action when an imprecisely filtering contract already in effect bans it. Therefore, in a low filtering-precision legal regime, a private firm would optimally provide investor protection when its returns are less sensitive to the insider's initiative, while another private firm, whose insider initiative is important enough, might find it optimal to withhold investor protection.

Formally, to model a private firm insider's initiative, we assume that at Stage 2 of the insider's decision tree there are a number of potential projects associated with the action \mathbf{A} , which, initially, are indistinguishable to the insider, and from which the insider would only be able to select one. For example, action \mathbf{A} can be thought of as a strategic decision to acquire another firm, and each project then represents a different target.

We assume that with probability $(1 - p)$ none of the projects are efficient, while with probability p , one and only one of the projects is efficient, and, when selected, yields an additional benefit B . To rule out the case where the insider would optimally choose to perform a project at random, we assume that there is always a project that yields a payoff of $-\infty$.

We introduce an additional stage, 2.5, in which the insider can exert a nonverifiable effort $e \in [0, 1]$ to obtain information about each project. We assume that when exerting effort e , the insider learns the value of all projects with probability e , while with probability $(1 - e)$ the insider learns nothing. The cost of exerting effort e is $\frac{1}{2}ke^2$, where k parameterizes the cost of insider initiative. Stages 3 and 4 are similar to those in the model presented in the previous section.

At this point, it is useful to describe in greater detail the process of renegotiation between the insider and the investor before an efficient action is allowed to be implemented, in order to endogenize and compare the shares of the surplus captured by the insider when using different types of investor protection contracts.

Consider first the case of a private firm where no investor protection has been granted (\mathbb{A}), and where the more interesting Jensen-Meckling condition $\gamma > c/s$ holds. With probability pe the insider knows the value of all projects and observes that one of them is efficient. Since the insider controls the firm, he decides whether to implement the efficient project by taking the action \mathbf{A} . The insider can decide to be content with the extant sharing contract, take action \mathbf{A} , and get $(1 - \gamma)B$ out of its returns. On the other hand, the insider can decide to use his discretion to threaten the investor with not taking action \mathbf{A} at all. We assume in that eventuality that the insider has enough bargaining power to extract $(1 - \mu)B$ of the return to action \mathbf{A} , leaving

μB to the investor, with $\mu \in [0, 1]$.³⁵ Therefore, the insider decides to renegotiate the extant sharing contract when $(1 - \mu) > (1 - \gamma)$. Hence, the insider share of the return to the efficient action **A** is $[1 - \min(\gamma, \mu)]B$, leaving $\min(\gamma, \mu)B$ to the investor. In addition, with probability $(1 - e) + e(1 - p)$ the insider will not undertake any additional project at Stage 3, either because he cannot distinguish between them or because he observes that they are all inefficient.

At Stage 0, anticipating the expected Stage 4 payoff, the insider will solve³⁶

$$\begin{aligned} & \text{Max}_{\gamma} \{g(I) - I + peB - \frac{1}{2}ke^2\} \\ \text{s.t. } & I = \gamma(1 - s)g(I) + \min(\gamma, \mu)peB + \mu cg(I) \\ & e = \min\left[\frac{[1 - \min(\gamma, \mu)]pB}{k}, 1\right]. \end{aligned} \tag{7}$$

Consider now the case of a private firm in a legal regime with filtering-precision φ , where investor protection has been granted through the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract. Since the $\neg\mathbb{E}\mathbb{X}(\varphi)$ bans it, the insider will never be able to expropriate. As in the case of the **A** contract, with probability $(1 - e) + e(1 - p)$ the insider will not undertake any additional project at Stage 3. With probability pe the insider observes that one of the projects is efficient. Due to the contract provided to investors, with probability φ the contract will allow the project to pass through (recall that all projects involve taking the action **A**,) and so, similar to the case described above, the project will be taken, with $[1 - \min(\gamma, \mu)]B$ going to the insider and $\min(\gamma, \mu)B$ to the investor. On the other hand, with probability $(1 - \varphi)$ the contract bans the project, so that the insider must first renegotiate with the investor in order to clear the ban.³⁷ Assuming the same bargaining powers as in the previous case, once renegotiation occurs and the project implemented, the insider's agreement share will then be $(1 - \mu)B$ and the investor's will be μB .

Note that the investor gets at least as large a share of the return of the efficient project (when $\gamma \geq \mu$), and sometimes a strictly larger share of those returns (when $\gamma < \mu$) under the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract relative to the share that he gets under the **A** contract.

Anticipating the expected Stage 4 payoff, at Stage 0 the insider will solve³⁸

$$\begin{aligned} & \text{Max}_{\gamma} \{g(I) - I + peB - \frac{1}{2}ke^2\} \\ \text{s.t. } & I = \gamma g(I) + [\varphi \min(\gamma, \mu) + (1 - \varphi)\mu]peB \\ & e = \min\left[\frac{[1 - \mu + \varphi(\mu - \min(\gamma, \mu))]pB}{k}, 1\right] \end{aligned} \tag{8}$$

³⁵If, for example, the bargaining protocol is a "take it or leave it" offer, and preferences are self-regarding, then $\mu = 0$.

³⁶To see this, note that as in the original model, the insider will never actually expropriate, instead renegotiating with the investor over the surplus $cg(I)$ created by avoiding expropriation. The insider will therefore obtain a Stage 4 expected payoff of $[(s - c) + (1 - \gamma)(1 - s)]g(I) + [1 - \min(\gamma, \mu)]peB + (1 - \mu)cg(I) - \frac{1}{2}ke^2$. Anticipating this expected payoff, the insider will exert effort at Stage 2.5 satisfying $e = \min\left[\frac{[1 - \min(\gamma, \mu)]pB}{k}, 1\right]$.

³⁷For a model where courts subvert contracts due to the personal biases of judges, see Gennaioli (2005).

³⁸To see this, note that the insider's expected payoff at Stage 4 is $(1 - \gamma)g(I) + [\varphi(1 - \min(\gamma, \mu)) + (1 - \varphi)(1 - \mu)]peB - \frac{1}{2}ke^2$. The insider will thus exert effort satisfying $e = \min\left[\frac{[1 - \mu + \varphi(\mu - \min(\gamma, \mu))]pB}{k}, 1\right]$.

Since when $\gamma < \mu$, the insider extracts less of the expected returns of the efficient project under the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract than under the \mathbb{A} contract, the insider would exert less effort under the former. In addition, when $\gamma \geq \mu$ the insider's share of the surplus is equal to μ both under the $\neg\mathbb{E}\mathbb{X}(\varphi)$ and under the \mathbb{A} contracts, and so he would exert the same level of effort in both cases. It follows that with respect to effort, holding γ constant, the \mathbb{A} contract weakly dominates the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract.³⁹ On the other hand, as in the analysis in the original model in Section 3.2, the \mathbb{A} contract involves underinvestment when s is large enough. The insider will therefore trade off the underinvestment and the optimal effort effects when deciding which contract to offer to the investor. Indeed we have that

Proposition 7 *For each set of parameters of the model, there exists a $\bar{\varphi} \geq 0$ such that for $\varphi < \bar{\varphi}$ the \mathbb{A} contract dominates the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract, while for $\varphi \geq \bar{\varphi}$ the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract dominates the \mathbb{A} contract. Also, for all $k > 0$, there exists an \bar{s} and $\bar{\mu}$ such that for all $s < \bar{s}$ and $\mu > \bar{\mu}$ we have that $\bar{\varphi} > 0$.*

Proof See Appendix C.

Thus, once insider initiative is considered, the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract will no longer dominate the \mathbb{A} contract. Further, unlike in the baseline model, private firms are no longer indifferent to the filtering-precision of the legal regime in which they operate, as precisely filtering contracts are required to curb expropriation without inhibiting insider initiative. Indeed, it is instructive to examine the disadvantage that firms experience in raising capital throughout their life cycle when operating in legal regimes with low filtering-precision. The model suggests that it is the young firms and the mature firms that are particularly constrained in raising capital when operating in such regimes. Young firms are constrained because it is in those firms that managerial initiative is likely to be of particular importance, and since the only way to increase their pledgeable income is to provide investors with imprecisely filtering contracts, managerial initiative will be dampened. Mature firms are also particularly affected in low filtering-precision legal regimes, because the option of selling equity in the public markets, for example, for large additional capital expenditures or for diversification purposes, is costly to them. This is due to their inability to renegotiate imprecisely filtering contracts with large numbers of investors.

On the other hand, the model suggests that during the middle phase of their life cycle, when the importance of managerial initiative decreases, firms are not as disadvantaged when operating in low filtering-precision legal regimes. Indeed, by renegotiating imprecisely filtering contracts

³⁹It should be noted that, as in the analysis without insider effort, the \mathbb{A} contract involves a smaller pledgeable income as compared to the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract, so that, holding effort constant, the insider would be able to raise any given amount of investment I by selling a smaller fraction γ to the investor under the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract as compared to the \mathbb{A} contract. Therefore, since insider effort is decreasing in the share γ owned by the investor, it is not the case that effort exertion will always be higher under the \mathbb{A} contract as compared to the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract.

they do not suffer the loss of forgone opportunities, and since managerial initiative is of lower importance, its dampening is not as costly.

Taken together, the analysis has implications for the growth rate of firms in different legal regimes along their life cycle, in line with Rajan and Zingales (1998). We predict that the growth rates of young firms and mature firms will be lower in countries whose legal regimes have lower filtering-precision. On the other hand, growth rates of middle-aged firms, or firms where managerial initiative is of lesser importance, will not vary as much across different legal regimes. While clearly not a test of this prediction, Rajan and Zingales's finding that institutional development disproportionately affects the prospects of young firms by affecting the rate at which new firms are created is very much consistent with the result that young firms particularly benefit from the existence of precisely filtering contracts.

4. Conclusion

It has been demonstrated that the better is investor protection that is provided by law, the more developed are the financial markets and the faster is economic growth. However, if there exists some efficient target level of investor protection, then, from a Coasian perspective, suppliers and users of capital should achieve that level voluntarily by opting out from the law, signing contracts that fill in the gap between the default and the efficient levels of protection. In doing so, total levels of investor protection should become equalized across different legal systems, rendering immaterial the level of investor protection offered by law, contrary to the findings. A resolution of this Coasian puzzle that is offered in the literature suggests that legal systems that provide poor investor protection by law are also those that are incapable of enforcing contracts that enhance investor protection.

In this paper, we take this argument to the testing ground of the Mexican legal system, where the law provides poor investor protection. Looking at a sample of Mexican firms, we observe three regularities. First, when privately held, over half of the firms in the sample significantly enhance the protection offered to their investors through contracts. This finding indicates an expectation that such contracts would be enforced when necessary. Our second finding, which seems at odds with the first, is that when going public, virtually no firm provides significant investor protection to its public investors beyond the default level provided by law. Our third observation is that the contingencies on which Mexican firms contract are straightforward, especially when compared to U.S. investor protection contract provisions which seem to be far more complex.

In order to explain the Coasian puzzle in a way that is consistent with the Mexican experience and, more importantly, to explain firm contracting behavior across different legal regimes, we

present a model that endogenizes the degree of investor protection that firms provide. At the base of the model is our assumption that legal systems differ in their ability to enforce precisely filtering contracts that provide protection in those cases where expropriation can occur and only in those cases. When only imprecisely filtering contracts can be enforced, a public firm faces a tradeoff in choosing the level of investor protection. On the one hand, increasing investor protection generates two benefits: it increases the firm's pledgeable income, preventing possible ex ante costs of underinvestment, and it also reduces the extent of expropriation that, in and of itself, is assumed to be inefficient. On the other hand, increasing investor protection also generates contract overinclusion costs by preventing the firm, at times, from taking efficient actions.

A private firm would face a similar tradeoff, except that due to its small number of investors, contract renegotiation becomes possible. Therefore, in those eventualities when investors' imprecisely filtering contractual rights prohibit the private firm from taking an efficient action, the parties can circumnavigate the problem by renegotiating the blocking clauses to allow taking of the efficient action. Thus, the overinclusion costs associated with provision of imprecisely filtering investor protection is greatly mitigated in a private firm relative to a public firm, and therefore, in a legal regime that can enforce only imprecisely filtering contracts, private firms will tend to provide imprecisely filtering investor protection more often than public firms.

Since the tradeoffs facing private and public firms when providing investor protection vary with the filtering-precision of the legal regime in which they operate, our model can be used to explain cross-country variation in investor protection provisions. Our model implies that due to their inability to renegotiate contracts, public firms are disadvantaged by being constrained to using imprecisely filtering contracts, and hence the level of investor protection that they provide will be sensitive to the filtering-precision of the legal regime in which they operate. As filtering-precision decreases, the level of contractual protection provided by public firms will decrease as well. In contrast, since private firms are able to renegotiate their contracts, they find imprecisely filtering contracts to be good substitutes for precisely filtering contracts. Our model then implies that private firms will tend to provide high levels of protection to their investors regardless of the filtering-precision of the legal regime in which they operate. However, as the filtering-precision of the legal regime in which the firm operates increases, they will use more precisely filtering contracts.

To explain variation in investor protection provision in private firms across legal regimes, we introduce managerial effort to the model. Our main result is that while the ability to renegotiate imprecisely filtering contracts solves the ex post inefficiency, whereby some efficient actions are not taken, it does not solve the ex ante inefficiency of managerial effort reduction. Thus, private

firms in low filtering-precision legal regimes will face a tradeoff in their choice of investor protection provisions: using imprecisely filtering contracts increases pledgeable income but decreases managerial initiative.

Taking these effects into account, our model suggests that, when raising capital, operating in legal regimes with low filtering-precision is particularly detrimental for young and mature firms. Middle-aged firms, where the importance of managerial initiative has decreased and which have yet to require access to public capital markets, will not be as adversely affected.

On a more general level, our model suggests that a possible driving force behind the empirical findings relating the level of investor protection provided by law to economic variables, such as growth and financial market development, is the filtering-precision of the contracts that are enforceable in each legal system.

Finally, in future research, it may be useful to endogenize the reason for the difference in the enforceable contract set across legal regimes. One possibility would point to the importance of corruption in the legal system as a prime determinant of its filtering-precision. According to this, high filtering-precision contracts would be less “corruption proof” than low filtering-precision contracts. For example, bribing a judge not to enforce a straightforward contract that bans “all sales of assets” would be more difficult than bribing a judge not to enforce an interpretation-prone contract that “prevents asset sales at terms worse than what could be obtained in an arm’s length transaction.” Thus, as corruption in the legal system increases, its ability to enforce precisely filtering contracts deteriorates.

Table 1. Summary statistics. Number of individuals and number of families owning shares in each firm are calculated from ownership structures provided in firms' private charters as defined in Section 2 of the paper. The share of each firm sold to the public at the time of the IPO is calculated from IPO filings at the Mexican stock exchange. Assets, Sales, and Net Income are in millions of dollars and are calculated from Worldscope and Datastream using data from the first year available after the IPO.

| | Mean | Median | Standard Deviation |
|---|---------|---------|--------------------|
| Number of individuals owning shares in firm | 4.3 | 3.5 | 3.27 |
| Number of families owning shares in firm | 3 | 2 | 2.72 |
| Share of firm sold to public in IPO | 24.5% | 22.2% | 8.7% |
| Assets | \$352.6 | \$113.8 | \$559.2 |
| Sales | \$221.0 | \$86.4 | \$297.2 |
| Net Income | \$16.9 | \$3.8 | \$52.3 |

Appendix A

Investor Protection Provided to Private Investors: Additional Examples

1. In November 1993, Bell Atlantic Latin America Holdings Inc. purchases 23.17% of Grupo Iusacell S.A. de C.V. It is issued a special class of shares — B shares. The charter states that any resolution taken in a shareholder meeting must be approved by the B class. In addition, the B class will appoint five out of the 17 members of the board. Any resolution taken by the board must be approved by at least one of these five members. Finally, the B class has the right to approve one of the three comptrollers of Iusacell.

2. Fondo de Optimizacion de Capitales S.A. de C.V. purchases 47.65% of Agro Industrial Exportadore S.A. de C.V. The requirement for a resolution in a shareholder meeting dealing with any of the following issues is raised from 50% to 76%:

- a) Sale, rent, or transfer of any business or asset, tangible or intangible, in any non-customary transaction for an amount greater than 5% of the firm's asset value
- b) Equity and long-term debt issuance
- c) Share repurchase
- d) Approval of the compensation of the board members and comptrollers
- e) Approval of financial statements
- f) Approval of dividend payment
- g) Appointment of firm auditors

In addition, any board resolution dealing with any of the following issues must be approved by board members representing 76% of the shares:

- a) Appointment, removal, and compensation of officers
- b) Approval of annual budgets and business plans, as well as their modifications
- c) Approval, modification, or renewal of any contract in which any shareholder is directly or indirectly involved
- d) Approval of accounting procedures
- e) Appointment of external auditors and their compensation
- f) Sale, rent, or transfer of any business, property, or asset, tangible or intangible, in any non-customary transaction for an amount greater than 10% of the firm's asset value

Appendix B

Reliance on Contracts in Dispute Resolution: Additional Examples

In this appendix we provide additional examples described by Mexican private equity investors and corporate lawyers in which the threat of the enforcement of investor protection contract provisions affected disputes between controlling shareholders and their investors.

1. A firm with a minority shareholder was provided with veto powers over the signing of long-term supply and distribution contracts over a certain value. Later, the firm's controlling shareholder attempted to sign a contract with a supplier at terms that the minority shareholder thought were unfair. (Indeed, the minority shareholder preferred that the deal be signed with a different supplier.) The minority shareholder vetoed the signing of the contract, thus preventing the firm from signing the contract. Negotiations between the firm and the investor then took place at the end of which the minority investor was bought out at a mutually agreed upon price.

2. A private equity fund co-invested in a real estate property with a developer. The private equity fund was provided contractual rights that specified a timetable with which the developer needed to comply, including completion dates for blueprints, the obtaining of government licenses and permits, and the securing of loans. In addition, the contract included a termination clause that guaranteed the investor the right to terminate the contract upon any violation occurring six months or more after the signing of the deal. In terminating the contract, the private equity fund could choose either to buy out the developer at 50% of the developer's investment or to force the developer to buy out the fund at 190% of the fund's investment.

When the developer fell behind schedule, failed to secure a loan, and signed a deal with a contractor at a price greater than that specified in the original budget, the private equity fund decided to exercise the termination clause. Rather than going to court, the parties began negotiations based on the contract provisions and agreed that the developer would buy out the fund at 135% of the fund's initial investment.

3. Utilizing its contractually provided veto powers, a private equity investor blocked a firm from borrowing additional funds, offering instead to invest additional capital in the firm in the form of equity. The family controlling the firm refused this additional equity capital since it would involve the dilution of their ownership. During negotiations, the fund offered to allow the firm to borrow capital in return for additional contractual rights, most important among them the right to hire and fire top executives. As of the time of writing, the parties remain in negotiations.

4. A private equity fund that invested alongside a developer in a real estate property was given a contract that provided veto powers over the sale of the property. At some point, the developer encountered financial difficulties and therefore wanted to sell the property. The private equity fund, however, wanted to sell the property only as part of a larger real estate portfolio that it owned, thinking that in doing so, it could receive a higher price. It therefore used its contractual clause to block the sale of the property.

5. A family controlled firm issued 20% of their firm's equity to a minority investor. At the time of the investment, majority requirements for shareholder resolutions involving various firm actions (such as the raising of capital and payment of dividends) were raised to 85%, thereby providing the minority investor with a blocking vote. At some point the controlling shareholders proposed to issue convertible debt to finance a project. Fearing the dilution of his voting rights to a level below 15% after the potential conversion of the convertible debt, the minority investor used the contractually provided rights to veto the financing.

6. In a firm with a controlling shareholder who planned to acquire another company to increase market share, the firm's minority shareholders invoked a veto clause to prevent the acquisition from taking place. In doing so, they claimed a prior antagonistic relationship with the target company's management. Since this management was scheduled to remain at the firm after the acquisition, the minority shareholders took the position that their interests would be harmed.

Appendix C

Proof of Proposition 1 To solve the maximization problem we write the Lagrangian

$$\mathcal{L} = g(I) - I + p\varphi B + \lambda[\gamma(g(I) + p\varphi B) - I].$$

Clearly, at the optimum we have that $I > 0$ and $1 \geq \gamma > 0$. Thus, taking partial derivatives with respect to I and γ we obtain the two first-order conditions

$$g'(I) - 1 + \lambda[\gamma g'(I) - 1] = 0$$

and

$$\lambda\gamma \geq 0, \text{ with equality if } \gamma < 1.$$

We begin by checking whether $\gamma = 1$ is a solution to the maximization problem. Plugging $\gamma = 1$ into the F.O.C. with respect to I , we obtain that the solution must satisfy $g'(I^*) - 1 = 1$. On the other hand, from the competitive financing constraint we have that $g(I^*) + p\varphi B = I^*$, which, by the properties of $g(\cdot)$, implies $g'(I^*) < 1$. Thus, $\gamma = 1$ cannot be a solution to the maximization problem.

The remaining solution has $\gamma < 1$, and thus $\lambda = 0$. Plugging this into the F.O.C. with respect to I , we see that at the optimum $g'(I) = 1$, or $I = I^{FB}$.

Proof of Proposition 2 With an \mathbb{A} contract, when $s = 1$ the insider will suffer from an underinvestment problem, as he will be able to raise only pB , which by assumption is less than I^{FB} . The result then stems immediately from the fact that the insider's pledgeable income $(1 - s)g(I) + pB$ is decreasing and continuous in s .

Proof of Proposition 3 Define the value functions and Lagrangians associated with the maximization problems (1) and (3) to be

$$\begin{aligned} V_1(p, B, \varphi) &\equiv \begin{aligned} &Max_{\gamma} \{g(I) - I + p\varphi B\} \\ &\text{s.t. } I = \gamma(g(I) + p\varphi B), \end{aligned} \\ \mathcal{L}_1 &= g(I) - I + p\varphi B + \lambda_1[\gamma(g(I) + p\varphi B) - I], \end{aligned}$$

and

$$\begin{aligned} V_2(p, B, c, s) &\equiv \begin{aligned} &Max_{\gamma \in (\frac{c}{s}, 1]} \{(1 - c)g(I) - I + pB\} \\ &\text{s.t. } I = \gamma[(1 - s)g(I) + pB], \end{aligned} \\ \mathcal{L}_2 &= (1 - c)g(I) - I + pB + \lambda_2[\gamma[(1 - s)g(I) + pB] - I], \end{aligned}$$

respectively.

By definition, the insider strictly prefers the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract to the \mathbb{A} contract if and only if $V_1(p, B, \varphi) - V_2(p, B, c, s) > 0$. By the Value Function Theorem, we have that $\frac{\partial V_1}{\partial \varphi} = pB + \lambda_1 \gamma pB = pB$, where, from the proof of Proposition 1, the last equality stems from the fact that $\lambda_1 = 0$. Thus, $\frac{\partial V_1}{\partial \varphi} > 0$. Since $\frac{\partial V_2}{\partial \varphi} = 0$, we have that $\frac{\partial(V_1 - V_2)}{\partial \varphi} > 0$. By continuity of $V_1 - V_2$, there exists a φ^* satisfying parts (i) and (ii) of the proposition.

In proving part (iii) of the proposition we assume for simplicity that φ^* is strictly between 0 and 1, and thus satisfies $V_1(p, B, \varphi^*) - V_2(p, B, c, s) = 0$. With this equation, defining φ^* implicitly as a function of s , we have by the Implicit Function Theorem that $\frac{\partial \varphi^*}{\partial s} = \frac{\partial V_2 / \partial s}{\partial V_1 / \partial \varphi}$. Since $\frac{\partial V_2}{\partial s} = -\lambda_2 \gamma s g(I) \leq 0$ (by the setup of the Lagrangian $\lambda_2 \geq 0$), and $\frac{\partial V_1}{\partial \varphi} > 0$, we have that $\frac{\partial \varphi^*}{\partial s} \leq 0$, as required. The proof of $\frac{\partial \varphi^*}{\partial c} \leq 0$ is similar.

Finally, from $V_1(p, B, \varphi^*) - V_2(p, B, c, s) = 0$, by the Implicit Function Theorem we also have that

$$\frac{\partial \varphi^*}{\partial B} = \frac{\frac{\partial V_2}{\partial B} - \frac{\partial V_1}{\partial B}}{\frac{\partial V_1}{\partial \varphi}}.$$

Taking the partial of \mathcal{L}_1 with respect to B , we have $\frac{\partial V_1}{\partial B} = p\varphi$ (recall that $\lambda_1 = 0$.) Taking the partial of \mathcal{L}_2 with respect to B we have $\frac{\partial V_2}{\partial B} = p + \lambda_2 \gamma p$. Since by the setup of the Lagrangian, $\lambda_2 \geq 0$, we thus have $\frac{\partial V_2}{\partial B} - \frac{\partial V_1}{\partial B} \geq 0$, and therefore, since $\frac{\partial V_1}{\partial \varphi} > 0$, we have $\frac{\partial \varphi^*}{\partial B} \geq 0$, as required. The proof of $\frac{\partial \varphi^*}{\partial p} \geq 0$ is similar.

Proof of Proposition 4 The proof that investment is at the first best level is identical to that of Proposition 1. Additionally, since in the case of a private firm the insider does not expropriate and takes the action \mathbf{A} when it is efficient, the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract achieves the first best outcome.

Proof of Proposition 5 With an \mathbb{A} contract, when $c = 0$ and $s = 1$ the insider will suffer from an underinvestment problem, as he will be able to raise only pB , which by assumption is less than I^{FB} . The result then stems immediately from the fact that the insider's pledgeable income $(1 - s)g(I) + pB + \mu c g(I)$ is decreasing in s , increasing in c , and continuous in both of these variables.

Proof of Proposition 6 This proposition is a direct result of Propositions 4 and 5.

Proof of Proposition 7 The proof proceeds along the lines of that of Proposition 3. Defining the Lagrangians of maximization problems (7) and (8) by $V_1(\varphi)$ and $V_2(\varphi)$, respectively, it is easy to see that $\frac{\partial V_1}{\partial \varphi} = 0$ and $\frac{\partial V_2}{\partial \varphi} > 0$. Thus, since the insider strictly prefers the $\neg\mathbb{E}\mathbb{X}(\varphi)$ contract to the \mathbb{A} contract if and only if $V_2(\varphi) - V_1(\varphi) > 0$, by the continuity of $V_2 - V_1$ there exists a $\bar{\varphi}$ as described in the proposition.

To prove the second part of the theorem, consider the insider's maximization problem under the $\neg\mathbb{E}\mathbb{X}(\varphi)$ and \mathbb{A} contracts at a legal regime with filtering-precision $\varphi = 0$. At the points $s = 0$ and $\mu = 1$, the insider strictly prefers the \mathbb{A} contract to the $\neg\mathbb{E}\mathbb{X}(0)$ contract, for two reasons. First, with $s = 0$, there is clearly no underinvestment when using the \mathbb{A} contract. Second, with $\mu = 1$, under the $\neg\mathbb{E}\mathbb{X}(0)$ contract the insider's effort level will be 0, while that under the \mathbb{A} contract will be $\min[\frac{(1-\gamma)pB}{k}, 1]$. Since the first best level of effort is $\min[\frac{pB}{k}, 1]$ there will be underprovision of effort under the $\neg\mathbb{E}\mathbb{X}(0)$ contract as compared to the \mathbb{A} contract. Now for any set of parameters where the \mathbb{A} contract is strictly preferred to the $\neg\mathbb{E}\mathbb{X}(0)$ contract, we have that $\bar{\varphi} > 0$, since $V_2 - V_1$ is increasing in φ . The result then follows immediately from the continuity of $V_2 - V_1$ with respect to s and μ .

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