

# Securities Laws, Disclosure, and National Capital Markets in the Age of Financial Globalization

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## ABSTRACT

As barriers to international investment fall and technology improves, the cost advantages for a firm's securities to trade publicly in the country in which that firm is located and for that country to have a market for publicly traded securities distinct from the capital markets of other countries will progressively disappear. Securities laws remain an important determinant of whether and where securities are issued, how they are valued, who owns them, and where they trade. I show that there is a demand from entrepreneurs for mechanisms that allow them to commit to credible disclosure because disclosure helps reduce agency costs. Under some circumstances, mandatory disclosure through securities laws can help satisfy that demand, but only provided investors or the state can act on the information disclosed and the laws cannot be weakened *ex post* too much through lobbying by corporate insiders. With financial globalization, national disclosure laws can have wide-ranging effects on a country's welfare, on firms and on investor portfolios, including the extent to which share holdings reveal a home bias. In equilibrium, if firms can choose the securities laws they are subject to when they go public, some firms will choose stronger securities laws than those of the country in which they are located and some firms will do the opposite.

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## 1. *Introduction*

If capital can move freely between countries to take advantage of the best investment opportunities, are national capital markets still relevant? If they are still relevant, why are they? Is it still in a country's national interest to have strong capital markets? Does it even make sense to talk about the competition between national capital markets<sup>1</sup> in an age of globalization? I attempt to make progress towards answering these questions in this paper.

A country's capital markets are the markets in which firms and government institutions raise capital publicly and where securities representing claims to capital are traded. Capital markets perform key functions of the financial system.<sup>2</sup> They allow investors to pool resources to finance firms and manage risk through diversification and hedging. They enable price discovery. However, capital markets do not have a monopoly on performing these functions. Firms can raise capital from financial intermediaries as well, so that capital markets compete with financial intermediaries. The relative importance of intermediated sources of capital versus public sources of capital for firms can change over time as technologies and regulations evolve. As capital markets perform their functions better, they displace intermediated finance and firms can raise capital more cheaply. A country's capital markets perform better than the capital markets of other countries if firms can finance themselves at lower cost on that country's markets than elsewhere.

In a world where countries are closed to international capital flows, firms can only raise capital domestically. In such a world, each country would be concerned about the performance of its national capital markets because the cost of capital for firms raising funds publicly would be determined on these markets. However, if capital can flow freely among countries, firms raise capital where it is cheapest. In a fully integrated world, we would expect national capital markets to be irrelevant. If a country's capital markets functioned poorly in such a world, firms would simply ignore these capital markets as sources of capital. The welfare consequences from having poorly functioning national capital markets would be extremely limited because firms and investors could bypass these markets freely. There would be no national interest at stake for a country in having well-functioning capital markets.

Technological changes over the last two centuries have dramatically altered the importance of location for capital markets, so that there is no operational reason to have national capital markets. Investors anywhere in the world virtually have access to the same price information at the same time. The location of the trader is irrelevant for trading on electronic exchanges.

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<sup>1</sup> Much attention has been paid recently to the competitiveness of U.S. capital markets. See, for example, the Committee on Capital Market Regulation [2006], Zingales [2007], and Doidge, Karolyi, and Stulz [2008a].

<sup>2</sup> See Merton [1990] for an analysis of the functions of the financial system.

The location of the exchange itself is irrelevant. There is no operational reason for the computer systems that make possible the trading of American stocks to be located in the United States. Economies of scale in trading imply that, in a frictionless fully integrated world, the trading of securities would not be organized by countries.

The fact that portfolios of investors are still heavily biased towards securities issued and traded in their own country, a phenomenon described as the home bias, shows that, despite the free flow of capital, we are far from a fully integrated world in which countries are irrelevant for the issuance and trading of securities.<sup>3</sup> A major reason why countries are not irrelevant is that they have different laws and enforce them differently. The laws that apply uniquely to publicly traded securities are securities laws. By securities laws, I mean broadly the laws and regulations that affect the trading and issuance of securities in a country. La Porta, Lopez-de-Silanes, and Shleifer [2006] show that these laws differ substantially across countries and that laws that mandate disclosure are strongly associated with the development of stock markets.

Otherwise identical securities subject to different securities laws are different securities. Securities laws affect capital markets in a country in at least two different ways: by imposing obligations on firms that issue securities publicly (issuer rules) and by having rules that apply to the trading of securities (trading rules) (see Siems [2008]). An example of issuer rules is the requirement for firms in the United States to make periodic disclosures. Restrictions on trading by insiders in the United States are examples of trading rules. I investigate the impact of both issuer and trading rules in a world of financial globalization and show how they can affect where firms' securities are traded, the extent to which firms access public markets, firm valuation, the cost of equity capital, and investor portfolios.

The issuer rules in the United States are mainly mandatory disclosure rules. Consequently, I restrict my investigation of issuer rules to mandatory disclosure rules. Much of the literature on mandatory disclosure evaluates whether firms disclose suboptimally because benefits from disclosure at the firm level are lower than benefits for society as a whole (see Leuz and Wysocki [2008] for a review). For instance, Zingales [2004] points out that "General Motor disclosure helps investors evaluate Ford, but GM will never internalize this benefit." Such a view assumes that it is clear that the positive externalities of mandatory disclosure outweigh the negative ones, a presumption that Romano [2001] and others have questioned. My approach to mandatory disclosure sets aside the issue of externalities and shows that securities laws enable private parties to reduce agency costs in a way that they could not otherwise.

To examine the impact of issuer rules on the cost of external finance in a world of financial globalization, I use a simple model of an entrepreneur

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<sup>3</sup> See Kho, Stulz, and Warnock [2009] for evidence that the home bias is still strong.

selling shares in an initial public offering (IPO). When the firm is public, the entrepreneur benefits from consuming private benefits at the expense of outside shareholders. These private benefits can range from shirking to investing in pet projects. At the time of the IPO, nobody knows whether production will be optimal later, in the sense that it will have a positive net present value (NPV) when assessed by outside shareholders. If it turns out that production is not optimal, the outside shareholders would want the firm to be liquidated and the proceeds from liquidation distributed as a dividend. Because the entrepreneur consumes private benefits only from the firm's output, she has incentives to have the firm produce even when production is not optimal. In my simple model, producing when liquidation is optimal is an extreme case of overinvestment. Since the entrepreneur pays for the costs of overinvestment *ex ante* through a lower share price at the IPO, the entrepreneur has incentives to find ways to reduce these costs. Disclosure of information relevant to evaluate whether production is optimal could make overinvestment less likely as long as outside shareholders can act on the information disclosed. Therefore, there is a demand from the entrepreneur for mechanisms that allow her to commit to credible disclosure of information.

In the model, a disclosure commitment is optimal for the entrepreneur *ex ante* but not *ex post* if the cost to renege on the commitment is low. If the entrepreneur cannot resolve this time-inconsistency problem, she receives less for the shares she sells than otherwise. I discuss a variety of mechanisms that the entrepreneur can use to make her commitment to disclosure time consistent. Strong securities laws can help resolve this problem by mandating disclosure and therefore enable the entrepreneur to obtain greater IPO proceeds. However, the fact that securities laws help firms to credibly commit to disclosures when they could not do so on their own as efficiently does not mean that securities laws necessarily improve economic welfare because the deadweight costs of these laws could exceed the value of their benefits. Further, while earlier authors, especially Rock [2002], have discussed the fact that securities laws help firms commit to disclosure, I show that the usefulness of securities laws depends heavily on the extent to which outside shareholders or the state can act on the information disclosed to force the firm to pursue a course of action that is valuable to outside shareholders. I demonstrate that firm values, ownership, and cost of external finance differ across countries because securities laws affect production decisions.<sup>4</sup>

In a world with free capital flows, differences in securities laws across countries can have a large impact, but these differences are mitigated when firms can choose to subject themselves to the securities laws of countries other than their own. In some countries, firms can issue securities abroad

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<sup>4</sup> Shleifer and Wolfenzon [2002] and Stulz [2005] derive implications for firm value and ownership when laws result in different rates of consumption of private benefits out of firm cash flows. My results in this paper do not rely on differences in the rate of consumption of private benefits.

and, in some cases, even opt out of the securities laws of their country. The resulting equilibrium of where a firm issues securities and where its common stock trades depends on the discretion firms have and the costs they bear to subject themselves to the securities laws of a different country from the one in which they are located.

If securities laws can be ranked by their strength, firms in countries with weak securities laws can benefit from choosing to subject themselves to stronger securities laws.<sup>5</sup> In the absence of cross-border trading and listing costs, new firms would list only in the country with the optimal securities laws as long as trading costs are low in that country and investors do not exhibit a preference for shares that trade locally. However, with crossborder trading costs, shares are likely to trade in the home country of firms, especially when investors have a preference for shares issued by firms of their country. I show that if listing on a second exchange has costs and firms are necessarily subject to the securities laws of their country of incorporation, only the firms that suffer the most from their inability to commit will be willing to cross-list and they will choose to have a second listing in a country with stronger securities laws. These conclusions assume that securities laws from one country are equally enforced on domestic firms as they are on foreign firms; if this assumption is not correct, the benefits to firms from adopting another country's securities laws are lower.<sup>6</sup>

When investors evaluate investments in common stocks, they consider the net expected return of stocks. Two stocks with the same gross expected return can have very different net expected returns after expected trading costs and information acquisition costs are taken into account. Securities laws can affect the cost of trading for investors, their information acquisition costs, the precision of their estimates of the distribution of returns, and the stocks they know. I examine the impact of securities laws on the portfolio choices of investors. To the extent that securities laws affect investors differentially, they can lead to differences in portfolios and in particular to a home bias. Further, such differences can affect the expected return of securities.

If investors had no preference for securities of their home country and a country's laws left firms going public free to choose securities laws they are subject to, as proposed by the legal scholars who favor issuer choice,<sup>7</sup> firms would have an IPO in the country that has securities laws that entrepreneurs prefer. If entrepreneurs want to maximize proceeds at the IPO, they would choose securities laws that help them commit to maximizing the value of

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<sup>5</sup> See Coffee [1999] and Stulz [1999] for developments of the idea that foreign firms can rent institutions, including securities laws, from other countries.

<sup>6</sup> Note that if securities laws cannot be ranked using a single index but instead are multidimensional, the securities laws of one country might be optimal for firms of a certain type from other countries, while securities laws from another country might be optimal for other types of firms.

<sup>7</sup> See, e.g., Romano [2001].

the shares for minority shareholders. In equilibrium, with issuer choice, all trading could still migrate to one exchange if cross-border trading costs disappear. Firms on that exchange would differ in the securities laws they are subject to.

Though there can be a case to allow securities law choice for new firms, there is no convincing case to allow existing firms to escape strong securities laws without overwhelming support by shareholders because such an action could benefit insiders at the expense of minority shareholders. It is valuable for firms to be trapped in the securities laws they choose, as argued by Rock [2002], and there is a cost to minority shareholders of making it easier for firms to escape the securities laws they committed to. After the IPO, insiders may prefer securities laws that put few constraints on them. They might therefore want to find ways to be subjected to weaker securities laws since doing so would benefit them at the expense of minority investors. In a political economy context, my analysis predicts that entrepreneurs want strong securities laws and investors want to prevent laws from being diluted. In contrast, at least some incumbent insiders want to dilute securities laws. Conflicting objectives among incumbent insiders, minority shareholders, and new entrants have been discussed in other contexts in the finance literature (see, e.g., Rajan and Zingales [2003]).<sup>8</sup> It is therefore easy to understand why insiders of established firms would lobby to relax securities laws, but all this relaxation might achieve is to redistribute wealth from minority shareholders to insiders at the expense of economic growth. For securities laws to perform their role as a commitment device, it is necessary that they have sufficient support and that the likelihood that they will be watered down substantially through lobbying by incumbents is low. To the extent that securities laws increase the value of firms, they have to be designed to have enough support so that the disclosure commitment they represent is strong. More discretion in the choice of securities laws for existing firms may well make an equilibrium with strong securities laws unsustainable because the constituencies supporting each law would be too weak.

The paper proceeds as follows. In section 2, I explore the implications of technological progress and financial globalization for the role of national capital markets. In section 3, I develop a model that enables me to assess the role of the issuer rules of securities laws across countries in section 4. In section 5, I investigate the impact of securities laws on the portfolio choices of investors across countries and hence on the required expected return of investors on securities. In section 6, I consider more broadly the advantages and disadvantages of allowing more freedom for firms to choose the laws and regulations that apply to the securities they issue and attempt

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<sup>8</sup> There is a growing literature that emphasizes political determinants of investor protection. This literature, among other contributions, shows that incumbent corporate insiders can create coalitions with other political forces. For instance, Pagano and Volpin [2005] develop and test a model in which investor protection can be decreased because of a political alliance between workers and incumbent managers against investors.

to forecast how the role of national capital markets will evolve. I conclude in section 7.

## *2. National Markets, Financial Globalization, and Transaction Costs*

At the end of World War II, the financial markets of most countries were completely segmented. In most countries, resident investors could not trade securities with foreign investors and firms could not raise capital abroad. If a country's capital market is segmented from the rest of the world, the cost of capital of its firms is determined within the country. Suppose that capital markets are perfect except for insurmountable barriers to international capital flows and that investors optimize the tradeoff between the expected return and the variance of their portfolio. In this case, the capital asset pricing model (CAPM) holds within a country. With the CAPM, the expected return on a security is equal to the risk-free rate plus the product of the security's beta coefficient and the risk premium on the market portfolio. With complete capital market segmentation, two securities that give the right to identical streams of dividends are priced differently across countries because the market portfolio, the risk-free rate, the market risk premium, and the beta coefficient of the securities all can differ across countries.

Since the end of World War II, barriers to international investment have progressively been removed. These barriers have mostly disappeared for trade in financial assets among developed countries and for a number of emerging countries. They still exist, however, in varying degrees, for a large number of emerging countries. Keeping the assumptions that capital markets are perfect, but now assuming that there are no barriers to international investment, the CAPM holds internationally.<sup>9</sup> In this case, two securities that give the right to identical streams of dividends issued in different countries trade for the same price.

With perfect capital markets and free capital mobility, the expected return on a security does not depend on the country in which it trades or the country in which it is issued. There are no differences in the cost of capital across countries. The concept of a national capital market is meaningless. It would make no difference to a firm whether it issues a security in its own country or issues it in another country. Investors would require the same expected return irrespective of the country in which a security trades or is issued. If there is no risk of interruption of cross-border trade, where a security trades becomes a matter of indifference when capital markets are assumed to be perfect.

With perfect capital markets, there are no trading costs. Suppose now that the only departure from perfect markets is that it is costly to process trades.

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<sup>9</sup> See Karolyi and Stulz [2003] for the precise conditions that have to be met for the CAPM to hold internationally.

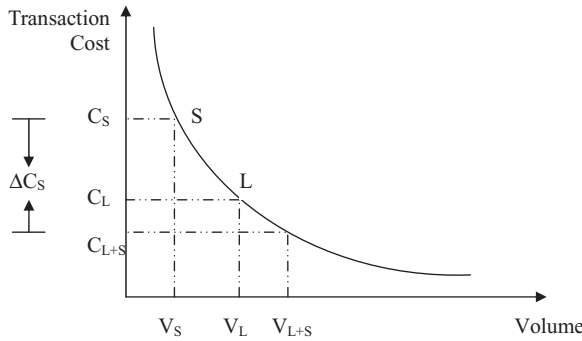


FIG. 1.—Countries S and L both face the same transaction technology, which has economies of scale as the volume of transactions increases. The lowest transaction cost is attained if there is only one market as long as there are no cross-border transaction costs. By trading in country L, the investors from country S save  $\Delta C_S$ . If they incur a cross-border trading cost greater than  $\Delta C_S$ , they do not move.

This trading cost can differ across trading venues, so that the selection of a trading venue for a trade is no longer a matter of indifference. Historically, when the costs of cross-border trades were high, it would have been reasonable to assume that local trades in local shares had a lower processing cost than if these trades were made abroad. However, cross-border costs are much lower now. To the extent that there are economies of scale in operating exchanges, there is a threshold level of cross-border costs such that, if cross-border costs are lower than this level, national exchanges stop making economic sense.

Consider the case where the trading technology and the cost of trading inputs are the same across countries. The demand for trading of a security as a function of the cost of trading is downward sloping. Malkmäki [1999] investigates cost and output statistics for 37 stock exchanges and demonstrates that there are substantial economies of scale in trading activities.<sup>10</sup> Empirical evidence shows that there are economies of scale to trading, so that the marginal cost is decreasing. Figure 1 plots the marginal cost function of the trading technology. I assume that there is perfect competition, so that the trading cost for investors is the marginal cost. I assume further that there are two countries with similar demand curves for trading, but the locations of the demand curves differ because one country is much larger than the other. Suppose first there are no cross-border trading costs. If investors from each country trade in their own country, the investors in the small country pay  $C_S$  per trade, while investors in the large country pay  $C_L$

<sup>10</sup> He distinguishes two functions of exchanges, one that is a trading function and the other that is a company-specific function. The company-specific function involves the collection of company-specific information and the management of listings. He only finds evidence of economies of scale in the trading function in his data set. For the larger exchanges, he also finds economies of scale for total cost.



and, consequently, pay much less per trade than the investors in the small country. If all investors trade in one country, the cost of trading is  $C_{L+S}$ , which is lower for all investors. In the absence of cross-border costs, the trading could be located anywhere—it does not have to be located in the large country or in the home country of the firm.

Suppose now that there is a cross-border trading cost. In this case, the outcome is either that all trading takes place in the large country or trading takes place in both countries. If the cross-border cost is small enough, investors in the small country will still trade at a lower total cost if they trade in the large country. If the cross-border cost exceeds the gains from the economies of scale, however, investors in the small country will be better off trading at home. In that case, securities would trade in both countries.

If the only departure from perfect markets is transaction costs, there would be no reason for a firm's securities to trade mostly in the country in which the firm is located. If a security were to trade in only one country, it would be much more likely that it would trade in the United States than in any other country because so much of world equity wealth is held in the United States. In this case, there would be no room for a home bias if investors optimize the tradeoff between the mean and variance of the return of their portfolios. However, suppose that, following Fama and French [2007], investors have a taste for some securities. Let's assume that their taste for securities is that they have a preference for securities issued by firms of their own country that trade in their own country. In this case, I would expect that a firm's securities would trade first in the firm's home country and, if they trade elsewhere, they might trade in the United States because U.S. investors would most likely be the second most important source of demand for these securities.

The determination of the trading location for a security becomes more complicated if liquidity is taken into account. The literature on multimarket trading makes predictions on the location of trading. In that literature, liquidity considerations can reinforce the economies of scale of trading, making it more likely that all the trading for a security will take place in one location, in the absence of frictions in the trading process. Pagano [1989] develops a model with adverse selection in which it is possible for trade to take place on multiple exchanges when trading costs differ across exchanges. His model does not account for economies of scale in trading and assumes a fixed cost to trade. In his model, whether all trading is concentrated on one exchange or not depends on the conjectures of the traders. However, the model is one where traders choose the exchange and are stuck with their choice. If instead traders can arbitrage across exchanges, the outcome is to have all trades take place on one exchange. Chowdhry and Nanda [1991] extend the models of Kyle [1985] and Admati and Pfleiderer [1988] to allow simultaneous trading on multiple markets. In their model, liquidity clusters on one market. Domowitz, Glen, and Madhavan [1998] extend the model of Glosten and Milgrom [1985] to multimarket trading. They emphasize the

importance of transparency between markets. In their model, incremental information costs make it cheaper for local investors to trade locally. As these incremental information costs disappear, trading may cluster on one market. Finally, Baruch, Karolyi, and Lemmon [2007] have no information acquisition costs. They assume, however, that the market makers on one exchange do not see the order flow on the other exchange, so that a market maker provides liquidity more cheaply if a security's return is highly correlated with the returns of other securities whose order flow he observes. This can lead to preferred trading locations for securities, but multiple exchanges remain in existence because market makers have a comparative advantage in providing liquidity for some securities on each exchange. However, with financial globalization and electronic trading, none of these arguments for trading on multiple exchanges imply a role for countries. Further, some of these arguments have much more force when communication between exchanges is slow. It no longer has to be as long as the exchanges or market makers release information quickly.

There is a large literature that examines whether investors closer to a firm geographically are better informed. Though much of that literature shows that geography gives investors an informational advantage,<sup>11</sup> there are exceptions. For instance, Grinblatt and Keloharju [2000] find that foreign investors perform better in Finland. With physical trading, the geographic informational advantage would make it advantageous for trading to be located close to firms because the traders who receive more and better information about these firms would be located there. Gehrig [1998] therefore predicts that informationally sensitive trading will take place where the information is produced and aggregated. Consequently, differences in access to information could offset economies of scale in trading.

In recent years, electronic trading has become increasingly dominant. Rather than having traders congregate in a pit or at a post, the traders meet over the internet. Computers are replacing trading floors. In a world of electronic trading in which markets are perfect except for trading costs, the location of the computers is almost irrelevant.<sup>12</sup> No investor would have reason to care whether the computers through which trading takes place are located in one country or in another. There are no cross-border costs for electrons. Consequently, cross-border trading costs caused by distance have disappeared. As cross-border trading costs approach zero, economies of scale of trading dominate the benefits that come from having local exchanges if the only market imperfection is the existence of transaction costs. Importantly, differences in information across investors have no impact on the location of trading when the exchange is electronic. The reason is that

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<sup>11</sup> See Choe, Kho, and Stulz [2005] for a partial review of the international literature on this issue.

<sup>12</sup> Some traders who use computerized robots for implementing trades gain from having computers co-located with the computers of exchanges on which they are trading. However, it does not matter where that co-location takes place. See Lucchetti [2006].

electronic trading completely separates the location of trading from the location of traders. With electronic trading, however, the costs of setting up a trading venue are low, which fosters competition and innovation. This low cost of entry can lead to the emergence of trading venues that cater to investors with specific demands that are not met or are met poorly by existing venues. Eventually, however, this fragmentation may fall as the most successful trading venues find better ways to accommodate different types of investors (see Blume [2007]). Again, however, there is no good reason for these trading venues to be country based.

With electronic trading, investors and market makers can be located anywhere as long as they have access to an internet connection. If market makers for stocks issued in a country are located in that country, they can make a market even if the exchange on which these stocks trade is located elsewhere. The fact that stocks might trade through a computer in a country that has a different currency is not a problem since the currency in which trading takes place does not have to be the currency of the country in which trading occurs. Time zones are not an issue because computers do not have to observe time zones.

We know from the field of microstructure that the organization of financial markets affects the cost of trading and the efficiency of markets. Consequently, countries might differ in how their markets are organized and trading might be cheaper in some countries than others. With free capital flows, the markets with lower transaction costs would obtain more listings. If trading costs were the only market imperfection and cross-border trading costs were trivial, there would be no reason for stocks to trade in a country when another country has better trading mechanisms. Eventually, all trading would take place on one electronic exchange.

With the analysis of this section, when cross-border costs are trivial, the benefits to a country from having the most efficient exchange are limited. All trading will take place on that exchange. However, firms from all countries will benefit equally from the efficiency of that exchange. As a result, firms in another country will not suffer from being in a country that does not have the most efficient exchange. From this perspective, there would be no national interest in having the most competitive capital markets.

A central prediction of the transaction costs model is that firms that list in another country besides the country they come from will list in the United States. The reason for this prediction is straightforward: There is more equity wealth in the United States than in any other country. Therefore, the United States is where the biggest amount of trading besides home-country trading would be if investors optimize the mean and variance tradeoff of their portfolio after taking into account a preference for home-country shares. Yet, many firms that list outside of their country do not list in the United States. Doidge, Karolyi, and Stulz [2008b] show that, in 2005, the U.S. exchanges had 30% of the world's cross-listings. Further, most firms do not have a cross-listing (see Doidge, Karolyi, and Stulz [2004]). It follows therefore that other considerations must affect the listing decision.

### 3. *Going Public and the Role of Securities Laws*

The previous section ignores the agency conflict between corporate insiders, such as managers and controlling shareholders, and the outside shareholders. I now extend my analysis to address this conflict. To simplify and focus the analysis, I analyze a firm's IPO. I assume that an entrepreneur has a project. The project is scalable, so that the entrepreneur may gain more from the project by raising outside equity. The agency problem is that, after the IPO, the entrepreneur or her successors running the firm maximize their own welfare and can take actions that reduce the value of the shares they sold to outside investors. This agency problem can be so extreme that a firm with a positive NPV project may not be able to go public. I argue that securities laws can help mitigate this problem and therefore reduce the cost of external finance for entrepreneurs.

#### 3.1 A MODEL OF THE IPO FIRM

To make these arguments clearer and more precise, I build on the models developed in Shleifer and Wolfenzon [2002] and Stulz [2005]. My model has three dates: 0, 1, and 2. I consider an entrepreneur with wealth  $W_0$  at date 0 who has an investment opportunity available at date 0. With this opportunity, an investment of capital  $K$  will return  $\mu K$ , where  $\mu$  is a random variable. The size of the investment opportunity has an upper bound of  $\Omega$ , so that  $K \leq \Omega$ . There is a risk-free asset that has a gross return of  $r$  from date 1 to date 2. (For simplicity, I assume that the gross return is zero from date 0 to date 1.) The entrepreneur can sell shares to outside shareholders. The outside shareholders and the entrepreneur are assumed to be risk neutral for simplicity.

At date 0, outside investors know  $E_0(\mu)$ , which is the expected value of  $\mu$  before the entrepreneur raises funds. The entrepreneur learns  $E_1(\mu)$  at date 1, after raising funds but before the investment becomes irreversible. After  $E_1(\mu)$  becomes known to the entrepreneur, she can either start production or not. If she does not start production, the firm liquidates and shareholders receive a liquidating dividend in proportion to their ownership. The outside shareholders receive no information about  $E_1(\mu)$ , except for the information that the entrepreneur decides to reveal to them. The distribution of  $E_1(\mu)$  is such that, with probability  $p$ ,  $\mu$  is log-normally distributed with mean  $\mu^+$  and with probability  $(1 - p)$  it is log-normally distributed with mean  $\mu^-$ . I assume that  $\mu^+ > r > \mu^-$ . Note that the assumption can be satisfied if  $E_0(\mu) < r$ . The standard deviation of  $(\mu - E_1(\mu))$  does not depend on the realization of  $E_1(\mu)$ . If the expected value of  $\mu$  turns out to be  $\mu^-$ , the project is expected to return less than the risk-free rate. Consequently, if markets were perfect, production would not take place if  $E_1(\mu) = \mu^-$ .

At date 2, the payoff from production is realized and the entrepreneur can consume private benefits at the rate  $f$ , which she chooses optimally. Consumption of private benefits has a cost for the entrepreneur that is a convex function of  $f$ ,  $0.5b\mu f^2 K$ . The entrepreneur is assumed to pay this

cost out of her own pocket. This cost may arise, for instance, from enforcement actions when the entrepreneur is caught consuming private benefits or may be incurred when the entrepreneur has to take expensive steps to disguise consumption of private benefits. The cash flow left in the firm after consumption of private benefits,  $(1 - f)$ , is distributed as a liquidating dividend. Investors are rational and anticipate the optimal actions of the entrepreneur. In this model, the entrepreneur would prefer to commit not to consume private benefits since she pays both for the private benefits she consumes and for their deadweight cost. However, the entrepreneur cannot credibly commit not to consume private benefits and consequently will always choose to consume private benefits at date 2.

In a neoclassical world, the entrepreneur would raise outside equity to invest  $\Omega$  at date 0, and at date 1 the entrepreneur would start production if  $E_1(\mu) > r$  and would return the money to the investors otherwise. I call a project that has  $E_1(\mu) \geq r$  ( $E_1(\mu) < r$ ) a project with a positive (negative) NPV at date 1. If the entrepreneur can consume private benefits out of the cash flows generated by the project at date 2, she can gain from starting production at date 1 even if the project has a negative NPV since her total return on her investment includes the ability to consume private benefits at date 2. Liquidation at date 1 has a private cost for the entrepreneur since it makes it impossible for her to consume private benefits at date 2.

Consumption of private benefits reduces the wealth of the entrepreneur by reducing the payoff from the shares she owns, so that the entrepreneur's consumption of private benefits is inversely related to her ownership stake. Lower consumption of private benefits at date 2 reduces the entrepreneur's gain from starting production at date 1 when  $E_1(\mu) < r$  since that gain is derived from extracting private benefits at date 2. Consequently, co-investment by the entrepreneur with the outside shareholders reduces her incentives to start production at date 1 when production has a negative NPV and to extract private benefits at date 2. In equilibrium, therefore, the entrepreneur will co-invest because she can raise capital on better terms. However, when she co-invests, her wealth limits the scale of the project provided that  $\Omega$  is large enough not to be a binding constraint, which I assume. As a result, co-investment will never be so high that the entrepreneur does not, in some circumstances, start production at date 1 when production is a negative NPV project. In the remainder of this section, I derive formally the entrepreneur's optimal consumption of private benefits at date 2, her decision to start production at date 1, and her optimal co-investment decision at date 0.

The entrepreneur consumes her wealth at time 2. In equilibrium, all of the entrepreneur's wealth is invested in the firm if production takes place. In this case, the entrepreneur's wealth at date 2,  $W_2$ , is given by:

$$W_2 = \alpha(1 - f)\mu K + f\mu K - 0.5b\mu K f^2. \tag{1}$$

If production does not take place, the entrepreneur's wealth earns the risk-free rate and  $W_2$  is equal to  $\alpha Kr$ . The entrepreneur maximizes  $E(W_2)$ .

She does so backwards by first solving for  $f$  at date 2. Her optimal amount of expropriation is given by:

$$f = \frac{1 - \alpha}{b}. \quad (2)$$

At date 1, the entrepreneur solves for the decision of whether to keep the money of investors or abandon production and return money to investors. The condition that has to be met for production to start is:

$$\alpha(E_1(\mu) - r) + 0.5 \frac{(1 - \alpha)^2}{b} E_1(\mu) \geq 0. \quad (3)$$

Note first that the neoclassical rule is to produce only if  $E_1(\mu)$  is equal to or higher than  $r$ . It immediately follows from equation (3) that if the firm goes public, so that  $\alpha < 1$ , the neoclassical rule holds only if  $b = \infty$ . As long as the entrepreneur can consume private benefits at date 2 at the expense of outside shareholders, she has an incentive to start production at date 1 even if the project has a negative NPV.

At date 0, the entrepreneur chooses the scale of the project,  $K$ , and her ownership,  $\alpha$ . For the sake of brevity, I only discuss the entrepreneur's optimization problem for the case where production always takes place at date 1. In this case, the entrepreneur's optimization problem can be written as:

$$\max_{K, \alpha} \left[ \alpha + 0.5 \frac{(1 - \alpha)^2}{b} \right] K E_0(\mu). \quad (4)$$

$$s.t. \quad (1 - \alpha) (1 - f^*) E_0(\mu) K \geq (K - W_0) r.$$

The rationality constraint implies that outside shareholders require their expected return to be at least equal to the riskless interest rate. There is no reason for the entrepreneur to choose a solution where the rationality constraint is not binding since the entrepreneur could increase her welfare by making the constraint binding. Substituting the solution for the rate of diversion into the rationality constraint, I obtain:

$$(1 - \alpha) \frac{E_0(\mu) K}{r} - \frac{(1 - \alpha)^2}{b} \frac{E_0(\mu) K}{r} = K - W_0. \quad (5)$$

The first term in this equation is the price at which the shares not retained by the entrepreneur would be sold in a world without consumption of private benefits at date 2 but with production always starting at date 1. The second term is the amount by which the shares are discounted because of the consumption of private benefits. The proceeds from the sale of shares to outside investors are equal to the amount of outside funds invested in the project. Remember that  $b$  is the parameter that affects the cost of consuming private benefits for the entrepreneur. As  $b$  becomes small, the discount becomes large. For small enough  $b$  and/or small enough  $E_0(\mu)$ , the rationality constraint cannot be satisfied, so that the entrepreneur cannot sell shares to outside shareholders. A lower  $b$  requires higher ownership by the

entrepreneur, which can only be achieved by decreasing the scale of the project.

The entrepreneur faces a tradeoff in choosing ownership. A greater  $\alpha$  reduces the extent to which outside shareholders discount the value of the firm and therefore allows management to raise external funds at a higher price. However, at the same time, a greater  $\alpha$  limits the scale of the project since the entrepreneur's co-investment is limited by her wealth. The entrepreneur chooses her ownership so that the marginal cost and the marginal benefit from ownership equate.

Given optimal ownership, the entrepreneur chooses whether to produce at date 1. If  $\mu^-$  is low enough, production makes no sense because the expected payoff on production is so low that the loss on the entrepreneur's own investment exceeds the expected gain from private benefits. However, if  $\mu^-$  is not too low, production will take place even when it has a negative NPV because it enables the entrepreneur to extract private benefits at date 2. The following proposition characterizes the production decision of the entrepreneur at date 1 (see proof in the appendix).

**PROPOSITION 1.** *Assuming that the entrepreneur sells shares to outside shareholders:*

- 1) *If  $\alpha^*(\mu^- - r) + 0.5\frac{(1-\alpha^*)^2}{b}\mu^- \geq 0$ , where  $\alpha^*$  is the optimal value of  $\alpha$  and satisfies  $(1 - f^*)(r - (1 - \alpha^*)(1 - f^*)E_0(\mu)) = (\alpha^* + 0.5bf^{*2})(1 - 2f^*)E_0(\mu)$ , production starts at date 1 even if the project is a negative NPV project.*
- 2) *If  $\alpha^*(\mu^- - r) + 0.5\frac{(1-\alpha^*)^2}{b}\mu^- < 0$  and  $\alpha^*(\mu^+ - r) + 0.5\frac{(1-\alpha^*)^2}{b}\mu^+ \geq 0$ , where  $\alpha^*$  satisfies  $(1 - qf^*)(r - (1 - \alpha^*)(1 - f^*)p\mu^+) = (\alpha^* + 0.5bf^{*2})(1 - 2f^*)p\mu^+ + (1 - 0.5bf^{*2})(1 - p)r$  and  $q = \frac{p\mu^+}{p\mu^+ + (1-p)r}$ , then production starts only if  $E_1(\mu) = \mu^+$  as with the neoclassical rule.*

With my model, an entrepreneur with a positive NPV project at date 0 may be unable to raise outside funds for the project because with external funds she could consume private benefits at date 2 and hence choose to produce at date 1 even when the project is revealed to be a negative NPV project at that date. If the entrepreneur could commit to only produce at date 1 if  $E_1(\mu) = \mu^+$ , she might be able to raise funds. Though the entrepreneur would find it advantageous to commit not to produce if  $E_1(\mu) = \mu^-$ , such a commitment is not credible in my model because ex post the entrepreneur is always made better off by starting production as long as  $\mu^-$  is not too low. In this model, the inability to commit to produce only if the project is a positive NPV project always decreases the proceeds from the IPO and hence decreases the size of the firm.

I assume that investors are rational. Consequently, they discount the value of shares sold to them to reflect their expected losses because of moral hazard. No investor protection is required to insure that investors are treated fairly: Their expected payoff is exactly the one they anticipate. However, the fact that investors protect themselves against some outcomes by reducing the

price they are willing to pay for shares is extremely costly to entrepreneurs and to economic welfare because some good projects are not implemented. Laws that protect investors by excluding some investment outcomes can be welfare enhancing if, by excluding these outcomes, they raise the price that investors are willing to pay for shares and make it possible for entrepreneurs to undertake positive NPV projects. Paradoxically, in this model, the investor protection of securities laws benefits the entrepreneur.

### 3.2 PRIVATE SOLUTIONS

I assume that the entrepreneur wishes to maximize the proceeds from the IPO. The entrepreneur could raise the most funds and hence maximize her profit from the project if she could commit to consume no private benefits at date 2 and to start production only if she has a positive NPV project at date 1. We call this policy the golden rule. Though it is *ex ante* optimal for the entrepreneur to commit to follow the golden rule, it is not *ex post* optimal for her to do so in the setting of my model. Consequently, investors cannot rely on promises by the entrepreneur—they would not be time consistent. There is a wide array of tools suggested in the literature that the entrepreneur could use to commit to the golden rule. I review these tools in turn and examine their limitations in resolving the agency problem in my model.

The most obvious tool is to increase the entrepreneur's ownership share. If the entrepreneur does not go public, she will always follow the golden rule in my model. However, this tool is very costly for the entrepreneur and for society because it limits the size of the firm since, for a given level of co-ownership, the size of the firm is limited by the wealth of the entrepreneur.

Consider next corporate disclosure policy. By committing to truthfully disclose the NPV of the project at date 1 and the payoff from production at date 2, the entrepreneur makes it more costly not to follow the golden rule. In particular, investors would know if the entrepreneur does not follow the golden rule and could sue to make her follow that rule. Grossman [1981] shows that a firm will disclose information provided that it cannot lie, investors know it has the information, and disclosure is costless. In my model, the firm can lie and disclosure is costly to the insiders. It follows that a stronger mechanism is required for the entrepreneur to credibly commit to truthful disclosure. Importantly, however, there is a demand from the entrepreneur for mechanisms that allow her to commit to disclosure. Such a mechanism would be a contractual commitment to the investors to use an auditor at date 1 and at date 2. With such a commitment, investors could sue the entrepreneur if there is no auditor report.

The difficulties with the use of an auditor are threefold. First, the entrepreneur does not benefit from having an auditor *ex post*. She would therefore be better off if she could find a way to escape her commitment to use an auditor. Second, though it is easy to verify that the entrepreneur has failed to hire an auditor, investors would have to coordinate to enforce the contract and would have to be willing to pay for this enforcement. Such



a situation could lead to free-riding and to insufficient enforcement. Furthermore, enforcement of disclosure work poorly with class-action lawsuits because disclosure would prevent investors from suffering future damages rather than compensate investors for damages they have already suffered. Third, the contract with investors would have to specify what the auditor has to certify. Generally, an auditor would not be in a position to certify investment opportunities, but only whether accounting statements are prepared according to specific rules. These rules may or may not make the statements helpful to investors who want to assess whether production is a positive NPV project.

Generally, the entrepreneur could choose bonding mechanisms and governance mechanisms that would make it more difficult for her to renege on her commitments. In particular, she could enter contracts that impose large penalties if she does not disclose and that require the posting of a bond. There are problems with such an approach, however. First, the entrepreneur will always have incentives to state that she has a positive NPV project at date 1. To enforce the contract, therefore, outsiders will have to be able to verify that the firm indeed has the positive NPV project, which may be expensive. Second, as emphasized in Grossman and Hart [1986] and Hart and Moore [1988], it may be difficult to write such a contract because not all possible situations that the entrepreneur might face after the IPO can be defined at the time of the IPO. Third, the posting of a bond involves transaction costs and also means that the entrepreneur has fewer resources to invest in the firm.<sup>13</sup> Finally, any plausible contractual mechanism requires enforcement actions by shareholders. Such a mechanism may therefore be incompatible with dispersed ownership.

Other ownership arrangements than dispersed ownership may facilitate the emergence of private solutions. As a result, if securities laws are poor, we would expect these arrangements to be more important, but at the same time it is possible that when such arrangements are pervasive, the demand for strong securities laws is weaker. For instance, blockholders could play an important role in monitoring management. Laeven and Levine [2008] find support for an important role of monitoring blockholders in Europe. Financial institutions could also be more involved in the monitoring of management. In countries where bank finance is more important, public disclosure might be less important because banks have access to nonpublic information. Further, throughout the world, the growing importance of institutional investors and the increasing ease with which pools of funds from these investors can be assembled make private solutions easier as firms can choose to bypass the public markets and use private equity financing with contractual arrangements that offer efficient ways to address corporate agency problems.

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<sup>13</sup> See Klein, Crawford, and Alchian [1978] for some of the problems involved in posting a bond.

A complementary approach for the entrepreneur is to devise governance mechanisms that limit her ability to take advantage of minority shareholders. The obvious difficulty with such mechanisms is that they have to be credible. With good laws and good enforcement of these laws, the governance mechanisms are more credible to investors. Aggarwal et al. [2008] show that firm-level governance mechanisms are complementary mechanisms with good country-level investor protection. In their paper, firms from common law countries are more likely to adopt governance attributes that restrict the discretion of insiders.

In the model, the firm can liquidate at date 1 if it has the low NPV project. Consequently, if the firm financed itself with short-term debt maturing at date 1 instead of outside equity, it would have a built-in mechanism to insure that it invests optimally at date 1 because the new investors at date 1 would only invest if they can expect to earn the risk-free rate over the second period. In this case, all projects that have too low productivity to be financed at date 1 are not undertaken. At date 1, the firm would issue equity if it has the high NPV project and uses the proceeds to pay off the debt. For short-term debt to be a solution for the date 1 problem, it has to be that the entrepreneur does not benefit from starting production at date 1 with the lenders' money. In other words, the debt contract has to be enforceable at low cost.

The simplicity of my model makes the short-term debt solution more attractive than it actually is. Consider a production process that takes two periods such that, in contrast to my model, the stock of capital changes randomly during the first period. At the end of the first period, the firm learns its productivity for the second period. In this case, a drop in the stock of capital during the first period would lead to default on the debt. Depending on the bankruptcy mechanism, there is some chance that the positive NPV growth opportunity would be lost. Alternatively, the firm could issue less debt at date 0, but then the scope for inefficient production would increase. The debt solution runs into trouble as well if the continuation decision occurs at a random date. In this case, the firm would have to refinance short-term debt. Bank debt would be a more flexible solution than public debt. The bank could monitor the company and require information from the company. However, the interests of a bank may differ from those of shareholders. Further, there is a potential hold-up problem with bank financing that does not arise with public financing (see Rajan [1992]).

It is important to note that all the private solutions discussed so far rely heavily on the use of the legal system for their implementation. An expensive, mistake-prone, and ineffective legal system will reduce the usefulness of these solutions.<sup>14</sup> Further, if those in control of firms have more resources than outside investors, they may have an advantage in the use of courts (see Glaeser, Scheinkman, and Shleifer [2003]). Reputation mechanisms can be

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<sup>14</sup>For references to the literature discussing problems with the use of litigation, see Schwartzstein and Shleifer [2008].

implemented without the use of the legal system.<sup>15</sup> One often hears that reputation will make it suboptimal for the entrepreneur to take advantage of minority shareholders. In my model, there is no role for reputation because the entrepreneur has nothing to gain from behaving. Reputation can make it optimal for the entrepreneur not to take advantage of minority shareholders provided that there is some chance that the entrepreneur will raise more funds in the future, in which case building a reputation would pay off when she subsequently raises funds.

If the model were to be extended to multiple periods, reputation could play more of a role. At the same time, however, contractual solutions become more complex and less feasible in multiple period models. With incomplete contracts, insiders have more opportunities *ex post* to engage in behavior that affects investors adversely.

### 3.3 SECURITIES LAWS

In my model, the entrepreneur has a demand for credible disclosure mechanisms. All the private solutions to the commitment problem of the entrepreneur have limitations. In this section I examine whether there are conditions such that securities laws can help the entrepreneur solve the commitment problem more efficiently than private solutions. I find that securities laws can help resolve some—but not all—of the problems the entrepreneur faces in credibly committing to the buyers of equity through mandatory disclosure. I restrict my attention to the benefits to the entrepreneur of disclosure at date 1 and ignore the role of laws and regulations on the cost of consumption of private benefits at date 2,  $b$ , which have been examined both theoretically and empirically already.<sup>16</sup> It is important to note, however, that disclosure laws affect the ability of insiders to consume private benefits, so that  $b$  is likely to be higher in countries with stronger securities laws (see Ferrell [2007]).

Suppose that the securities laws require that the entrepreneur has to disclose  $E_1(\mu)$  at date 1 and that the disclosure is credible because the disclosure requirement is strictly enforced. Upon disclosure, the state or investors could act to prevent production if production is not optimal. With such a law, production would be less likely to take place if  $E_1(\mu) = \mu^-$ . Whether the neoclassical rule would be followed would depend on the mechanisms that investors have to constrain corporate insiders from pursuing negative NPV policies. In fact, if the law worked extremely well, so that the entrepreneur can never produce if  $E_1(\mu) = \mu^-$ , such a law would eliminate the time-consistency problem and would increase firm value by eliminating suboptimal production. It is important to note that enforcement by investors does not have to involve legal action. Any mechanism that permits outside investors to affect the production decision in the state of the world where

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<sup>15</sup> See Gomes [2000] for a model of how reputation can work for an IPO firm.

<sup>16</sup> See, for instance, Shleifer and Wolfenzon [2002], La Porta et al. [2002], Durnev and Kim [2005], Doidge, Karolyi, and Stulz [2004], and Stulz [2005].

$E_1(\mu) = \mu^-$  increases firm value—for instance, a hostile bid or the threat of such a bid could lead insiders not to produce in that state of the world. If enforcement by investors is costly, there will be cases where insiders pursue negative NPV projects. As enforcement costs increase, the benefit of the law in reducing suboptimal production falls so that, at some point, the law has no effect. Forcing disclosure is therefore not enough.

Could such a law do harm? Not if enforcement of the law is costless and if the only disclosure required is the one that the entrepreneur would like to credibly commit to but cannot do so without the help of the law. Under these conditions, the law would be superior to a firm disclosure policy. Of course, in reality the law and its enforcement are not costless. Suppose that the law is indeed perfectly designed so that it elicits the optimal disclosure if followed by the firm. It would have to be enforced and enforcement would have a cost. The enforcement of a securities law by government does not require coordination among shareholders. As a result, part of the cost of enforcing private disclosure agreements will be eliminated. Free-riding by shareholders means that enforcement of private disclosure agreements will be suboptimal. Public enforcement of disclosure laws eliminates the free-riding problem. Further, public enforcement has resources and punishments that shareholders do not and cannot have.

In my model, the entrepreneur would like to find a way to credibly commit to disclose  $E_1(\mu)$  at date 1. Effectively, the entrepreneur wants to commit to disclose the NPV of a project. Accounting disclosures focus on the past rather than the future, but they have information for NPVs. For instance, they can reveal whether a project is making losses, which would be useful information for the discontinuation of the project. Different accounting rules can have different implications for the timeliness with which value-relevant information is disclosed through accounting statements.<sup>17</sup> Bushman, Piotroski, and Smith [2006] provide evidence that investment is more responsive to a worsening of growth opportunities in countries where accounting rules lead to more timely recognition of economic losses. In the context of my model, this result suggests that accounting regimes that recognize economic losses more quickly are more informative about NPVs. Consequently, the usefulness of disclosure laws is partly tied to the informativeness of the accounting rules.

In general, the disclosures required by securities laws will contain information about the NPV of a project, but may do so with some imprecision. The magnitude of the imprecision will depend on many factors—from the quality of the accounting regime to the intensity of the enforcement of the securities laws. If disclosures reveal  $E_1(\mu)$  at date 1 imprecisely, an additional cost of securities laws is that investors or the state will intervene at times when they should not because their information about the NPV of the a project is inaccurate.

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<sup>17</sup> See Bushman and Smith [2001] for an analysis of the role of the timeliness of accounting information and of how timely accounting information can prevent overinvestment.

Disclosure does not, by itself, eliminate suboptimal production. The disclosure mechanism prevents suboptimal production through private enforcement of optimal production. Such private enforcement may be costly. Therefore, even if mandatory disclosure is costless, the elimination of suboptimal production may not be. For the mandatory disclosure solution to be preferable to the private solutions, it has to be that the total cost of eliminating suboptimal production with the mandatory disclosure solution is not so high that private solutions that only reduce suboptimal production are preferable. Further, a law might impose additional costs on firms by forcing them to disclose other items that the entrepreneur does not want to disclose—perhaps because they are helpful to competitors. Such additional costs could make the mandatory disclosure solution inferior to some types of private solutions for the entrepreneur.

#### 4. *Securities Laws and Financial Globalization*

I now investigate the role of securities laws in a world of integrated financial markets. In this section, I focus on firms' supply of equity and assume a perfectly elastic demand for equity as before. To simplify the analysis, I assume that investors discount expected cash flows from shares at the risk-free rate irrespective of where the shares are issued or traded. Risk-neutral investors would discount expected cash flows that way in a world where there are no restrictions or costs to cross-border trades in securities. To emphasize that my results do not come from differences in the cost of consuming private benefits across countries, as determined by  $b$ , I assume  $b$  to be the same across countries unless I say otherwise. My analysis therefore focuses on differences in disclosure requirements across countries at date 1. The section concludes with a brief discussion of how my results are affected if  $b$  is allowed to increase with stronger securities laws.

To analyze the impact of securities laws, I consider two countries. I assume that country G has better securities laws than country B in that, at date 1,  $E_1(\mu)$  is disclosed in country G but not in country B and the disclosure enables investors to costlessly enforce the neoclassical investment policy. I investigate later the case where enforcement costs are positive. There are no barriers to international investment. Both countries have exactly the same distribution of projects. In each country, there is a continuum of projects. Each project has the same characteristics as the project analyzed in section 3, so that the project of firm  $i$  has an expected return of  $E_0(\mu_i)$  as of date 0.  $E_0(\mu_i)$  is a monotone function of  $i$ , with  $i \in [0, U]$ , and, for any firm  $i$ ,  $(1/\lambda)\mu_i^+ = E_0(\mu_i) = \lambda\mu_i^-$ , with  $\lambda > 1$ . In the following, I drop the subscript  $i$  to simplify the notation.

I use my model to compare the cost of external finance, firm creation, valuation, and insider ownership in the two countries. I first discuss the case where a firm domiciled in a country is subject to the securities laws of that country. I then turn to the case where a firm can choose to be subject to

stricter or weaker securities laws. In each case, I discuss the impact of stricter securities laws when they have a deadweight cost for firms. In the last part of the section, I discuss some important limitations to my analysis.

#### 4.1 FIRMS ARE SUBJECT TO THE SECURITIES LAWS OF THEIR COUNTRY ONLY

In my model, investors have the same expected return irrespective of securities laws. For an all-equity firm, it might be tempting to conclude therefore that the cost of external finance is the same for all firms when viewed from the entrepreneurs' perspective. However, this would not be correct. The agency problems I focus on create a wedge between the cost of capital for the entrepreneur and the expected rate of return required by investors.

The entrepreneur's perspective on the cost of capital differs from the investors' perspective. The entrepreneur focuses on how much she has to pay to secure the outside financing she seeks. Outside financing has costs for the entrepreneur. These costs differ between country G and country B. In country B, the entrepreneur starts production at date 1 even if the project has a negative NPV. Because of this suboptimal production, the entrepreneur consumes private benefits at date 2 in country B that would not be available to the entrepreneur in country A because she could not have started production. As a result of the disclosure differences between country G and country B, the entrepreneur bears the deadweight costs from producing suboptimally in country B, including the costs of consuming private benefits following suboptimal production, but not in country G. These deadweight costs are the difference in the cost of external finance in country B relative to country G. It follows that outside finance is cheaper for the entrepreneur in country G than in country B. In addition (see proof in the appendix):

**PROPOSITION 2.** *Assuming that (1) country B and country G differ only in disclosure requirements at date 1, so that  $b$  is the same in both countries, (2) a firm in country B and a firm in country G have exactly the same project, and (3) production always takes place for the firm in country B irrespective of  $E_0(\mu)$  if the firm goes public, it follows from the fact that country B has weaker disclosure requirements at date 1 than country G that:*

- 1) *If the firm in country B has an IPO, then the firm in country G has an IPO as well. If the firm in country B stays private, it may still be optimal for the firm in country G to have an IPO. Consequently, a larger fraction of firms will go public in country G than in country B.*
- 2) *The firm in country B will be smaller than the firm in country G because external finance is more expensive for the entrepreneur in country B than in country G.*
- 3) *The firm in country B will have lower output per unit of capital on average before managerial diversion than the firm in country G since the entrepreneur in country B will invest in the negative NPV project whereas the firm in country G will only invest in positive NPV projects.*

- 4) *Tobin's  $q$  will be higher for the firm in country G than in country B.*
- 5) *The entrepreneur in country G will retain fewer shares than the entrepreneur in country B.*
- 6) *Foreign investors will hold a larger fraction of shares in country G than in country B.*

It is important to note that, in the model developed so far, securities laws benefit entrepreneurs but not investors. Despite this, it turns out that the portfolios of individual investors depend on the securities laws of the countries they invest in. In fact, individual investors invest a larger share of their portfolios in securities of the country that has better securities laws. However, individual investors do not invest more in country G because they care about securities laws. Remember that, in my model, investors are risk neutral and have rational expectations. The expected return of shares is the same for firms irrespective of their country. The greater weight of securities of country G in the portfolios of individual investors simply results from the fact that in countries with better securities laws the entrepreneurs can sell a larger fraction of their firms to the public at the IPO. There is evidence that insiders have higher ownership in countries with weaker investor protection.<sup>18</sup> It is important to note, however, that an index of attributes of securities laws need not be correlated with ownership in my model for two reasons. First, as I have shown, securities laws alone are not sufficient to yield my results. Investors have to be able to take actions following disclosures. Second, the level of enforcement of securities laws is critical and enforcement differs considerably across countries.

In my model, country G has better securities laws than country B. Consider now the portfolio of an individual investor who is not a corporate insider. First, assume that the individual investor resides in country G. For a firm with a given market capitalization, a larger fraction of shares will be available to individual investors if the firm is from country G than would be the case if it were from country B. Consequently, if an individual investor holds the world market portfolio of shares available for trading by portfolio investors (i.e., the world market portfolio constructed from shares not held by insiders, as in Dahlquist et al. [2003]), she will overweight country G compared to the weight of market capitalization of that country in the world market portfolio of all shares. An individual investor from country B would behave in the same way. It follows from this that individual investors will appear to overweight shares from countries with better securities laws. Assuming that corporate insiders are local residents, a larger fraction of shares from country B will be

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<sup>18</sup> See La Porta, Lopez-de-Silanes, and Shleifer [1999] for an analysis of ownership across the world. Stulz [2005] provides evidence on insider ownership as a fraction of a country's market portfolio, using Worldscope data (see Dahlquist et al. [2003] for a discussion of the weaknesses of the Worldscope data) and provides references to alternative explanations. An obvious difficulty with ownership measures is that institutional investors unrelated to insiders can have large stakes in the United States, giving the appearance of concentrated ownership for firms where insiders control a small fraction of shares.

held by resident insiders than shares from country G. As a result, residents in country B will appear to overweight shares from country B and residents in country G will appear to overweight shares from country G. It follows that variation in the quality of securities laws can worsen the home bias even though individual investors have no preference for better securities laws in my model.<sup>19</sup>

The analysis conducted so far assumes that there are no costs to stricter securities laws and their enforcement is costless. Suppose first that securities laws in country G are costly, so that participation in public markets has a deadweight cost of  $c$ . It immediately follows that raising outside funds is now more costly for a firm in country G. Firms that have an investment opportunity that has low expected productivity will now decide not to raise outside funds. Consequently, fewer firms will go public in country G.

Consider next the case where there is a fixed cost for investors to enforce good policies following disclosure by a firm that  $E_1(\mu) = \mu^-$ . In this case, the entrepreneur will start production when  $E_1(\mu) = \mu^-$  as long as  $\mu^-$  is high enough so that it is not worth it for investors to expend enforcement costs. If  $\mu^-$  is lower than this threshold, production will not start because investors would incur enforcement costs to prevent wasteful production. If investors expect to have to pay costs of enforcement, the expected rate of return they require to invest in firms will reflect expected enforcement costs. Lombardo and Pagano [2002] develop a model where monitoring costs affect the expected return on equity and where these costs depend on laws and their enforcement. The enforcement costs discussed here are part of the monitoring costs they posit in their model. In the absence of a mechanism of collective action, there would be no enforcement by atomistic shareholders. Consequently, in the absence of such a mechanism, firm values would be higher if a large monitoring outside shareholder emerged who would find it worthwhile to pay the cost of enforcement.

#### 4.2 FIRMS CAN CHOOSE THE SECURITIES LAWS THEY ARE SUBJECT TO

Suppose now that financial globalization makes it possible for a firm in country B to choose to be subject to the securities laws of country G. I assume that a firm from country B subjects itself to the securities laws of country G by going public in country B as well as in country G. As a result, the firm will be subject to the securities laws of both countries. Given the assumed difference in securities laws between countries B and G, any firm going public chooses to be subject to the securities laws of country G if there were no cost to do so. The reason is that the outside investors rationally discount the share price to reflect the ex post incentive problems. Therefore, the

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<sup>19</sup> Dahlquist et al. [2003] show how different levels of insider ownership can help explain the home bias. Kho, Stulz, and Warnock [2009] extend this analysis to account for the existence of a comparative advantage in monitoring for local investors. In their analysis, poorer laws imply a greater monitoring role for local investors, so that even fewer shares are available for foreign investors.



entrepreneur bears all the costs of being unable to tie her hands ex ante to follow the golden rule and will benefit from a credible commitment not to start production when  $E_1(\mu) = \mu^-$ .

The situation changes if there is a fixed listing cost  $L$  for a firm from country B to become subject to the securities laws of country G. With such a cost, some firms from country B will choose to be subject to the securities laws of country B only. It is interesting to investigate which entrepreneurs from country B will choose to IPO in country G if there is a fixed cost  $L$  for a firm in country B to list in country G. There are both direct and indirect benefits to a listing in country G for a firm in country B. I explore these two benefits in turn.

I define the direct benefits as the benefits that accrue to the entrepreneur if she changes nothing in her actions except that the firm is liquidated at date 1 in the bad state of the world, that is, the state where  $E_1(\mu) = \mu^-$ . There are two direct benefits. First, the entrepreneur now pays the deadweight costs of private benefits only in the good state where  $E_1(\mu) = \mu^+$ , so that these costs fall. Second, firm value increases, so that the IPO proceeds increase. The increase in firm value keeping  $f$  and  $K$  constant is:

$$\text{Direct gain in firm value} = (1 - p)K - (1 - p)(1 - f)\frac{\mu^-}{r}K - L. \quad (6)$$

It immediately follows from this expression that the direct gain in value: (1) falls as the probability  $(1 - p)$  of the bad state decreases, (2) increases as the rate of consumption of private benefits increases, (3) falls as the expected return to production in the bad state increases, and (4) falls as the listing cost increases.

The indirect gain from the listing is that the entrepreneur can raise more funds and hence benefit more from the investment opportunity in the good state. To see this, note that as firm value increases, keeping  $f$  constant, more funds are raised. The entrepreneur will want to invest these funds in production, so that  $K$  will increase. The benefit from increasing  $K$  increases with the expected return of production in the good state. Consequently, everything else equal, firms that have higher productivity will benefit more from listing in country G.

I have the following proposition (its proof is straightforward based on my discussion and therefore omitted):

PROPOSITION 3. *Compared to firms from country B that do not list in country G, the firms from country B that list in country G have the following characteristics:*

- (1) *Cross-listed firms are larger.*
- (2) *Cross-listed firms have better operating performance.*
- (3) *Cross-listed firms have a higher Tobin's  $q$  than firms from country B that are not cross-listed, but have a lower Tobin's  $q$  than similar firms from country G.*
- (4) *Cross-listed firms will have more diffused ownership.*
- (5) *Foreign investors will hold a larger fraction of the cross-listed firms.*

Karolyi [2006] reviews the evidence on cross-listed firms. This evidence shows that cross-listed firms are larger firms and have higher valuations. There is now substantial empirical evidence that foreign firms listed in the United States have a greater Tobin's  $q$  than foreign firms that are not listed in the United States. Doidge, Karolyi, and Stulz [2008a] show that this valuation difference holds from 1990 to 2005. Foreign firms that list on a U.S. exchange become subject to U.S. securities laws. However, these firms also become subject to monitoring from information intermediaries, so that this monitoring may contribute to the valuation difference.

Doidge, Karolyi, and Stulz [2004] also predict that cross-listed firms have a higher Tobin's  $q$ . In that paper, the mechanism that leads to a higher Tobin's  $q$  for cross-listed firms is different from here. In Doidge, Karolyi, and Stulz [2004], a firm cross-lists because it has good investment opportunities that it cannot finance because of excessive consumption of private benefits by the controlling shareholders. Through cross-listing, the firm subjects itself to laws that constrain the consumption of private benefits and can raise additional funds to finance the growth opportunity. Here, the rate of consumption of private benefits at date 2 is the same in both countries, so that securities laws do not reduce the rate of consumption of private benefits at date 2. Instead, by subjecting itself to the securities laws of country G, a firm from country B bonds itself to a legal regime where it will not be able to overinvest at date 1. Hence, the cross-listed firm makes decisions that are better for shareholders notwithstanding their consumption of private benefits at date 2.

Empirical evidence on foreign ownership of shares in companies with American Depositary Receipt (ADR) programs is consistent with my predictions. In particular, Ammer et al. [2006] show that firms with ADR programs have greater ownership by U.S. investors than other firms from the same countries. The impact of cross-listing on share ownership by foreign investors results simply from the fact that more shares of cross-listed firms are available to portfolio investors because the entrepreneur retains fewer shares at the IPO. Doidge et al. [2009] show that cross-listed firms have lower insider ownership. Further, Ayyagari and Doidge [2008] provide some evidence that insider ownership falls after a cross-listing.

If the securities laws of country G impose no costs on firms, firms from country G will not list in country B at the IPO. However, suppose that there is a cost  $c$  to being subject to the securities laws of country G and that this deadweight cost applies as well to firms in country B that choose to list in country G. I assume that there is a listing cost  $L$  for a firm to list outside its country. With these assumptions, some firms in country G will list at the IPO in country B as long as the listing cost is less than  $c$ . The firms from country G that list in country B will be firms for which preventing investment in the bad state has little value compared to saving the cost  $c - L$ .

I assumed throughout the analysis that the constraint on the size of the investment opportunity is not binding when consumption of private benefits is an issue. It is useful to relax this assumption in my discussion of foreign listings. Suppose that the constraint is binding for a firm even when the

entrepreneur consumes nontrivial private benefits. In this case, there is no indirect benefit to a firm from country B in listing in country G. Further, when a firm from country G lists in country B, it does not suffer from losing the indirect benefit of good securities laws, which is to enable firms to raise more outside funds. With this extension, it therefore follows that firms whose investment opportunities are not easily scaleable have less to gain from good securities laws. I would therefore expect small firms from country G to be more likely to IPO in country B.

As mentioned in the introduction, there has been much debate on the costs of regulation in the United States and how these costs affect the competitiveness of the U.S. capital markets. In my model, if the United States is country G, an increase in the cost of securities laws necessarily reduces the fraction of foreign firms that list in the United States. The impact of an increase in  $c$  on U.S. firms depends on the cost of listing abroad for U.S. firms. If that cost is prohibitive, then an increase in  $c$  means that fewer U.S. firms go public. Alternatively, however, consider the case where the cost on U.S. firms of listing abroad is the same as listing in the United States. In that case, an increase in the cost of securities laws in the United States leads some U.S. firms to go public abroad instead of going public in the United States. The U.S. firms that list abroad are similar to the firms from country B that choose not to list in the United States.

With my analysis, entrepreneurs with highly profitable projects find it optimal to be subjected to strong mandatory disclosure laws, while entrepreneurs with less profitable projects find the costs associated with such laws to be too high. If entrepreneurs in country G only have the choice of not going public, going public being subject to the securities laws of country G, or going public being subject to the securities laws of country B, we would see some firms from country G go public in country B. However, it could also be possible to have different applicable laws in country G for different types of firms, so that entrepreneurs would have the option to go public in country G being subjected to weaker mandatory disclosure laws. I discuss this possibility more in section 6.

In my analysis, I have assumed that the only benefits of cross-listing are due to securities laws. This is an excessively simplistic view. For instance, U.S. markets could be more liquid and more efficient, which would benefit cross-listing firms. One might argue that this attribute of U.S. markets partly results from securities laws, but it is a different benefit from the one I have focused on (see section 5.1 for some discussion of the relation between disclosure and liquidity). The cross-listing cost could be viewed as a net cost of cross-listing after all the costs and benefits of cross-listing separate from those discussed in this paper have been taken into account. Suppose now that the liquidity of foreign markets increases relative to the liquidity of U.S. markets. In this case,  $L$  would increase and consequently the number of cross-listings would fall. Similarly, if country B were to adopt securities laws more similar to those of country G, cross-listings would fall and perhaps even disappear if eventually securities laws have the same impact on firms in both countries.

#### 4.3 SOME IMPORTANT LIMITATIONS OF THE ANALYSIS

The analysis in this section relied implicitly on the assumption that securities laws can be ranked, so that some countries have better securities laws than others. With the model developed here, better securities laws are those that reduce the likelihood of overinvestment at date 1. There can be good reasons why, for some firms, more disclosure is costly. My model does not account for costs associated with disclosure. The literature on disclosure has focused on the costs to firms of divulging information that could be helpful to competitors (see Leuz and Wysocki [2008] for a review). Recently, Almazan, Suarez, and Titman [2007] have shown that under some circumstances transparency can reduce firm-specific investments by stakeholders. Transparency can also have political costs (see, e.g., Leuz and Oberholzer-Gee [2006], Durnev and Fauver [2007]). Further, as shown by Hermalin and Weisbach [2007], better disclosure can be costly for managers, so that in equilibrium firm value can be maximized for shareholders with less than complete disclosure. All these disclosure costs can lead to a situation where a firm in country B might maximize shareholder wealth by not listing in country G. If a type of disclosure is optimal for one type of firm but not for another, a securities law might not be optimal for all firms. In such a situation, securities laws cannot be ranked in a simple way. Further, countries could then compete by providing securities laws that meet the needs of firms better. Such competition could lead to better securities laws if enough firms can choose the securities laws they are subject to. I discuss issues related to issuer choice of securities laws in section 6.

My analysis assumes that the entrepreneur chooses the firm's charter to maximize IPO proceeds. It is legitimate to question this assumption for several reasons. First, variables that proxy for agency costs seem to be at best only weakly related to insider ownership in the United States (see, e.g., Helwege, Pirinsky, and Stulz [2007]). Second, there are good reasons to believe that some entrepreneurs value control for its own sake rather than to divert cash flows for their own consumption (Hart [2004]). In the United States, as shown by Field and Karpoff [2002], firms often choose to go public with antitakeover charter provisions, which may reduce IPO proceeds. In this case, my model would have less predictive power because ownership would also depend on the preferences of the entrepreneur for control.

I emphasized earlier that enforcement costs are a critical component of the efficacy of securities laws. For the mechanism I have focused on in my analysis of securities laws to work, it is necessary that the information disclosed can be used to change the actions of firms. It is also necessary that the securities laws themselves are enforced effectively.<sup>20</sup> It may well be

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<sup>20</sup> Jackson and Roe [2008] show that resources committed to enforcement result in more robust public markets. Coffee [2007] shows striking differences in enforcement expenditures between the United States and the United Kingdom. Berglöf and Pajuste [2005] show that, in countries with poor enforcement, such as Eastern European countries, firms disclose less than is required by the law.

that information disclosed by a firm in country B has different implications from the same information disclosed by a firm in country G. For instance, information disclosed by a firm in country G might be used by bidders in the market for corporate control, but there might be a much more limited market in country B. Information disclosed in country G might be effectively used to prevent a firm in country G from taking some actions through legal channels, but the judiciary might be inefficient in country B or the corporate laws might limit legal recourse drastically.

It could be that the securities laws of country G can be enforced more effectively on firms from that country than on firms from country B. Siegel [2005] provides some evidence of differential enforcement of U.S. securities laws between U.S. firms and foreign firms. In this case, the gain from cross-listing would be smaller and fewer firms from country B would obtain a listing in country G.

I assume that the cost of consumption of private benefits for the entrepreneur, parameterized by  $b$ , is the same in country G and country B. I would expect  $b$  to be higher in country G. An increase in  $b$  in country G would have similar effects to mandatory disclosure at date 1. Note further that an increase in the cost of consumption of private benefits reduces the benefit to the entrepreneur from suboptimal production at date 1, so that suboptimal production becomes less likely. A decrease in the fraction of cross-listed firms does not, therefore, mean that adverse developments took place in the United States that made cross-listings less advantageous. Such a decrease could result from developments abroad.

## 5. *The Investors' Demand for Equity and Securities Laws*

In this section, I examine how securities laws can affect the expected return required by investors on equity. In a world of financial globalization, I claim that securities laws can lead to market segmentation in that securities with identical expected cash flows that trade on different markets can have different expected returns. I consider first laws that affect insider trading and the importance of private information in the flow of information concerning a firm's stock. I then examine how securities laws affect monitoring and information gathering by investors. Finally, I consider the marketability restrictions often present in securities laws.

### 5.1 SECURITIES LAWS, INSIDER TRADING, AND DISCLOSURE

There is a vast literature on the economic consequences of insider trading. Though some argue for the removal of penalties on insider trading on a variety of grounds, there is generally broad support in finance for the view that insider trading affects adversely the cost of trading and market liquidity. The argument is straightforward: In the presence of insider trading, market makers have to widen the bid-ask spread to be compensated for losses made to insiders (see, for instance, DeMarzo, Fishman, and Hagerty [1998]).

Greater disclosure reduces the opportunities for insiders to make profits.<sup>21</sup> Consequently, greater disclosure should decrease the bid–ask spread and increase market liquidity.

Amihud and Mendelson [1986] show that investors optimally focus on their return on securities net of expected transaction costs. Everything else equal, I would therefore expect securities that have higher transaction costs to have higher expected returns before transaction costs. There is some debate in the literature as to whether this is so. For instance, Spiegel and Wang [2005] conclude that, after controlling for idiosyncratic volatility, the relation between transaction costs and expected returns is at best weak.

Rather than looking at transaction costs, some authors investigate whether stocks for which a greater fraction of the information flow consists of private information have greater expected returns. Diamond and Verrecchia [1991] show that disclosure can lead to a lower cost of capital by attracting large investors to a firm because its stock becomes more liquid, but an adverse effect of disclosure is that it reduces the risk-bearing capacity of market makers, so that complete disclosure is not optimal in their model. In rational expectations models, investors' holdings of securities depend on the precision of their information about the payoffs of these securities. To the extent that more disclosure increases the precision of the information investors have about a security, we would expect more disclosure to increase the willingness of such investors to hold the security and hence to decrease the cost of capital of the firm that issues the security. Easley and O'Hara [2004] develop a model in which investors who have no private information in a stock underweight that stock. Greater disclosure affects the information available to investors when they form expectations about variances and covariances of returns of securities. Ex ante, a portfolio will be less risky as investors can estimate variances and covariances more precisely.<sup>22</sup> Investors who can forecast variances and covariances of certain securities better than others are likely to overweight these securities on average.

It follows that the composition of the information flow about securities affects their expected return and the holdings of investors. Everything else equal, firms would want to reduce the share of private information in the information flow of their securities by credibly committing to disclosing information that can be disclosed by the firm with low or no cost. Through such a disclosure policy, firms would reduce the opportunities for insider trading or trading on private information, lower trading costs, and enable investors

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<sup>21</sup> Note, however, that Bushman and Indjejikian [1995] develop a model where firm disclosures can increase the trading profits of insiders at the expense of other informed traders.

<sup>22</sup> Lambert, Leuz, and Verrecchia [2007] show that greater disclosure has a direct effect, which is to increase the precision with which investors estimate variances and covariances. They also document an indirect effect, which is that disclosure changes firm investment policy, which can increase or decrease the precision of estimates of variances and covariances.

to more accurately estimate the variances and covariances of the stocks they hold. Such an optimal disclosure policy would not, however, eliminate all insider trading, so that there would still be value to laws that limit insider trading. For reasons already discussed, a discretionary disclosure policy that is optimal *ex ante* is not necessarily optimal *ex post* for insiders. Securities laws can make the optimal disclosure policy time consistent by punishing firms that depart from that policy.

The considerations discussed in this section have several important empirical implications. First, in general, greater disclosure should reduce bid–ask spreads and increase liquidity. Empirical evidence is supportive of this prediction. For instance, Healy, Hutton, and Palepu [1999] show that U.S. firms that increase their disclosures, as measured by the Association of Investment Management and Research (AIMR) rankings, experience a decrease in bid–ask spreads and an increase in volume. Leuz and Verrecchia [2000] find similar results for firms in Germany that switch from German generally accepted accounting principles (GAAP) to an international reporting regime. Second, differences in disclosure can lead to differences in the cost of capital.<sup>23</sup> There is evidence to that effect for the United States, but the evidence is ambiguous. In an international context, differences in securities laws could lead to differences in expected returns across countries even if securities markets are fully integrated in that there are no barriers to international investment. In fact, these differences could persist even if all investors hold the world market portfolio. Existing evidence on insider trading shows that countries where insider trading laws are enforced have a lower cost of equity (Bhattacharya and Daouk [2002]) and that insider trading laws are associated with more information production by analysts (Bushman, Piotroski, and Smith [2005]). Hail and Leuz [2006a] provide evidence that stronger securities laws are associated with lower expected returns on equity. Strikingly, their evidence shows that the adverse impact of weaker securities laws on firms' cost of equity capital is reduced by capital market integration. In this paper, capital market integration has such an impact to the extent that firms can subject themselves to stronger securities laws. Third, differences in securities laws can create preferred habitats in shares for investors. Access to private information about a firm makes it a more attractive investment for an investor, so that the investor is expected to overweight that firm in her portfolio (Easley and O'Hara [2004]). Securities laws affect the relative importance of private information in the information flow of a firm. It seems reasonable to believe that resident investors have greater access to private information. Countries where the laws are such that private information's share in the information flow is higher will have higher expected returns and a greater home bias on average.<sup>24</sup>

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<sup>23</sup> In one of the first studies, Botosan [1997] shows that the cost of equity capital falls with an index of disclosure, but only for firms with low analyst following.

<sup>24</sup> See Kho, Stulz, and Warnock [2009] for a discussion of the limitations of the imperfect information theory of the home bias.

Empirical results by Leuz, Lins, and Warnock [2008] fit the preferred habitat theory. They show that nonresident investors hold portfolios more heavily weighted towards countries with better securities laws. Differences in securities laws that affect resident and nonresident investors equally cannot explain their finding. For their finding to be explained with rational investors, it must be that some investors require a lower compensation for holding securities from countries with weaker securities laws and that these investors are resident investors.

Securities laws that regulate disclosure can do so based on where a firm is incorporated or on where it trades. To the extent that the securities laws of a country require disclosure from firms that trade within a country, they might lead firms from other countries where disclosure is less regulated to choose to list in that country. A country's laws that restrict insider trading can only be laws that restrict insider trading within the country. As a result, such laws make the location of trading relevant. However, a firm that chooses to cross-list in a country that has good insider trading laws does not get the full benefit of these laws unless it can and does give up its listing in its home country if that country has poor insider trading laws. Otherwise, insiders could just choose to trade in the home country of the firm and not in the country where the firm is cross-listed. If investors prefer securities trading in their own country, it is generally not optimal for a firm to give up its domestic listing.

A cross-listing that commits a firm to better disclosure reduces the flow of private information for its shares. I would therefore expect the expected return on cross-listed firms to be lower than the expected return on comparable firms that do not have a cross-listing. Hail and Leuz [2006b] find evidence of a lower cost of equity for firms that cross-list on U.S. exchanges. The lower expected return implies a higher Tobin's  $q$ .

## 5.2 THE IMPACT OF MARKETING RESTRICTIONS

Securities laws can restrict the marketing of shares to investors in a country. For instance, U.S. firms that choose to IPO abroad to avoid U.S. securities laws have to do so in a way that will keep their shares from being acquired by U.S. investors over an initial period. Specifically, Regulation S provides a safe harbor for firms that IPO abroad, but only to the extent that they have less than 500 U.S. shareholders (see Fox [1997]). When a firm has more than 500 U.S. shareholders, it becomes subject to U.S. securities laws even if it has its IPO abroad. Consequently, in my analysis in section 4, if the United States is country G, a U.S. firm that has an IPO abroad would have to proceed so that U.S. investors cannot acquire its shares. In this section, I study the impact of such restrictions.

Suppose first that there are no cross-border transaction costs. In this case, a U.S. firm would not be affected by the marketing restrictions as long as foreign investors can reasonably hedge their holdings of the U.S. firm and that the cost of doing so is trivial. The foreign investors would hold the outstanding supply of the shares of the U.S. firm and would hedge



their holdings partly. The U.S. firm would not suffer from the marketability restriction. If there are crossborder transaction costs, hedging would be more expensive, so that there would be a cost for the U.S. firm to face marketability restrictions. Generally, investors will not be able to hedge the full risk of the shares. In this case, that risk will not be shared optimally across the world when there are marketability restrictions. Consequently, there will be a greater risk premium for shares that are subject to such restrictions.<sup>25</sup> This risk premium will increase if domestic investors have a taste for shares issued by domestic firms trading locally or have, for any other reasons, a comparative advantage at holding these shares.

It may well be, however, that the main problem faced by firms that seek to escape U.S. securities laws is simply that they are hard to escape for firms that want their shares to have a liquid market. There is probably no effective way for firms to list shares abroad in a way that guarantees that the majority of the shares are not held by U.S. investors, in which case firms become subject to periodic disclosure requirements.

### *6. Issuer Choice and the Future of National Capital Markets*

The legal literature has debated the question of issuer choice intensely, with a number of scholars arguing that a firm should be able to pick the securities laws it wants to follow—be it across countries or across a menu of laws offered within a country.<sup>26</sup> Issuer choice has potentially two important benefits. First, it allows a firm to choose the securities laws that are optimal for it. Second, to the extent that countries or regulators derive benefits from having more firms subject to their securities laws, it fosters competition among countries in providing more attractive securities laws for firms. In this section, I examine the implications of my analysis for the issuer choice question and raise some additional considerations that are relevant for answering this question.

In much of the analysis in this paper, the main benefit of securities laws is that they facilitate a firm's commitment to policies that are ex ante optimal for the firm. These laws benefit the entrepreneurs and the economy. Their benefit to investors is through their impact on the economy as a whole. In my model, if securities laws are well conceived, new firms would pay to be subject to those laws. In practice, securities laws also have deadweight costs, which would reinforce the willingness of firms to pay to be subject to laws that have low deadweight costs and can help firms to credibly commit to disclosures that reduce agency costs the most. There is therefore no reason, with this model, for firms not to have the right to choose the securities laws they are subject to.

If securities laws reduce the importance of private information in the flow of information about a firm, a firm would want to commit to reduce

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<sup>25</sup> For evidence of such a risk premium see, for instance, Stulz and Wasserfallen [1995].

<sup>26</sup> See Fox [2002] for a review.

the importance of private information in the flow of information and the obstacle of doing so would be the credibility of the commitment. In this case, entrepreneurs would want to be subject to securities laws if they help them achieve the commitment they seek. The case for letting firms choose the securities laws that help them the most would seem strong under that scenario. However, if securities laws lead to disclosures that enable investors to obtain more precise estimates of variance and covariances, this benefit increases when more firms are subject to securities laws. In this case, one might argue, following Fox [1997], that there is an argument not to have issuer choice within a country and to subject all securities trading in a country to its securities laws.

With some exceptions, the debate on issuer choice largely assumes that securities laws are developed in a vacuum. However, they are affected by political forces. It is therefore not surprising that the laws and regulations resulting from all these forces do not correspond to the laws and regulations that would result from theoretical models that maximize social welfare. The regulators are subject to political influences and to lobbying by those who have a stake in the regulations and in how they are enforced. Regulators have their own interests at heart as well. Diffuse stakeholders, such as individual investors or entrepreneurs who might be considering an IPO, may not have the same ability to influence regulators as incumbent insiders. Given the nature of the benefits of securities laws, some laws and regulations could be worse than no laws and regulations at all. As pointed out by Ferrell [2007] and Leuz and Wysocki [2008], incumbents could tailor laws so that they protect them from competition. Coates [2001] points out that issuer choice arguments have received little support from issuers. He argues that this could be because the SEC has been responsive to issuers and that, as a result, regulations already offer much choice to issuers. Further, with the current system, regulatory uncertainty is limited for issuers because their ability to influence outcomes makes prohibitively costly forms of regulation highly unlikely.

Political influences on securities laws and their implementation can sharply reduce their usefulness when they are viewed as instruments to enable entrepreneurs to commit to actions that are not *ex post* optimal for them. In section 3, the benefit of securities laws depends heavily on the difficulty for firms of changing the laws they are subject to, on the belief that these laws will keep constraining firms rather than be weakened, and that they will not change in ways that impose large additional costs on firms. To the extent that securities laws are a commitment device for entrepreneurs, they are always subject to pressure from incumbent corporate insiders to be weakened as well as pressure from politicians to perhaps change them to protect investors better or sometimes in costly ways to show their responsiveness in times of crisis. From that perspective, issuer choice could lead to less credible securities laws because, as argued by Coates [2001], it might make them less stable. After all, if some firms are not subject to securities laws, incumbent insiders can argue that they

are at a disadvantage to those firms. Politicians might also focus on these firms during an economic crisis and use them to justify new stronger laws. Further, there are economies of scale in enforcing securities laws, so that if they cover a large number of firms the costs of enforcement are lower and the enforcement is less subject to budget pressures. Recent regulatory developments in the United States that make it easier for foreign firms to exit U.S. securities laws may not be helpful to foreign firms from this perspective because they reduce the value of the commitment they make when deciding to subject themselves to U.S. securities laws.<sup>27</sup>

Little attention has been paid in the issuer choice debate on the issue of whether stock market participation is affected by having all firms trading in a country subject to the same securities laws. It is true that in an efficient market firm value would reflect the securities laws that affect the firm, so that investors who do not know all the implications of securities laws would still buy fairly priced securities. However, willingness to participate in the stock market is likely to depend on investors believing that stock market investment is a fair game. It seems difficult to believe that such a belief could thrive in a world where local firms are subject to different securities laws.

## 7. Conclusion

Historically, the trading of securities on organized capital markets has been close to the geographic location of the issuer. Many reasons account for this phenomenon. In particular, distance was an obstacle to the rapid diffusion of information and cross-border trade was restricted and expensive. With financial globalization, barriers to cross-border trade in securities have decreased dramatically. Transaction costs reasons for trading of securities to stay local have largely disappeared. Technological progress has sharply reduced the role of distance in the diffusion of information. Economies of scale in trading are becoming a more compelling reason for trading not to be organized according to geography. Yet, securities issued in a country typically are subject to some or all of the laws of that country. Consequently, securities differ by their country of issuance. When it comes to firms, their value, the distribution of their ownership between insiders and outsiders, the extent of ownership by foreign investors, and the expected return of their equity all depend on the securities laws these firms are subject to.

I show that a critical contribution of securities laws is to help entrepreneurs to commit to disclosures policies that maximize shareholder wealth and that are not optimal for them *ex post*. Though my argument is based on a simple

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<sup>27</sup> The United States made it easier for foreign firms to deregister in 2007. At the very least, the evidence is that foreign firms did not benefit from that change. See Doidge, Karolyi, and Stulz [2008b] and Fernandes, Lel, and Miller [2007].

model of a firm going public, I believe that my conclusions would hold in models that offer more complicated investment opportunities for firms and that focus on established firms that have to raise new funds to finance growth opportunities. With this view of securities laws, they are only valuable to the extent that they are properly enforced, that they do not impose excessive costs on firms, and that investors can use the disclosures they force firms to make to prevent firms from taking actions that diminish shareholder wealth. In my analysis, poor securities laws can harm economic welfare by keeping firms away from the public markets and hurting innovation, entrepreneurship, and economic growth. Importantly, the function of securities laws I emphasize has no necessary impact on the expected rate of return on equity from the perspective of investors (since it holds when investors are risk neutral) but it reduces the cost of external finance for entrepreneurs because it enables them to sell equity to the public at a higher price. With this function of securities laws, better securities laws lead to more firms going public, to firms taking fuller advantage of investment opportunities, to firms having more ownership by dispersed shareholders including foreign shareholders, and to firms being valued more highly. Though good securities laws are associated with greater foreign ownership in my model, this is not because investors have a preference for investments in firms subject to better securities laws, but rather because more shares from such firms are available to the public. Other functions of securities laws, such as those that decrease the relative importance of private information in the information flow of securities, can affect directly the expected rate of return on equity and portfolio holdings.

Firms can choose to subject themselves to better securities laws by having their securities trade in countries that have such laws. There is ample empirical evidence that firms behave that way. As long as some countries have better securities laws than others, both in terms of the laws themselves as well as their enforcement and the opportunities investors have to act on information disclosed because of the laws, national capital markets will stay distinct because securities that trade on them differ in the laws they are subject to. However, differences across countries in securities laws may erode over time, which will decrease the benefits of U.S. listings for foreign firms. Further, the growing importance of institutional investors may also make private solutions to manage agency conflicts more effective and less costly, thereby decreasing the contribution of securities laws in helping to manage these conflicts.

## APPENDIX

### *Proof of Proposition 1*

- (1) When production always takes place at date 1, I solve for  $K$  using the rationality constraints of the outside shareholders:

$$K = \frac{W_0}{1 - (1 - \alpha) \frac{E_0(\mu)(1 - f^*)}{r}}. \tag{A1}$$

Using the solution for  $K$ , I can rewrite the entrepreneur’s optimization problem as

$$\max_{\alpha} \frac{\alpha + 0.5bf^{*2}}{r - (1 - \alpha)(1 - f^*)E_0(\mu)} E_0(\mu) W_0 r.$$

Let  $G(\alpha) = \frac{\alpha + 0.5bf^{*2}}{r - (1 - \alpha)(1 - f^*)E_0(\mu)}$ . The first-order condition for the entrepreneur’s optimization problem is met if  $G'(\alpha) = 0$ . Let  $N(\alpha) = \alpha + 0.5bf^{*2}$  and  $D(\alpha) = r - (1 - \alpha)(1 - f^*)E_0(\mu)$ . Thus,  $G(\alpha) = \frac{N(\alpha)}{D(\alpha)}$ .

Consequently:

$$\begin{aligned} G'(\alpha) &= \frac{N'(\alpha)D - ND'(\alpha)}{D^2} \\ &= \frac{(1 - f^*)(r - (1 - \alpha)(1 - f^*)E_0(\mu)) - (\alpha + 0.5bf^{*2})(1 - 2f^*)E_0(\mu)}{D^2}. \end{aligned}$$

The first-order condition of the objective function is:

$$\begin{aligned} (1 - f^*)(r - (1 - \alpha^*)(1 - f^*)E_0(\mu)) \\ = (\alpha^* + 0.5bf^{*2})(1 - 2f^*)E_0(\mu). \end{aligned} \tag{A2}$$

It can be verified that the second-order condition holds when the first-order condition is met.

- (2) When production only takes place if  $E_1(\mu) = \mu^+$ , I solve for  $K$  using the rationality constraint of the outside shareholders:

$$K = \frac{W_0}{1 - (1 - \alpha) \frac{((1 - f^*)p\mu^+ + (1 - p)r)}{r}}. \tag{A3}$$

I can rewrite the entrepreneur’s problem as

$$\max_{\alpha} \frac{\alpha(p\mu^+ + (1 - p)r) + 0.5bf^{*2}p\mu^+}{r - (1 - \alpha)((1 - f^*)p\mu^+ + (1 - p)r)} W_0 r.$$

Proceeding in the same way as for part (1), I obtain the first-order condition of the objective function:

$$\begin{aligned} (1 - qf^*)(r - (1 - \alpha^*)(1 - f^*)p\mu^+) \\ = (\alpha^* + 0.5bqf^{*2})(1 - 2f^*)p\mu^+ + (1 - 0.5bqf^{*2})(1 - p)r, \end{aligned} \tag{A4}$$

where  $q = \frac{p\mu^+}{p\mu^+ + (1 - p)r}$ .

It can again be verified that the second-order condition holds.

*Proof of Proposition 2*

- (1) The entrepreneur in country G can always mimic the entrepreneur in country B. Since the entrepreneur in country G does not start production at date 1 when the project's productivity is  $\mu^-$ , she can always raise more capital at date 0 than the firm from country B, everything else equal. If  $K = W_0$  for the entrepreneur in country B,  $K > W_0$  is possible for the entrepreneur in country G since  $K$  from equation (A3) is higher than  $K$  from equation (A1).
- (2) For ease of presentation, I abuse notation slightly. Let  $K_G(\alpha)$  and  $K_B(\alpha)$  denote the project size given insider ownership, respectively, in country G and country B. From the rationality constraints in the two countries, I have the following:

$$K_B(\alpha) = \frac{W_0 r}{r - (1 - \alpha)(1 - f^*) E_0(\mu)},$$

$$K_G(\alpha) = \frac{W_0 r}{r - (1 - \alpha)(1 - f^*) \left( p\mu^+ + \frac{(1 - p)}{(1 - f^*)} r \right)}.$$

Clearly,  $K_G(\alpha) > K_B(\alpha)$ . Furthermore, it can be verified that  $K'_B(\alpha) < 0$ . Let  $\alpha^B$  and  $\alpha^G$  be, respectively, the optimal insider ownership in country B and country G. I show below that  $\alpha^G < \alpha^B$ . Therefore,  $K_G(\alpha^G) > K_B(\alpha^G) > K_B(\alpha^B)$ .

- (3) The firm in country B has lower expected output per unit of capital before the entrepreneur's diversion of private benefits, since the average expected output in country G is  $\mu^+$ , whereas in country B, the average expected output is  $E_0(\mu)$ .
- (4) Tobin's  $q$  in this model is given by  $(1 - f^B) E_0(\mu)$  for the firm in country B and  $(1 - f^G) p\mu^+ + (1 - p)r$  for the firm in country G. Since I show below that  $\alpha^G < \alpha^B$  and  $f = \frac{1-\alpha}{b}$ ,  $f^B < f^G$ , that is, the entrepreneur diverts more when she has less cash flow ownership. However, this effect on  $q$  is second order when compared to the other two more dominant effects. First, she diverts cash flow only when the state is good, that is,  $E_1(\mu) = \mu^+$  in country G; whereas in country B she always expropriates. Second, she does not invest in negative NPV projects in country G but she does in country B.
- (5) From the proof of Proposition 1, I know that the first-order conditions for the maximization problem the entrepreneur faces in country B and country G are obtained by setting the following expressions to zero:

$$L_B(\alpha) = (1 - f^*)(r - (1 - \alpha)(1 - f^*) E_0(\mu)) - (\alpha + 0.5bf^{*2})(1 - 2f^*) E_0(\mu),$$

$$J_G(\alpha) = (1 - qf^*)(r - (1 - \alpha)((1 - f^*) p\mu^+ + (1 - p)r)) - (\alpha + 0.5bqf^{*2})[(1 - 2f^*) p\mu^+ + (1 - p)r]$$

I can now prove that, for a given level of  $\alpha$ ,  $L_B(\alpha) > J_G(\alpha)$ . To see this, note that:

$$\begin{aligned} L_B(\alpha) - J_G(\alpha) &= (1 - f)(1 - \alpha)(1 - p)[r - (1 - f)\mu^-] \\ &\quad + (\alpha + 0.5bf^2)(1 - p)[r - (1 - 2f)\mu^-] \\ &\quad - [f(1 - q)r - 0.5bf^2(1 - p)r] \end{aligned}$$

By definition,  $q = \frac{p\mu^+}{p\mu^+ + (1-p)r} > p$ . Therefore,

$$\begin{aligned} L_B(\alpha) - J_G(\alpha) &> (1 - f)(1 - \alpha)(1 - p)[r - (1 - f)\mu^-] \\ &\quad + (\alpha + 0.5bf^2)(1 - p)[r - (1 - 2f)\mu^-] \\ &\quad - [f(1 - p)r - 0.5bf^2(1 - p)r] \end{aligned}$$

Rearranging the terms, I obtain the following expression:

$$\begin{aligned} L_B(\alpha) - J_G(\alpha) &> [(1 - \alpha)(1 - f)^2 + (\alpha + 0.5bf^2)(1 - 2f)] \\ &\quad \times (1 - p)(r - \mu^-) + 0.5f(1 + \alpha)(1 - p)r > 0. \end{aligned}$$

It follows from this expression that  $L_B(\alpha) > J_G(\alpha)$ . I show in the proof of Proposition 1 that the second-order conditions are satisfied for the optimal values of  $\alpha$  in country B and country G. Consequently, to obtain  $L_B(\alpha) = 0$  and  $J_G(\alpha) = 0$ ,  $\alpha^B$  has to be greater than  $\alpha^G$ .

- (6) Since all firms raise capital in my setup and firms in country G have lower insider ownership  $\alpha^G < \alpha^B$ , it follows that more shares are available to outside shareholders in country G.

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