Preemptive Rights and Anti-Dilution Protections around the World

Vladimir Atanasov*
College of William and Mary

Artyom Durnev
McGill University

Larry Fauver
University of Miami

Kate Litvak
University of Texas

6 February 2007

* Corresponding author: Mason School of Business, College of William and Mary, P.O. Box 8795, Williamsburg, VA 23187, vladimir.atanasov@mason.wm.edu

Preemptive Rights and Anti-Dilution Protections around the World

Abstract: We study shareholder anti-dilution protections which we argue are an important condition for equity markets to function as a source of capital. We first provide a taxonomy of various forms of anti-dilution protections like preemptive rights, minimum price provisions, and approval rights. We then develop a theoretical framework to analyze the effectiveness of these anti-dilution statutes. The framework identifies important interactions, which are not captured by existing methodology to quantify investor legal protection. We show that the effectiveness of preemptive rights is strongly affected by ownership structure, financing costs, and freeze-out provisions; minimum price provisions are affected by freeze-out discounts and price manipulation statutes; while approval rights depend on the shareholder ownership structure. These country and firm-specific effects should not be ignored when measuring the quality of legal protections in empirical law and finance research.

1. Introduction

One of the most important functions of equity markets is to provide capital to publicly-traded companies. Equity capital is especially relevant for young or small companies which have little tangible assets available as collateral and have limited access to debt financing. Equity may be even more suitable for companies in emerging markets, which often lack a developed banking system or public debt markets.

Under certain conditions equity offerings benefit the issuing corporation and all of its shareholders by allowing the issuer to finance future positive NPV projects. Yet, the recent studies of Atanasov, et al (2006) and Baek, Kang and Lee (2005) find evidence that controlling shareholders in Bulgaria and Korea respectively often initiate equity offerings not to raise capital and increase firm value but to expropriate the wealth of minority shareholders by diluting their ownership stake.

In order for an equity market to flourish, it has to develop mechanisms that limit the dilutive consequences of equity issues. The law is an important mechanism that serves such preventive role in many markets and a variety of legal statutes have been designed to address dilution. Some legislatures grant preemptive rights to shareholders, others have minimum issue price statutes, yet others utilize a more self-enforcing approach and grant shareholders the right to approve the conditions of new issues. Not only the existence of broad groups of statutes varies across countries, but also the actual implementation of particular statutes is vastly different.[1]

---

[1] For example, the existence of preemptive rights is one of the components of the anti-director index developed by La Porta, et al (1998). According to this study, only 26 of the 49 countries in their sample have basic preemptive rights.

The main goal of our study is to develop a taxonomy of existing anti-dilutive statutes and develop a theoretical framework to analyze their effectiveness in preventing dilution. We develop a theoretical model of an equity issue and derive the payoffs for controlling and minority shareholders and the effect of legal provisions on these payoffs. To our knowledge, we are the first to model in a unified framework the three most common groups of anti-dilution statutes: preemptive rights, minimum issue price provisions, and shareholder approval rights.

Our approach offers several improvements over the existing methodology to quantify investor protection which simply counts the number of existing statutes in a particular jurisdiction to form an investor protection index. First, existing legal protection indices assume that all legal statutes are of equal importance and weigh them equally. Our model demonstrates that the various anti-dilution statutes have different role and importance in protecting shareholders and should not be weighed equally. Moreover, we find situations where the way a particular statute is implemented is more important than the sheer existence of the statute.

Second, existing legal protection indices ignore various interactions between legal statutes. Some statutes may be necessary for other statutes to be effective; statutes may be complements or substitutes. Our framework explicitly models these interactions. For example, we show that classic preemptive rights can be effective only when strong protections from other expropriation methods like freeze-out exist.

Third, the existing leximetric methodology does not take into account possible interactions of the law and other institutions or frictions. It may be that some statutes work best when ownership is dispersed, while others are effective in firms with

concentrated ownership. Our model and simulation results demonstrate that financing costs, margin rules, or the existence of institutional investors modify the effectiveness of various anti-dilution statutes. For example, simple preemptive rights provide strong protections for small investors when financing costs are low, but almost no protection when financing costs are high.

Last, our framework enables regulatory authorities to estimate the costs of regulation for various parties involved before a regulation is passed.

The remainder of the paper is structured as follows. Section 2 provides a background of shareholder dilution via equity issuance and existing methodologies to measure the level of shareholder protections. We provide a taxonomy of the various legal statutes that protect shareholders from dilution in Section 3, and develop the theoretical analysis of these statutes in Section 4. Section 5 discusses some results stemming from the theoretical model. Section 6 concludes.

2. Background

This section discusses the basic dilution problem and outlines the necessary conditions for wealth transfer from minority shareholder to the controlling shareholder to occur. We outline the various mechanisms that alleviate the dilution problem, among which the law has special importance. Next, we discuss the existing methodology to evaluate effectiveness of investor legal protections and the major weaknesses of this methodology.

2.1. Equity Dilution and Major Mechanisms which Prevent It

In the general case the equity dilution problem arises only when all of the following three conditions are met.[2] Condition 1: A significant amount of equity is issued. If the size of the equity issue is small, shareholder wealth loss is negligible. This is why many anti-dilution protections have a *de minimis* exception.

Condition 2: Some shareholders receive a disproportionately lower (higher) stake in the new issue. If all existing shareholders receive a proportionate amount of the newly issued shares, then there will be no dilution effects and the equity issue will resemble a stock split or a stock dividend.

Condition 3: Equity is issued at a lower price than the fair value of the stock. If the new stock is issued at fair value or even above fair value, regardless of participation or issue size, existing shareholders will not suffer a wealth loss. Although, their percentage ownership stake may be reduced, the new money coming to the company following the issue will compensate for this reduction.[3] When an equity issue is priced below fair value and some shareholders receive a disproportionately low share, their ownership (cash flow) rights are diluted and there is a transfer of wealth from them to the shareholders that purchase a disproportionately higher stake.

Even though all three conditions listed above have to be true in order for some shareholders' ownership rights to be damaged by equity dilution, we claim that there are

---

[2] We assume that in an equity issue all shares in as share class are issued at the same price, which is true in most cases.
[3] Even if the newly-issued equity is priced at fair value, but some shareholders receive a disproportionately low share, their control rights may be impaired due to the reduction of their percentage ownership stake. If control brings private pecuniary or non-pecuniary benefits, then the ownership rights of the shareholders who receive a disproportionately smaller stake are also affected. O'Neal and Thompson (2004) provide an example illustrating this issue. A closed corporation had only two shareholders each owning 50%. The corporation issued one share that was bought by Shareholder A. Most firm decisions required a simple majority and the control rights of Shareholder B were severely damaged.

many settings in the U.S. and around the world where equity dilution is common and has large wealth effects for the parties involved. Moreover, widespread equity dilution may actually inhibit the ability of corporations or other entities to raise capital from equity markets. Below we outline a few examples to demonstrate the scope of equity dilution around the world. We summarize the important cases in Table 1.

Dilution in Emerging Markets

Emerging markets and especially economies in transition are the first place that comes to mind when one thinks of shareholder expropriation (tunneling). Many of these economies lack a well-developed legal system to protect the ownership rights of minority shareholders. Other protective mechanism like the media and financial intermediaries are also weak. Equity dilution is a relatively low-cost and effective way to tunnel the wealth of minority shareholder and as one would expect it is often used by unconstrained controlling shareholders. Several recent studies have documented dilution in countries from the former Soviet Block. For example, Atanasov, Ciccotello, and Gyoshev (2006) show that before 2002, minority shareholders do not participate in equity issues initiated by companies listed on the Bulgarian Stock Exchange and as a result some controlling shareholders manage to increase their ownership stake from 50% to above 90% without expending much effort or resources in the process. The authors provide a couple of anecdotes where the discount of newly-issued shares exceeds 80% to the stock price before the issue.

Black (1998) analyzes a case in Russia, where the controlling shareholder places an "astounding 196,300 percent" of newly-issued shares into the hands of four related

parties at a price more than 50% lower than the prevalent market price at the time of the

placement. Given the size of the privately-placed blocks non-participating shareholders

lose more than 50% of their wealth following the transaction. The case described in

Black (1998) is not an isolated event in the Russian market during the 90s. Goldman

(2004) reports at least five more cases of shareholder dilution, all in major Russian

companies.

Equity dilution is not a problem only in ex-Socialist countries. Baek, et al, (2006)

investigate a large sample of private placements at non-market prices among companies

in Korean chaebols and find evidence of shareholder dilution. In Section 5.2 below we

are going to discuss one illustrative case of attempted shareholder dilution by SK

Telecom – the largest Korean mobile phone provider. There are examples of dilution in

other countries in East Asia referred to in Backman (2002).

Dilution in U.S. Privately-Held Companies

The common perception among academic scholars is that in the U.S. shareholder

expropriation is rare. Perhaps this is true in large publicly-traded companies. In contrast,

investors in privately-held corporations often suffer oppression from controlling

shareholders, and again dilutive equity issues are an efficient method to implement this

oppression. The seminal work of O'Neal and Thompson (2004) discusses many examples

where minority shareholders are diluted via increases in equity capital and dedicate a

whole section on the subject (Section 3:20). On p. 3-183 the authors report the egregious

example of Doll vs. James Martin Associates, where the majority shareholder proposed to

increase capital by half a million shares priced at $1 and dilute the value of the minority shareholder from $90 per share to $1.78.

Most of the cases in O'Neal and Thompson are small privately-held corporations, where the oppression is motivated by some personal conflict. There is another set of privately-held corporations where potential dilution of company founders is part of the contract – VC-backed startups. Venture Capitalists often negotiate anti-dilution provisions in their contracts with entrepreneurs. These anti-dilution provisions are an effective way to dilute entrepreneurs if firm value declines in subsequent investment rounds. The problem of common stockholder dilution in such down-rounds is investigated in Leavitt (2005) and Atanasov, Ivanov, and Litvak (2006). The latter paper compiles a sample of several lawsuits initiated by company founders that allege oppression of common shareholders via excessive dilution in financing rounds. Perhaps the most famous case of this type is the Alantec case where the venture capitalists virtually eradicated the ownership stake of two of the founders. This case is rather unique being the only case where the VCs expected to lose and settled with the plaintiffs for $15 million.

Dilution in U.S. Publicly-Traded Companies

Classic equity dilution in U.S. publicly-traded companies is rare or well-disguised. We focus on two settings that are effectively equity dilution, although there are not straightforwardly identified as such. The first setting is the practice of mutual fund market timing and late trading. The second case is excessive option and restricted share grants to top firm executives.

Mutual fund market timing occurs when a mutual fund has assets which have not traded a certain period before the close of the market at 4 p.m. The mutual fund usually computes its Net Asset Value based on these stale prices without incorporating information about market movements during the day. Savvy investors may identify funds with large number of stale-price assets and following a large movement in the broad equity market submit buy orders in these funds just before the 4 p.m. close. At some point in the future the assets in the mutual fund portfolio will trade and their prices will reflect the up move the stock market and the savvy investors will realize positive abnormal return. In essence, the market timers are buying undervalued shares at NAV, which does not reflect the market price of these shares. Most mutual funds state that they take measures to prevent such practice, although the scandals in 2002 involving Bank of America, BankOne, Putnam Investments, and Janus Funds revealed preferential treatment of certain investors in allowing them to time the mutual funds operated by these institutions.

The issue of excessive stock-based executive compensation needs more thorough discussion than the scope of this paper. We can just state that anytime an executive exercises options or receives restricted shares, there is shareholder dilution because the executive has received shares in the company at below market price. This dilution is further increased by various legal and illegal techniques like backdating and timing of option grants before good new and following bad news.

Equivalent Transactions to Equity Dilution

Besides the classic dilution case where some shareholders are excluded from an underpriced equity issue, there are transactions which result in similar wealth expropriation. The transaction with possibly the largest wealth expropriation so far is debt-for-equity swaps. Based on Goldman (2003) and others debt-for-equity swaps were an effective way for a handful of oligarchs to expropriate the government equity stake is many of the prized Russian corporations, the wealth expropriated being in the hundreds of billions if not trillions of dollars. In these debt-for-equity swaps a modest loan to a company was converted into a majority stake based on extremely low equity valuations, which, it is reasonable to believe, were well below fair value.

Another transaction, which also results in shareholder dilution is targeted repurchases at a premium to market value. Such transactions were common in the US in the 80s and denoted by the term "greenmail" (Peyer and Vermaelen, 2005). O'Neal and Thompson dedicate Section 3-16 in their book to cases where the majority shareholder sells shares back to corporation at inflated price. Even Enron made a similar transaction with its subsidiary EOG, in which Enron – the parent corporation sold stake back to EOG in exchange for $600 million in cash and arguably its most prized assets. The benefit for Enron was to avoid capital gains taxes on its holding but minority shareholders were left with little assets and no possibility for a takeover premium if Enron put EOG for acquisition instead.

2.2. Methods to Prevent the Dilution

Shareholder dilution techniques can have serious impact on minority investor wealth. If such techniques are left unregulated, a number of "rogue" controlling shareholders can seriously damage investor confidence in the integrity of the equity

market. In the extreme, the adverse selection may be so large that the market will cease to function as a source of capital for listed companies. During the development of most capital markets there was demand to control equity dilution with a variety of mechanisms, which we list below.

One of the first anti-dilution mechanisms to develop is legal statutes in the domestic country. These historically have been in the form of preemptive rights (Kraakman, et al, 2004). In Section 3 below we provide a detailed analysis of most legal statutes that regulate equity issues and have a role in preventing dilution.

Another, possibly complementary, approach would be to mandate detailed disclosure of all transactions in firm equity, including private placements, a variety of debt-to-equity or assets swaps, and targeted repurchases. The disclosure of any non-arm's-length deals to the wide public may have a disciplining effect.

Good disclosure of bad deals can punish oppressive controllers but also help long-term thinking controlling shareholders. Such controlling shareholders may have incentives to build reputation for treating minority investors fairly and thus increase company market valuation and reduce cost of capital. For example, Atanasov, Litvak and Ivanov (2006) that established VCs treat entrepreneurs more fairly than new VCs.

Even if the laws in the domestic country are poor, a company may attempt to import better laws from developed markets by cross-listing there. Ethics and religion may be also contributing factors to preventing shareholder abuse. Last, financial intermediaries like investment banks, institutional investors, or auditors may provide a certification role and screen good controllers from bad.

In emerging or transitional markets, many of the mechanisms that we list in this sub-section are underdeveloped or non-existing. Due to the uncertainty of the economic environment the horizon of most investors is short and reputation building may be suboptimal. Financial intermediaries will take time to appear, good disclosure and independent media may be hard to find. It seems that, at least in developing markets, legal protections will be the most effective and quick way to prevent wide-spread dilution and this is why we set to study them in detail in the remainder of the paper. Assuming that the legal anti-dilution protections important, our next step would be to quantify their existence and then measure their effectiveness.

2.3. Existing Leximetric Approaches

Attempts to quantify the law date back a long way. There is even a new word for the process – leximetrics, coined by Cooter and Ginsberg (2003) in their study of the length of similar content provisions in several countries in the European Union. The literature on measuring a more narrow part of the law, namely investor protection and relating it to economic and financial indicators starts with La Porta et al. (1998). The authors of this seminal study choose a handful of arguably ad hoc statutes and code their existence in a sample of 49 countries with a zero or one. Then sum the number of statutes to derive their "Anti-Director Rights Index." We denote this approach as a First Generation Shareholder Protection Leximetric Methodology. Following this study, several other works like Pistor (2000), Pistor, et al (2001), and Lele and Siems (2006) improve and extend the methodology but are still confined to the same paradigm of the First Generation Methodology.

Typically these studies attempt to measure the quality of investor protections at a very macro level and are usually not concerned with different implementations of the same statute across countries. The First Generation Methodology, beyond intuitive discussion, usually does not provide any rationale why a particular statute will be important for determining ownership structure, or size of capital markets around the world. The thinking process of a First Generation Leximetrist is that somehow law is related to finance or economics, we have vague ideas of some causal effects, but we are going to measure the law with crude force without thinking much about the exact mechanisms through which law may affect capital markets.

Critiques of this approach, especially of the seminal La Porta et al (1998) study are abundant. For example, a thorough study by Spamann (2006) shows extensive biases in the coding of the statutes, endogeneity issues between capital market development and the coding of statutes, and inconsistencies among the interpretation of the statutes by foreign country lawyers. After carefully recoding the Anti-Director's Right Index, Spamann (2006) shows that its predictive power in explaining capital market development disappears.

In response to these critiques recently a Second Generation of investor protection leximetric approaches emerged. The studies implementing the Second Generation Leximetric Approach are only a handful. We are familiar with only two such studies – Djankov, et al (2006) and Nenova (2006). The major improvement of the Second Generation compared to the First is that these studies focus on a particular transaction that may seriously damage the wealth of minority shareholders if left unregulated and then codify all legal statutes in a particular jurisdiction that control the impact of this

transaction. Djankov et al (2006) focus on a self-dealing asset sale, while Nenova (2006) studies mergers and acquisitions. In essence, these studies add another link to the chain between law and finance, namely law regulates shareholder expropriation, while shareholder expropriation affects market valuations, liquidity, and other financial measures. This causal link between the law and finance via shareholder expropriation is formally developed and tested by Atanasov, et al (2006).

While a major improvement over the previous methodology, the Second Generation Approach still does not solve some of the problems with the First Generation. In particular, we list the following five problems.

1. Equal weighting of all statutes. Following the steps of the original studies, the Second Generation leximetrists still weigh equally all statutes that they study. This is probably good practice without any a priori belief about the relative importance of certain statutes, but it is reasonable to expect that not all statutes have equal contribution to shareholder protection.

2. No interactions between statutes. The coding of First Generation and Second Generation investor protection measures treats every statute independently. In practice, some statutes can function only if other statutes simultaneously exist. Statutes may complement each other or be functional substitutes. In fact, one of the critiques of the La Porta et al (1998) index in Spamann (2006) is that preemptive rights and approval rights are substitutes, a fact which was ignored by the index. Such interactions are hard to code under the existing methodology and to our knowledge have not been coded yet.

3. No interactions between statutes and other institutions. Some statutes will work well in a particular environment like one with independent media and stable macroeconomic conditions. Other, will require qualified judiciary. In general a good understanding of the law cannot be achieved in vacuum abstracting from the rest of the institutional framework.

4. No interactions between statutes and transaction costs. Similar to the above point, many statutes require low transaction costs to be effective, while others are robust to large variation in financing costs or other frictions.

5. Not unsuitable for policy recommendations. For example, if we take La Porta et al (1998) or even Djankov et al (2006) at face value we have to set all variables to 1 and this will achieve a well-performing equity markets. But, implementing this simple recommendation is impossible before we estimate costs for different parties from setting all statutes to 1. Existing indices are usually not detailed enough to answer questions like: "In a constrained world, which statutes are more important?", "What are the costs of each statute to implement?", or "What is the best way to implement a statute?".

In the following sections we develop a theoretical framework which we believe can be titled a Third Generation leximetric methodology.[4] The framework addresses some of the problems listed above in the context of shareholder dilution and the legal statutes that control it. We summarize the main features of the two existing generations of coding methodology and list the improvements we propose in a third-generation approach in Table 2.

---

[4] The only paper that implements a similar theoretically-founded approach to quantify legal text is Litvak (2006), although her study focuses not on statutory law but on private contracts between venture capitalists and limited partners.

3. Taxonomy of Anti-Dilution Statutes

Anti-dilution statutes are not usually the focus of academic legal research in the

U.S. In fact, it is hard to find any recent study of such statutes in the literature. One

possible reason for this neglect is that U.S. corporate law does not mandate any

preemptive rights, and the default rule is that companies do not have them. Yet, there is

one legal entity, which has been very carefully regulated by the U.S. federal law with

respect to potential shareholder dilution. This entity is a closed-end investment company.

The issuance of equity by closed-end funds follows under the jurisdiction of the

Investment Company Act in 1940. Section 23 of this act states:

a. Issuance of securities. No registered closed-end company shall issue any of its securities (1) for services; or (2) for property other than cash or securities (including securities of which such registered company is the issuer), except as a dividend or distribution to its security holders or in connection with a reorganization.

b. Sale of common stock at price below current net asset value. No registered closed-end company shall sell any common stock of which it is the issuer at a price below the current net asset value of such stock, exclusive of any distributing commission or discount (which net asset value shall be determined as of a time within forty-eight hours, excluding Sundays and holidays, next preceding the time of such determination), except (1) in connection with an offering to the holders of one or more classes of its capital stock; (2) with the consent of a majority of its common stockholders; (3) upon conversion of a convertible security in accordance with its terms; (4) upon the exercise of any warrant outstanding on the date of enactment of this Act [enacted Aug. 22, 1940] or issued in accordance with the provisions of section 18(d) [15 USCS § 80a-18(d)]; or (5) under such other circumstances as the Commission may permit by rules and regulations or orders for the protection of investors.

c. Purchase of securities of which it is issuer; exceptions. No registered closed-end company shall purchase any securities of any class of which it is the issuer except--

    1. on a securities exchange or such other open market as the Commission may designate by rules and regulations or orders: Provided, That if such securities are stock, such registered company shall, within the preceding six months, have informed stockholders of its intention to purchase stock of such class by letter or report addressed to stockholders of such class; or

2. pursuant to tenders, after reasonable opportunity to submit tenders given to all holders of securities of the class to be purchased; or

3. under such other circumstances as the Commission may permit by rules and regulations or orders for the protection of investors in order to insure that such purchases are made in a manner or on a basis which does not unfairly discriminate against any holders of the class or classes of securities to be purchased.

The analysis of the above text outlines three broad categories of legal statutes that protect shareholders in closed-end funds from dilution. First, there is a preemptive right granted to shareholders. The fund can issue shares at any price to its existing shareholders. In practice, this preemptive right is securitized and existing shareholders are given tradable rights, which are similar to stock warrants.

Second, there is an implicit pricing rule that sets the minimum price above which shares can be issues. In particular, closed-end funds can issue new shares to anyone at prices above Net Asset Value. The predominant interpretation of this rule is that the issue price has to be well above NAV, such that after all issue fees and expenses are paid, the money flowing into the fund is at least NAV per newly-issued share.

Last, shareholders are given an approval right. If a majority of shareholder approve, the fund the issue shares at any price to anyone. Note, that the approval of the issue can also be granted by the Securities Regulator – The SEC.

Part a) has also an important role. It prevents the issuance of securities for services or payment other than cash and marketable securities. As we will see later, such rule is rather important in preventing complete dilution of shareholders. Last, part c) regulates stock repurchases, which we argued in the previous section can have identical dilution outcomes as equity issues.

Note that the Act works in a logical OR as opposed to a logical AND faction. The closed end fund can fulfill any of the obligations of Section 23 and issue securities. This

allows plenty of flexibility, while still maintaining reasonable protections for shareholders.

Similar OR approaches exist in France and Hong Kong. In France, companies can initiate rights offerings at any price to existing shareholders or a public offering at a market price (existing shareholders have ten days to subscribe to offering, then it is opened to the public. In Hong Kong, companies can issue rights to existing shareholders to obtain shareholder approval to issue equity in a public offering.

The drafters of the 1940 Act in a very succinct way managed to capture all major existing anti-dilution protections in corporate and securities laws around the world. In the remainder of this section we analyze in more detail the three main groups of protections: preemptive rights, minimum price provisions, and approval rights.

An alternative classification of anti-dilution provisions can be designed based on the timing of these provisions along the equity issue process. Such classification is shown in Figure 1. Statutes can be effective pre-issue. These are usually approval rights and minimum pricing rules. During-issue statutes are the various types of preemptive rights. Last, post-issue statutes are catch-up rights and possibly appraisal rights, although we are not aware of a country that offers shareholders an appraisal process following an equity issue.[5]

---

[5] Perhaps such provision does not exist because the idea behind an offering is that the firm needs new capital and burdening it with appraisal demands will put too much power into dissenting shareholders. Still, appraisal right may not be that bad, especially if granted for transferable preemptive rights. They will assure that there is some value that minority shareholders capture in equity issues, even if there is no market for the rights.

3.1. Preemptive Rights

The role of preemptive rights is to ensure proportional participation of all investors/no exclusion of certain investors from an equity issue. Many of the developed markets studied by Kraakman, et al (2004) have some form of preemptive rights, although in the U.S. they are neither mandatory nor the default for corporations.

Transferability

We believe that the most important dimension along which one can classify preemptive rights is whether they are transferable and if transferable whether they are publicly-traded. The different variations of preemptive rights along this dimension, illustrated with some examples, are shown in Figure 2. The most advanced form of preemptive rights is securitized rights, which are traded on a stock exchange. Such preemptive rights are mandatory in, for example, Bulgaria and Turkey. Anecdotal evidence in the US from Smith (1977) reveals that 50% of shareholders exercise their preemptive rights, 40% sell them, and 10% of shareholders do nothing and suffer dilution, so even tradable preemptive rights are not 100% fool-proof.

It is worth relating the history of preemptive rights in the US described in Smith (1977). In the 1880s a shareholder had to appear in person at the company head office to exercise her preemptive right and purchase new shares. Then the rights to purchase new shares were sent by mail. Afterwards, the rights become transferable to other shareholders. Last, in 1910 the engraved form of a warrant was issued and traded on a stock exchange. So the US went in a period of 50 years through four stages, which essentially summarize all current variation of preemptive rights in the world:

- Subscription in person

- Subscription by mail

- Transferable right

- Securitized/publicly traded warrants

Then somewhere between 1960 and 1980 there was a switch in common practice and companies started using public seasoned equity offerings instead of rights offerings, and most contemporary publicly-traded companies (except closed-end funds) do not have preemptive rights on their charter.

<u>Payment in Cash</u>

Another important dimension of preemptive rights, which is addressed in the 1940 Act, is whether the law requires new shares to be paid in full or allows conditional increase of capital. The possibility of non-cash payments for new shares leaves significant opportunities for controlling shareholders to abuse small investors. Important issues arise like:

- Will the payment ever arrive? (may be a scheme to get shares in exchange for nothing)

- Problems of valuation of non-cash payments (promissory notes, shares of private companies, other illiquid assets) (e.g. the Tri-Star Pictures case)

- Do you allow insiders to pay for shares by promising future services?

In view of the above issues, the Investment Company Act along with other jurisdictions outright forbids non-cash payments. But this is not the case in Macedonia

for example, where the controlling shareholder may postpone payments of new shares for an unspecified period.

The Oversubscription Privilege

Another facet of preemptive rights is if there is an oversubscription privilege granted to shareholders that participate in the equity offering to purchase the unsubscribed shares. Most jurisdictions have this option as a default, but in rights offerings by closed-end funds in the US the oversubscription privilege is granted in some but now all offerings (Khorana, et al, 2002).

Default Option

Given the anecdotal evidence in Smith (1977) that 10% of investors do not bother to subscribe to rights offerings, preemptive rights may be mode more effective if there a default option if a shareholder does not do anything? In some closed-end offerings in the US stockbrokers may automatically sell rights and credit investor's account if they are not exercised. This definitely benefits small and unsophisticated investors at relatively modest costs to the company.

Waivability

The law in many cases prefers companies to have flexibility in their equity raising activities. Therefore, in many cases, preemptive rights can be waived by a shareholder vote. These rules demonstrate the interaction between legal statutes, in this case between preemptive rights and approval rights, a point made by Spamann (2006), because

predominantly the waiver rules are similar to the rules for approving equity offerings. The variations in implementation of rules of waiver re whether the vote has be of all shareholders, of only shareholders present at meeting, of disinterested shareholder, and is there a simple or supermajority.

Costs associated with preemptive rights

As most legal rules, preemptive rights are not costless for small shareholders, the firm, and the controlling shareholder. Classic preemptive rights allow shareholders to purchase shares in new issues, but this purchase requires capital. The cost of financing the newly-issued shares may be significant. Moreover, investors may be budget-constrained and not able to obtain financing. The US legislation provides some help with financing. Smith (1977) states that, at least at the time the article was written, the margin requirement for financing the purchase of rights are easier than the regular margin requirement for purchasing stocks – instead of 50%, is up to 75% of the value can be bought on margin. This allows shareholders to finance the purchase of shares as much as three times the value of their existing position.

Besides the direct financing costs of purchasing shares, there may be transaction and information costs for investors to file the paperwork and subscribe for new issues. Such costs are consistent with existing evidence in Cox and Thomas (2002) that investors do not bother to file claims in class-action suits and Smith (1977) and investors do not bother to receive their warrants. There will also be costs associated with transferable and securitized rights (warrants) like listing costs and regulatory compliance, which are likely to be born by the whole firm and trading and liquidity costs.

Financing and other transaction costs are likely to be related to investor-specific characteristics like ownership size, nationality (foreign vs. domestic), level of sophistication, asset allocation. Thus, preemptive rights will not protect all investors equally and their effectiveness will depend on the distribution of investors in a particular firm and country.

3.2. Minimum Issue Price Provisions

We next turn to the second group of anti-dilution provisions – minimum pricing rules. Examples of minimum pricing rules are easy to find. We already discussed the rule that closed-end mutual funds in the US can freely issue shares above NAV. In France, the rule is that public-offerings have to priced higher than or equal to the average price based on ten successive days chosen in a 20-day window before offering. (Gajewski, et al, 2003). In the UK shares can be issued at a 5% maximum discount to market price before the offering date.

Type of Basis Price

One useful dimension along which we can differentiate minimum pricing rules is the type of price that is referred to. We show the variations of basis price in Figure 2. The basis price can be the market price, book value per share, or a fair price formula based on valuation methods similar to appraisal. For example, in Russia the law states that the minimum price should be fair value, but for publicly-traded companies the law substitutes fair value with the market price. In Czech law and formally the Investment Company Act the basis price is Book Value per share, although NAV can be also though as a more market-based price.

Minimum price statutes struggle most with the calculation of the fair price of firm shares. On one hand, if the rule is based on market price, the rule may be made ineffective if the controlling shareholder can manipulate the market price by wash sales or a threat to freeze-out shareholders. For such minimum price provisions to be effective, price manipulation rules and good freeze-out protections are critical. On the other hand, if the rule is based on book value, the controlling shareholder can engage in asset stripping, take excessive liabilities, or other accounting manipulations that can reduce the book value per share. For these rules, good accounting disclosure and independent auditors may be helpful.

Net or gross of transaction costs

The second meaningful dimension shown in Figure 2 is whether the issue price has to exceed the basis price net or gross of transaction costs. The Investment Company Act states that the issue price even net of costs has to exceed NAV, while Russian law allows up to 10% of the value of the issue to be allocated to investment banking fees and other transaction costs

Waivability

Similar to preemptive rights, minimum price rules can often be waived by a shareholder vote. Same variations as with preemptive rights apply here – whether the vote has be of all shareholders, of only shareholders present at meeting, of disinterested shareholder, and is there a simple or supermajority.

<u>Costs associated with minimum price statutes</u>

Due to the historical nature of accounting numbers, book-value-based provisions are bad in most cases, but arguably more robust to market manipulations by controlling shareholders. Fair or market value based provisions are better but there will be costs for appraisal in the fair value case. Last, a company may need capital quickly and restrictions on the liquidity discount and transaction costs will hamper the ability to sell quickly. A relevant comparison here is the IPO process and the large amount of money left on the table. A minimum price rule will inhibit the whole IPO process. Some discount is very common for various reasons and this is why rigorous net of proceeds rule are probably too restrictive. Typical examples are closed-end funds in the US. Only a handful of funds have managed to issue equity at above-NAV prices in the last 30 years (Khorana, et al, 2002).

3.3. Approval Rights

Approval rights are the last group of anti-dilution provisions we study. Approval rights are representative of the self-enforcing approach to solve shareholder conflicts. Under many circumstances approval rights can be a flexible substitute both for preemptive rights and minimum pricing statutes, which is reflected in the OR structure of the Investment Company Act. For them the important issues, which are shown in Figure 4, are as follows.

<u>Who approves new issues</u>

New issues can be approved by the Board of Directors, all shareholders, or by minority/disinterested shareholders only. The requirement that all shareholders approve

an issue may be combined with a minimum equity size as in the case of NYSE listed companies, where shareholder approval is needed for any issue exceeding 20% of existing shares.

Majority Provisions

The second dimension of approval rights is whether there is a simple majority or a supermajority required to approve the issue, and whether the majority requirement is based on all existing shareholders or only on voting shareholders (shareholder present at meeting). The Investment Company Act requires an approval of a simple majority, but a majority of all shareholders. This has proven rather difficult to obtain, given the dispersed ownership structure of most closed-end funds and the passivity of small investors in voting proxies.

Approval by Securities Regulator or other government agency

Such possibility exists in the 1940 Act and other jurisdictions as well. An approval by a sophisticated regulator solves the free-riding problem both when approval cannot be obtained due to dispersed ownership and when the majority shareholder controls more votes than supermajority requirements. This requirement is rather rare in developed markets.

Costs associated with approval rights

Approval rights are not costless. First, the company has to make expenses in summoning a shareholder meeting and mailing proxies to all shareholders (if voting by

proxy is available under the law). Given minority shareholders veto may lead to a minority holdup that may prevent a company from value-increasing capital-raising. Conversely, if the controlling shareholder controls a majority of votes, or the rules are based on shareholders present at the meeting, approval rights will be largely ineffective in preventing dilution. A strong reliance on approval rights in emerging markets is most likely inefficient.

4. Model Results and Discussion

After providing a taxonomy of anti-dilution provision around the world in Section 3, we next turn to the development of a theoretical model which interacts these legal provisions with various transaction costs, investor ownership stakes, and other relevant statutes like freeze-out rules into a unified framework. The full theoretical model is still under development and its unfinished body is included in the Appendix. Here, we provide a brief description of the structure of model, which may allow readers to get an idea of our approach and understand better the source of results and interactions discussed below.

4.1. Brief Description of the Model Structure

The model is driven by several assumptions about financing and other transaction costs which interact with preemptive rights, minimum pricing statutes and approval rights. We assume that whenever shareholders exercise their preemptive rights, they need to finance the purchase of shares at some interest rate. They are also restricted in the amount of capital that they can raise depending on the margin requirements in the economy, and they also have to incur fixed financing and subscription costs. All of these

costs reduce the ability for investors to participate in offerings and as a result allow the controlling shareholder to initiate the offering at worse terms – larger number of shares issued at a bigger discount.

Another important driver of the model which interacts with the fixed and variable financing costs is the ownership stakes of the largest minority shareholders. Financing and subscription costs are fixed, which makes larger investors more likely to participate, although margin requirements or other investment restrictions may prevent them from fully participating in large issues.

Last, the ability of a controlling shareholder to freeze-out the rest of investors at a discount following the offering, severely reduces the effectiveness of preemptive rights, because now shareholders are facing the problem of "throwing good money after bad." If the freeze-out discount is large, then no shareholders participate in an offering, even if the dilution is large, or preemptive rights are transferable and tradable. In this scenario, minimum pricing rules may be more effective, because they limit the ability of the controlling shareholder to issue shares at a discount that nobody else is willing to subscribe to.

4.2. Some Preliminary Results and Conjectures

We now turn to discussing some of the preliminary results that arise from the model we have developed so far. The main effects of each of the main drivers in the model and some important interactions between them are reported in Table 3.

As we discussed in Section 2.2, statutes cannot be analyzed and coded in isolation. This argument is supported by many of the results in Table 3. Preemptive rights and Minimum pricing statutes are usually substitutes for Approval rights, although each

of the three statutes works best under different conditions. Preemptive rights are best, when price manipulation makes minimum price provisions weak and when financing costs are low. Approval rights work when the controlling shareholder's stake is relatively small. Minimum price provisions are robust to weak freeze-out protections.

The effectiveness of all three statutes is modified by various transaction costs and shareholder characteristics. Factors like financing costs, margin requirements, subscription costs, stock market liquidity, and firm ownership structure cannot be ignored when coding the existence of legal statutes in a particular jurisdiction. Many of these transactions costs uniformly reduce the protection afforded by statutes. Others like margin requirements have double-sided effects.

The last important insight in Table 3 is that in order for preemptive rights to be effective in preventing dilution one or more conditions have to be met. First, pay-in-full rules have to be mandated in order to prevent controlling shareholders from diluting everyone else without much effort and zero capital expense. Second, financing and subscription costs have to be low. A way to achieve low subscription costs is to have a default selling rule, as in closed-end fund offerings in the US. Second, there should be large and sophisticated minority investors that will exercise their rights, even if subscription and financing costs are high. These large investors are especially effective when rights are transferable, as they provide an outlet for small investors to sell their rights to, even if they themselves do not plan to participate.

4.3. The Case of SK Telecom

We conclude this section with an illustration of the importance of minority blockholders in preventing dilution. This is an important result that arises from our model, but is also seen in practical cases. One such illustrative case is the rights offering initiated in June 1999 by SK Telecom – at the time the largest Korean cell phone company.

In mid-June of 1999, SK Telecom announces a 1 for 4.3579 or 1.67 million new common shares in a rights offering to be completed on July 27 and 28, 1999. The rights allow participating shareholders to purchase shares at a 30% discount to the lowest average price derived from the closing prices one month, a week and the day before June 30. The offering is the largest in Korean history until that day and increases SK Telecom's shares outstanding by 25%. The main reason for the offering is that SK Group, the controlling shareholder of SK Telecom, wants to raise its stake by taking forfeited shares from the offering. Although, all shareholders could potentially exercise their rights, and the plan of SK Group to increase its ownership at low cost could fail, it is betting that the second largest shareholder Korea Telecom (KT) would not participate because of KT's plan to cut down on spending (Yoon, 1999). Critics of the rights issue have said the company's largest shareholder, SK Group, was seeking to consolidate its management control ahead of the July 1, 1999 expansion of the foreign ownership ceiling of Korean telecom firms from 33% to 49% (Yoon, 1999)

The third largest shareholder of SK telecom with a 6.63% stake is a hedge fund – Tiger Management LLC (Yoon, 1999). Tiger opposes the rights offering from the day it is announced, perhaps because it is also facing financing problems. Tiger starts an

energetic campaign to stop the rights offering. Tiger summons an extraordinary shareholder meeting on June 30, 1999 to remove directors responsible for offering. It is rumored that Bob Dole, former U.S. Senator and an adviser of Tiger Management, visited President Kim Dae Jung and the Ministry of Information & Communication on Wednesday to call for cancellation of SK Telecom's capital increase (Veal, 1999).

This extensive campaign increase awareness of investors of the potential dilution effects of the offering and has several important effects. First, Korea Telecom, the second-biggest shareholder of SK Telecom, decides to participate in the purchase even though originally it was expected not to. Second, the final outcome of the offering is that 99.65% of the rights are subscribed. Many of the rights are actually purchased by Tiger and it increases its stake to more than 12% following the offering. Ironically, because of being a thorn in the side of the SK Group, SK Group buys the majority of Tiger's stake in August, 1999. Tiger makes a 30% return on its investment in the offering and SK Group increases its stake to 36% following the block purchase.

Tiger got a respectable return for its efforts, but its shareholder activism also prevented the controlling shareholder to quietly diluting small investors. This illustrates to a large extent the insights from our model about the effects of minority blockholders in reducing shareholder dilution in settings where transferable preemptive rights exist.

5. Conclusion

- Summarize the main insights of our analysis
    - o Importance of shareholder dilution as a tunneling method
    - o Role of anti-dilution protections in the development of equity markets
    - o Interactions between statutes

- o Interaction of transaction costs and statutes

- o Interaction of ownership structure and statutes

Appendix. A Theoretical Analysis of Equity Dilution and Anti-Dilution Statutes

A.1. Mechanics of Dilution

We start with a setup similar to Atanasov et al. (2006). All notation is included in Table 4. There are five relevant time periods, indexed by $t = 0$ to 4. A firm has one share at time $t = 0$. Define the intrinsic value of a share in the firm at time $t = 0$ as V_0. The firm has a controlling shareholder C and M minority shareholders indexed by $j = 1$ to M. Initially, the controlling shareholder C owns α_0 shares, each minority shareholder owns $\alpha_{j,0}$ and the sum of the $\alpha_{j,0}$ equals $(1 - \alpha_0)$ shares. Let minority shareholders are indexed by the value of their initial stakes $\alpha_{j,0}$ such that $\alpha_{1,0} \geq \alpha_{2,0} \ldots \geq \alpha_{M,0}$.

At time $t = 0$, the firm is set up, endowed with its ownership structure, and minority shareholders value the firm, taking into account the risk of future dilution. At time $t = 1$, the controlling shareholder decides whether the firm will issue i new shares at a discounted price P_{dilut}. Let P_{dilut} equal to $(1 - d_{dilut})$ of the pre-dilution firm value. The newly issued shares are offered to some or all of the firm's existing shareholders. At time $t = 2$, the minority shareholders decide whether to participate in the new equity issue if they have a right to do so. At time $t = 3$, if allowed by the law, shareholders that have not participated in the new issue may sell their rights to other investors, which then exercise them. At time $t = 4$, the controlling shareholder decides whether to freeze-out minority shareholders through a tender offer at P_{freeze} and thus acquire 100% ownership in the company. The timeline of events in the model is shown on Figure 5.

At the equity offering in $t = 2$, each minority shareholder acquires $p_j * \alpha_{j,0} * i$ of the newly issued shares. Here p_j are numbers between 0 and 1, and represent the fractional

participation by each minority shareholder $j = 1$ to M relative to the number she would

have the right to acquire in order to preserve her ownership stake in the company. At time

$t = 3$, the shareholders can also sell their rights to other investors, if this allowed by the

law. The proportion of sold rights is denoted by s_j, where $s_j = 1 - p_j$. Below we model the

choice of p_j and s_j for each minority shareholder as a function of legal statutes and

transaction costs. We assume that the controlling shareholder acquires all unsubscribed

shares.[6]

After the offering, each minority shareholder owns the following proportion of the

company:

$$\alpha_{j,1} = \frac{\alpha_{j,0} + p_j \alpha_{j,0} i}{(1+i)} = \frac{\alpha_{j,0}\left[1 + p_j i\right]}{(1+i)} \tag{1}$$

After the issuance, once all new shares are subscribed at time $t = 3$, the firm's

intrinsic value is $[1 + i*(1-d_{\text{dilut}})]*V_0$ and the number of outstanding shares is $(1 + i)$. The

value of a minority share, without anticipation of a freeze-out or further dilution, drops

to:

$$V_3 = \frac{\left(1 + i * \left(1 - d_{dilute}\right)\right)}{1 + i} * V_0 = \left(1 - d_{dilute}\frac{i}{(1+i)}\right)V_0 \tag{2}$$

We formulate the following proposition about the effect of dilution on minority

shareholder wealth.

Proposition 1. The wealth transfer D_j from a minority shareholder j to the controlling

shareholder in a dilutive offering (as a fraction of the no-financial tunneling value of

minority shares $V_{no\text{-}fin}$) equals:

---

[6] We can potentially model the case where no oversubscription privileges exist, but the results about
shareholder dilution, albeit becoming weaker, will not change in qualitative sense. Moreover, most country
laws either grant oversubscription privileges, or do not ban them explicitly.

$$D_{j,0} = \alpha_{j,0} d_{dilute} \frac{i}{1+i} \left(1 - p_j\right) \tag{3}$$

If there are no legal protections against dilutive share offerings and no financing

constraints and other transaction costs, then d_{dilute} may approach 1, all p_j approach 0; and i

approaches ∞; so $D_{j,0} \approx \alpha_{j,0}$. The controlling shareholder can exclude all remaining

shareholders from the issue and acquire an arbitrarily large number of shares at an

arbitrarily low price, thus expropriating minority shareholders' entire initial ownership of

the firm $(1-\alpha_0) = \Sigma \alpha_{j,0}$.

We also formulate the following proposition about the perfect substitutability of

anti-dilution protections:

Proposition 2. If there are no frictions, the wealth transfer D_j from a minority

shareholder j to the controlling shareholder will be reduced to zero by any of the

following statutes:

      1.   Preemptive rights that ensure that all $p_j = 1$

      2.   Minimum price provisions that set $d_{dilute} = 0$

      3.   Approval rights that allow shareholders to block any equity offering

            that has terms, which reduce minority shareholder wealth ($p_j < 1$ or

            $d_{dilute} > 0$

Proposition 2 is similar to the Coase Theorem and states that the actual form of

anti-dilution protection is irrelevant as long as there are not friction like financing costs,

informational asymmetry, other costs for shareholders to participate in offering, or a

potential for the controlling shareholder to reduce post-issue price by other tunneling

methods like freeze-out. In particular, a minimum pricing statute will be equivalent to a

preemptive right statute and transferability and securitization of preemptive rights be irrelevant.

The proposition provides a baseline case, which states that just putting a simple preemptive right in the law is enough. This is the assumption behind the inclusion of a simple 0-1 variable in the La Porta et al (1998) anti-director index. In the remainder of this section we model theoretically the interaction of the anti-dilution provisions and particular frictions and show that the actual form of anti-dilution protections matters as much as the presence of such protections.

A.2. Modeling Preemptive Rights

We now analyze the decision problem of minority shareholders once an equity issue has been announced. We assume that the investor can finance the purchase of new shares (or exercise her preemptive rights) at an interest rate equal to r and a fixed cost of R.[7] The fixed cost represents filing paperwork, acquiring information, and other effort that an investor has to spend to participate in the equity issue regardless of the size of the investment. There is also a fixed cost C, which is incurred in the case of subscribing to receive rights, even when these rights can be transferred and not financing cost will be incurred. Last there are margin requirements (or budget constraints) which limit the amount of financing each investor can raise to purchase shares in the new issue. These are captured by the parameters b_0 for C and b_j, j = 1 to M for minority shareholders.

We analyze four cases. Case 0, no preemptive rights, Case 1 – no transferability of rights, Case 2 – transferable rights, and Case 3 – publicly traded rights. The cases are indexed by c = 0 to 3. In Cases 2 and 3 where the preemptive rights are transferable we

---

[7] Financing costs r could possibly vary across investors. For simplicity, we choose constant r but add fixed costs of financing R. This generates variation of total financing costs among investors based on their size.

assume that the investor can sell these at a discount of t_c to other investors. We assume that the discount in the case of publicly-traded warrants is smaller ($t_3 < t_2 < 1$). The case when rights are not transferable can be viewed as having transferability with a discount of $t_1 = 1$.

The investor will exercise p_j of the granted rights and sell the remaining $s_j = 1 - p_j$ to another investor or the market if such outlets are available, otherwise the rights will expire. We are now ready to formulate the optimization problem of a representative minority investor j deciding on p_j and c_j in order to maximize his wealth. The investor solves the following problem:

$$
\underset{p_j, s_j}{Max} \left[V_0 \alpha_{j,0} i \left(\left(\frac{d_{dilute}}{1+i} - r \left(1 - d_{dilute} \right) \right) p_j + \frac{d_{dilute}}{1+i} \left(1 - t_c \right) s_j \right) - R * I \left(p_j > 0 \right) - S * I \left(s_j > 0 \right) \right]
$$

$$
s.t. \tag{4}
$$

$$
p_j \in [0,1]
$$

$$
i * \frac{d_{dilute}}{1+i} p_j \leq b_j
$$

Where $I(p_j$ (or s_j)>0) denotes an operator equal to 1 if p_j (or s_j) >0 and zero otherwise.

Case 0

In Case 0, the controlling shareholder may exclude minority shareholder from participation and investors are left with no choice but to set $p_j = 0$. Regardless of financing or transaction costs, they receive zero payoff from the issue and their wealth is diluted by $\alpha_{j,0} d_{dilute} \frac{i}{1+i}$.

Assuming that the controlling shareholder purchases all issued shares, the wealth loss of minority shareholders through dilution Tun_0 in Case 0 will be given by the following expression:

$$Tun_0 = d_{dilute} \frac{i}{1+i} \sum_{j=1}^{M} \alpha_j = d_{dilute} \frac{i}{1+i} (1 - \alpha_0) \tag{5}$$

Given that the controlling shareholder can exclude everyone else from the new issue, C can set the optimal values of i and d_{dilute} in order to maximum his payoffs. In this case it is critical whether the jurisdiction mandates that all newly-issued shares have to be paid in full and in cash. If conditional capital increases are possible, then C can set i close to infinity and d_{dilute} close to 1 and take the whole firm at no cost. If there are pay-in-full requirements, then C solves the following optimization problem:

$$\operatorname*{Max}_{d_{dilute}, i} \left[V_0 i \left(\frac{d_{dilute}}{1+i} - r(1 - d_{dilute}) \right) \right]$$
$$s.t.$$
$$i > 0 \tag{6}$$
$$d_{dilute} \leq 1$$
$$i * (1 - d_{dilute}) \leq \alpha_0 * b_0$$

It is easy to see that if there are no minimum price provisions, C can set d_{dilute} to 1 and maximize his return, by expropriating the whole firm. With some minimal price provisions even like $P_{dilute} \geq \$0.01$, shareholders will have some value left, but not much.

Case 1

The solution to the optimization problem in Case 1, where $t_c = 1$, is also simple. The investor will either set p_j to 0 or 1 depending on the sign of the following inequality.

$$V_0 \alpha_{j,0} i \left(\frac{d_{dilute}}{1+i} - r \left(1 - d_{dilute} \right) \right) > R \qquad (7)$$

If the equality holds, the investor will participate 100% in the new issue; if it does not, she will not participate at all. In case the investor finds it optimal not to participate, her payoff from non- participation is zero as in Case 0 and her wealth gets diluted by

$\alpha_{j,0} d_{dilute} \dfrac{i}{1+i}$. From Inequality (7) it is evident that higher financing and fixed costs will increase that likelihood of an investor will not participate in an issue, while a larger stake in the company will make participation more likely.

The percentage wealth increase for C via tunneling Tun_1 will equal:

$$Tun_1 = d_{dilute} \frac{i}{1+i} \sum_{j=1}^{M} \alpha_{j,0} \left(1 - p_j \right) \qquad (8)$$

Depending on the individual choices p_j, $0 \le Tun_1 \le Tun_0$. Minority shareholders are at least well off as in Case 1 and under most circumstances are strictly better off with the institution of simple preemptive rights. In contrast, the increase of controlling shareholder wealth via tunneling is strictly lower in most cases.

Given Equation (8) we can solve the optimal choice of d_{dilute} and i that maximizes the payoff of C for a given set of ownership stakes $\alpha_{j,0}$ and financing and subscription costs r and R. Note that if the left-hand side of Inequality equals R for a certain $\alpha_{j,0}$, then all shareholders with stakes larger than $\alpha_{j,0}$ will participate in offering and all with smaller stakes will not participate. Thus, the optimization problem of C reduces to deciding on the cutoff ownership stake $\alpha_{j,0}*$ and choosing d_{dilute} and i accordingly.

Case 2

The solution to (4) in Case 2 is also simple. As in Case 1, the investor can still

exercise p_j rights and finance them by paying r interest and a fixed cost R, but the

difference is that the remaining $(1-p_j)$ rights can be sold to another investor for $(1-t_2)$ of

their intrinsic value, which in our simple setting equals $d_{dilute}/(1+i)$. Like in Case 1, the

solution of this program is still either full participation $p_j = 1$ or no participation. The

choice depends on the following inequality:

$$V_0\alpha_{j,0}i\left(\frac{d_{dilute}}{1+i} - r\left(1 - d_{dilute}\right)\right) - R > V_0\alpha_{j,0}i\left(\frac{d_{dilute}}{1+i}\left(1 - t_c\right)\right) - S \tag{9}$$

The important difference is that in Case 2 if the investor finds it optimal to not

participate, her payoff is not equal to zero but equals the right hand side of Inequality (9)

$V_0\alpha_{j,0}i\left(\frac{d_{dilute}}{1+i}\left(1 - t_2\right)\right) - S$, which is will be greater than zero for a sufficiently large

investor. Granting transferability of preemptive rights makes minority shareholders no

worse off and in some cases strictly better off.

The controlling shareholder's wealth increase after tunneling Tun_2 is harder to

compute. Let's assume that C will be the buyer of all rights that are not exercised and

sold by minority shareholders. In this case, Tun_2 is given by:

$$Tun_2 = d_{dilute}\frac{i}{1+i}t_2\sum_{j=1}^{M}\alpha_{j,0}\left(1 - p_j\right) \tag{10}$$

It is evident that Tun_2 is lower than Tun_1 because $t_2 < 1$.

Case 3

Last, the solution in Case 3 is very similar to Case 2, but this time the minimum

payoff for the investor will be $V_0 \alpha_{j,0} i \left(\dfrac{d_{dilute}}{1+i} (1 - t_3) \right)$, which is higher than the minimum

payoff in Case 2, because $t_3 < t_2$. In a similar manner, it is easy to show that $Tun_3 < Tun_2$.

Making preemptive rights publicly-traded makes minority shareholders no worse off and

in many cases better off, while the wealth that a controlling shareholder can tunnel is

strictly reduced.

- We may consider a bargaining model between C and M that can endogenize t_2

and t_3. The reason $t_3 < t_2$ is that public-market investors provide a higher outside option

for M (competition to C for the rights)

A. 3. Interaction of Preemptive Rights and Freeze-out Protections

There is a potential interaction between dilution and another financial tunneling

technique – minority shareholder freeze-out. Imagine that preemptive rights existed and

let minority shareholders purchase pro rata shares in an equity offering, but freeze-out

rules are weak and let minority shareholders be frozen out at a large discount d_{freeze}. If the

probability of a freeze-out is high, minority shareholders will not exercise their

preemptive rights, because to do so would "throw good money after bad." In the general

case, for minority shareholders to rationally exercise preemptive rights, the offering price

must be less than the expected share value after the dilutive offering, taking into account

the subsequent freezeout at discount d_{freeze}.

This condition reduces to the following inequality:

$$\left(1 - d_{dilut}\right) \leq \frac{1 + i(1 - d_{dilut})}{1+i} \left(1 - d_{freeze}\right) \tag{11}$$

ADD R and r into the Inequality. SHOW THAT INCREASES THE PAYOFF FOR C AND REDUCES PARTICIPATION BIG TIME.

If d_{freeze} is sufficiently high, the above inequality is violated, and preemptive rights will be ineffective at preventing dilution, and hence at limiting the compound effect of dilution followed by freezeout. Thus, successful protections from equity dilution may work only in conjunction with effective protections against freezeout.

Note that there is also the opposite interaction between anti-dilution provisions and freeze-out protections. When no anti-dilution provisions exist, a controlling shareholder can engage in diluting equity issues to reduce firm stock price and then freeze-out shareholders at this lower price, even if freeze-out protections exist. Such two-stage freeze-out transaction bypassed a market-based freezeout protection in Bulgaria.

A.4. Modeling Minimum Issue Price Provisions

- Limit d
- May be more robust than preemptive rights if the pricing statute is "fair"
    a. Do not depend on financing and trading costs
    b. Interact with freezeout statutes if based on market price. More robust if based on fair value (valuation models and market price)
    c. Model the pricing statute as some function of underlying fair value that is subject to manipulation, noise, or other deviations
- Costs
    a. Appraisal
    b. Lack of flexibility

A.5. Approval Rights

    a. Show where they fit

        i. Limit i

        ii. Limit d

        iii. Limit (1-k) - rarely

1. May develop a voting/bargaining game between C and M

    a. Shapley-type bargaining game where the ownership distribution will be important for the payoffs. Depending on supermajority provisions and ownership structure these will be binding or not.

    b. Discuss the Inv. Company Act case. Very hard to get shareholder approval if shareholder base is atomistic

    c. This is where an option to get approval by Security Regulator is valuable. Also when controlling shareholder has more than supermajority threshold.

A.6. Modeling interaction with non-legal protective mechanisms

- It is beyond the scope of the paper to model each interaction explicitly, but we will discuss the possibilities and then include some variables that proxy for them in the empirical paper.

    ▪ Shareholder activism

        • Addressed by modeling investor size

    ▪ Media/transparency

        • Disclosure of event

        • Disclosure enough information to compute fair price

    ▪ Firm reputation

- Repeated needs for financing

- Cost of other sources of financing compared to equity

- Liquidity needs for controlling shareholder

References

Avilov, Gainan, Bernard Black, Dominique Carreau, Oksana Kozyr, Stilpon Nestor, and
Sarah Reynolds, 1999, General Principles of Company Law for Transition
Economies, *Journal of Corporation Law 24*, 190-293

Atanasov, Vladimir, Bernard Black, Conrad Ciccotello, and Stanley Gyoshev, 2006, How
Does Law Affect Finance? An Examination of Financial Tunneling in an Emerging
Market, William Davidson Institute Working Paper No. 742

Atanasov, Vladimir, Conrad Ciccotello, and Stanley Gyoshev, 2006, Learning from the
General Principles of Company Law for Transition Economies: The Case of
Bulgaria, *Journal of Corporation Law*, Summer, 1004-1033

Atanasov, Vladimir, Vladimir Ivanov, and Katherine Litvak, 2006, VCs and the
Expropriation of Entrepreneurs, working paper.

Backman, Michael, 2002, The Asian Eclipse: Exposing the Dark Side of Business in
Asia, Revised Edition, John Wiley and Sons, Singapore.

Baek, Jae-Seung, Jun-Koo Kang, and Inmoo Lee, 2006, Business Groups and Tunneling:
Evidence from Private Securities Offerings by Korean Chaebols, *Journal of
Finance*, forthcoming

Bhargava, R., A. Bose, and D. Dubofsky, 1998, Exploiting international stock market
correlations with open-end international mutual funds, *Journal of Business
Finance and Accounting*, 25, 765-773

Black, Bernard, 1998, Shareholder Robbery Russian Style, *Institutional Shareholder
Services ISSue Alert,* 3-9.

Chalmers, J., R. Edelen, and G. Kadlec, 2002, On the perils of financial intermediaries setting security prices: The mutual fund Wild Card option, *Journal of Finance*, 56, 2209-2236.

Cooter, Robert, and Thomas Ginsberg, 2003, Leximetrics: Why the Same Laws are Longer in Some Countries than Others, University of Illinois Law & Economics Research Paper No. LE03-012.

Cox, James, and Randall Thomas, 2002, Leaving Money on the Table: Do Institutional Investors Fail to File Claims in Securities Class Actions?, *Washington University Law Quarterly 80*, 855-881

Djankov, Simeon, Raphael La Porta, Florencio Lopez-de-Silanes, and Andrei Shliefer, 2006, The Law and Economics of Self-Dealing, *Quarterly Journal of Economics*, forthcoming.

Easterbrook, Frank, and Daniel Fischel, 1991, The Economic Structure of Corporate Law, Harvard University Press, Cambridge.

Gajewski, Jean-Francois, Edith Ginglinger, and Ameziane Lasfer, 2003, Why Do Companies Include Warrants in SEOs: The Case of French Unit Offerings, working paper.

Goldman, Marshall, 2003, The Piratization of Russia: Russian Reform Goes Awry, Routledge, New York

Hansen, Robert, 1989, The Demise of the Rights Issue, *Review of Financial Studies 1*, 289-309.

Hillion, Pierre, and Theo Vermaelen, 2004, Death Spiral Convertibles, *Journal of Financial Economics*, 71.

Khorana, Ajay, Sunil Wahal, and Marc Zenner, 2002, Agency Conflicts in Closed-End

    Funds: The Case of Rights Offerings, *Journal of Financial and Quantitative*

    Analysis, 37, 177-200.

Kraakman, Reinier, Paul Davies, Henry Hansmann, Gerald Hertig, Klaus Hopt, Hideki

    Kanda, and Edward Rock, 2004, The Anatomy of Corporate Law: A Comparative

    and Functional Approach, Oxford University Press, Oxford

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny

    (1998), Law and Finance, *Journal of Political Economy, 106*, 1113-1155

Leavitt, Jeffrey, 2005, Burned Angels: The Coming Wave of Minority Shareholder

    Oppression Claims in Venture Capital Start-up Companies, *North Carolina*

    Journal of Law and Technology, 6, 223-288.

Lele, Priya, and Mathias Siems, 2006, Shareholder Protection: A Leximetric Approach,

    working paper, University of Cambridge.

Litvak, Katherine, 2006, Firm Governance as a Determinant of Capital Lock-In, working

    paper, University of Texas Law School.

Nenova, Tatyana, 2006, Takeover Laws and Financial Development, World Bank Policy

    Research Working Paper 4029.

O'Neal, F Hodge, and Robert Thompson, 2004, Oppression of Minority Shareholders and

    LLC Members, 2d ed., Thomson-West.

Peyer, Urs, and Theo Vermaelen, 2005, The Many Facets of Privately Negotiated Stock

    Repurchases, *Journal of Financial Economics*, 75, 361-395.

Pistor, Katharina, 2000, Patterns of Legal Change: Shareholder and Creditor Rights in

    Transition Economies, *European Business Organization Law Review*, 1, 59-110.

Pistor, Katharina, Martin Raiser, and Stanislaw Gelfer, 2000, Law and Finance in
Transition Economies, *The Economics of Transition*, 8, 325-368.

Smith, Clifford, 1977, Alternate Methods for Raising Capital: Rights versus Underwritten
Offerings" *Journal of Financial Economics*, 5, 273-307. Reprinted in *The Modern
Theory of Corporate Finance*, edited by M. Jensen and C. Smith (McGraw- Hill:
New York), 436-470 (1984)

Spamann, Holger, 2006, On the Insignificance and/or Endogeneity of La Porta et al.'s
'Anti-Director Rights Index' under Consistent Coding, ECGI - Law Working
Paper No. 67/2006.

Veal, Jennifer, 1999, Shareholders Turn on South Korean Blue-chip Giant, *Australian
Financial Review*, 19 June 1999.

Yoon, Jean, 1999, S. Korea SK Telecom Rights Plan Criticized, *Reuters News*, 16 June
1999.

Zitzewitz, E., 2003, Who cares about shareholders? Arbitrage-proofing mutual funds,
J*ournal of Law, Economics, and Organization*, 19, 245-280

.

Table1
Examples of Shareholder Dilution

Example	References	Description
Private placement with related parties	Black (1998) Baek, et al (2006) O'Neal and Thompson (2004)	
Classic equity offerings at below-market price	Atanasov, Ciccotello, and Gyoshev (2006)	
Down-round financing in VC-backed startups	Atanasov, Ivanov, and Litvak (2006) Leavitt (2005)	
Market Timing in Mutual Funds	Bhargava, et al (1998) Chalmers, et al (2002) Zitzewitz (2003)	
Death-spiral convertibles	Hillion and Vermaelen (2004) Fernandez (2001)	
Targeted repurchases	Peyer and Vermaelen (2005) O'Neal and Thompson (2004)	
Debt for equity swaps	Goldman (2003) O'Neal and Thompson (2004)	
Asset swaps	Tri-Star Pictures Lawsuit	

Table 2

Existing Methods to Quantify Shareholder Protection in Corporate and Securities Law

Approach	Examples	Description of Method
First Generation: Coding of legal statutes at macro-level	La Porta et al (1998), Pistor (2000), Pistor et al, (2000), Lele and Siems (2006)	Code a number of broad legal statutes with numbers between 0 and 1 (older studies do just 0-1). Combine into one overall index or several sub-indices by equally-weighing all components. Ad hoc choice of variables. Crude and sometimes erroneous coding. No particular business transactions in mind. Stress on legal origin.
Second Generation: Coding of legal statutes concerning a particular transaction	Djankov, et al (2006), Nenova (2006)	Choose a particular business transaction. Focus only on statutes regulating the transaction and identify different stages of transaction where the law interferes. Still code statutes with 0-1 and equally weight all components.
Third Generation: Develop a theoretical model of an economic transaction and effect of legal statutes on distribution of payoffs	Litvak (2006), this paper	Choose a particular business transaction. Identify legal statutes that regulate the transaction. Develop economic model to calculate payoffs of various investors from the transaction. Show how statutes modify payoffs. Major benefits: - Interactions between statutes (complements, substitutes, enabling) - Relative importance of statutes (unequal weighting) - Interactions with transaction costs - Interactions with other institutional features and protections

Table 3
Main Effects and Interactions of Model Drivers

Factor	Main Effect	Interactions
Anti-dilution Statutes		
Preemptive Rights	Increase minority shareholder participation in new issues. Reduces dilution even if the discount is too large	- Substitute with minimum price provisions - Substitute with approval rights, but also affected by rules to waive
Minimum price provisions	Reduces discount of offering. Reduces dilution even if shareholders do not participate	- May improve effectiveness of preemptive rights by setting limits on size of offering if margin requirements are tight - Substitute with approval rights
Approval Rights	Reduce discount or size of offering increase shareholder participation, if controlling shareholder stake is not too large	- See above
Other Factors		
Financing Costs	Increase costs of shareholder participation in new issue	- Increase discount of new issues - Reduce participation - No effect on minimum price provisions
Subscription Costs	Reduce subscription to rights offerings	- Increase discount of new issues
Margin Requirements/Budget Constraints	Reduce size of offering	- Reduce effectiveness of preemptive rights. Reduce price of rights. Reduce subscription rates. Reduce participation
Ownership stake of Controlling shareholder	Increase size of offering	- Reduce participation rates - Reduce effectiveness of approval rights
Ownership stakes of largest and second-largest minority shareholder	Increase value of rights	- Increase effectiveness of transferable preemptive rights - Increase effectiveness of approval rights
Freezeout discount	Increase wealth expropriation via dilution	- Reduce effectiveness of preemptive rights – reduce participation and subscription - Reduces effectiveness of minimum price provisions based on market price - Does not affect "fair value" provisions
Price-manipulation statutes	Increase discount of offering	- Enable market-based minimum price provisions - Reduce freeze-out discount

Table 4
Notation

Symbol	Description
C	Controlling shareholder
$j = 1\ to\ M$	Index of minority shareholders
t	Time period (t = 0 to 4)
α_0	Ownership by controlling shareholder at time t = 0
$\alpha_{j,0}$	Ownership by minority shareholder j at time t = 0
V_0	Intrinsic value per share of the firm at $t = 0$
V_3	Intrinsic value per share of the firm at $t = 3$, after dilutive offering
i	Fractional number of share issued in a dilutive offering, relative to shares outstanding before the offering. Estimated empirically based on year-end data as $i = (S_{year\_1} - S_{year\_0})/S_{year\_1}$, for an offering during year 1
r	Interest rate, at which shareholders can obtain financing to purchase shares in new offering
R	Fixed cost of obtaining financing
S	Fixed cost of obtaining rights in new offering
b_0	Budget constraint of C, as a fraction of the value of existing ownership stake at time t = 0
b_j	Budget constraint of minority shareholder j, as a fraction of the value of existing ownership stake at time t = 0
d_{dilute}	Fractional discount at which new shares are issued in a dilutive offering, relative to pre-dilution firm value V_0
d_{freeze}	Fractional discount at which minority shares are frozen out, relative to pre-freeze-out firm value V_3
P_{dilut}	Price at which new shares are issued in a dilutive offering
P_{freeze}	Price at which minority shares are frozen-out
p_j	Fractional participation of minority shareholder j in a dilutive offering
s_j	Fraction of rights sold (if rights are transferable) by minority shareholder j to another investor, $s_j = 1 - p_j$
c	Subscript identify case (type of preemptive rights existing in economy), c = 0 to 3
t_c	Transaction costs as fraction of rights intrinsic value, c = 1 to 3
Tun_c	Wealth loss of minority shareholders after equity issue

Figure 1. Steps of the Equity Issuance Process and Statutes that Protect Shareholders or Convertible Security Holders from Dilution at each step (Kate Litvak Notes)

Step 1. Ex Ante Protection
- Requirement of charter amendment for new share issuances
- Vote of shareholders
- Vote by board of directors
- Exceptions
  - Small issues
  - Public
  - Issues at market price
- Minimum price provisions
  - BV
  - Market price
  - Fair value

Step 2. During-Issuance Protection

- Preemptive right to participate in new issue
  - Transferable?
  - Securitized?
- Effectiveness of protection depends on costs of exercising preemptive rights:
  - Credit costs
  - Other transaction costs
  - Size of shareholders
  - Sophistication of shareholders
  - Existence of infrastructure for trading
  - Who bears costs – the firm or the shareholders (a special case of the firm bearing the cost is outsourcing to a broker)

Step 3. Ex Post Protection
- Participation rights (catch-up rights):
  - Issuance goes through, but shareholders who dissented get to buy at same price to maintain pre-issue stake in company
  - Dissenters get a call
- Appraisal rights:
  - Dissenters get a put
- Differences between appraisal and participation:
  - Participation rights do not require litigation; appraisal usually do → more expensive; takes longer; company may siphon resources during litigation; danger of corrupt/incompetent judges
  - Might be easier to manipulate stock prices in one direction than the other, which affects effectiveness of one type of protection more than other
  - If credit is more expensive for company than for shareholders, then, appraisal might be more effective protection. Vice versa if credit is more expensive for shareholders.
  - In industries where firms have free cash available, appraisal may be less effective protection than in industries where first stripped of cash.
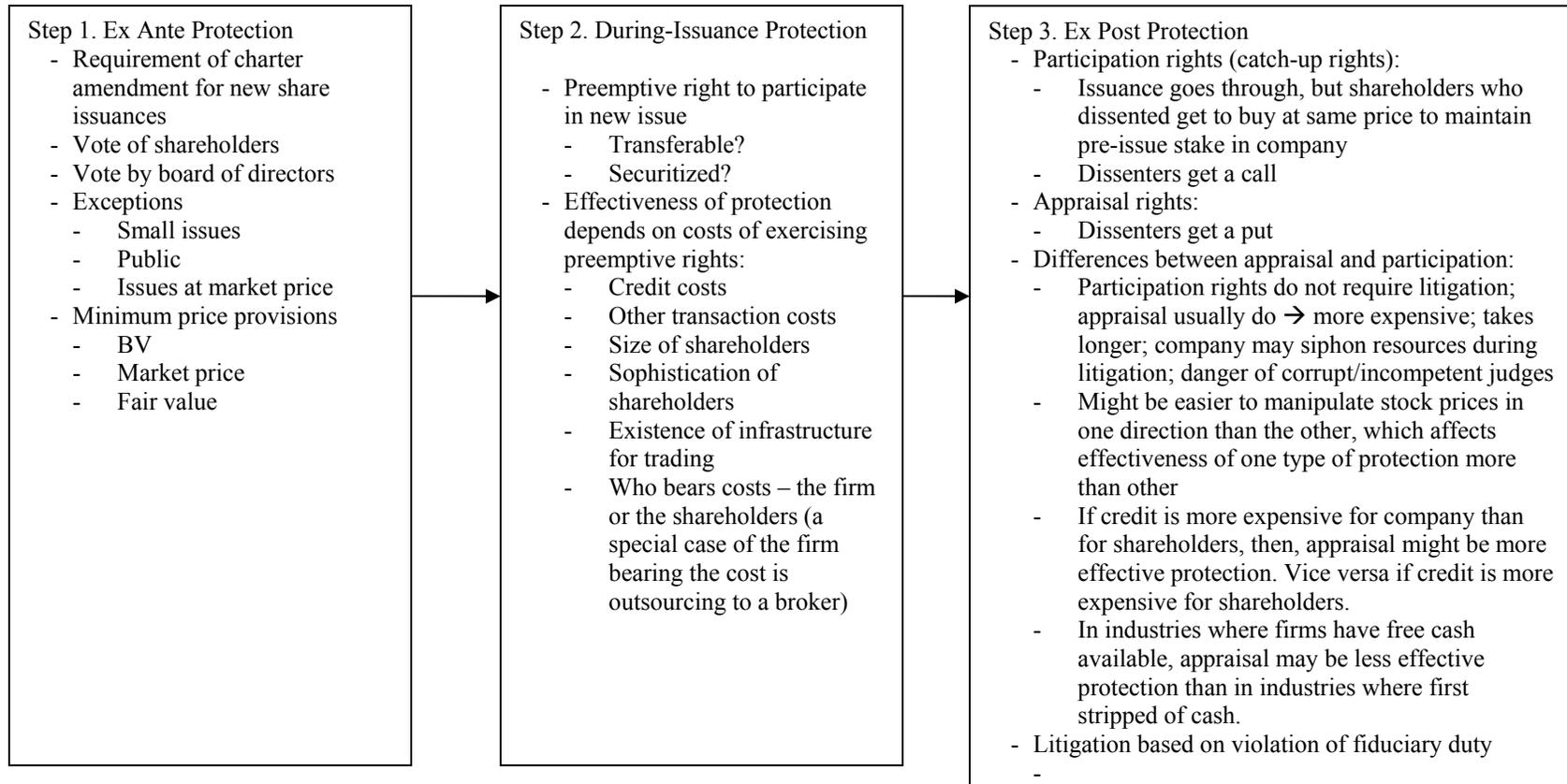- Litigation based on violation of fiduciary duty
  -

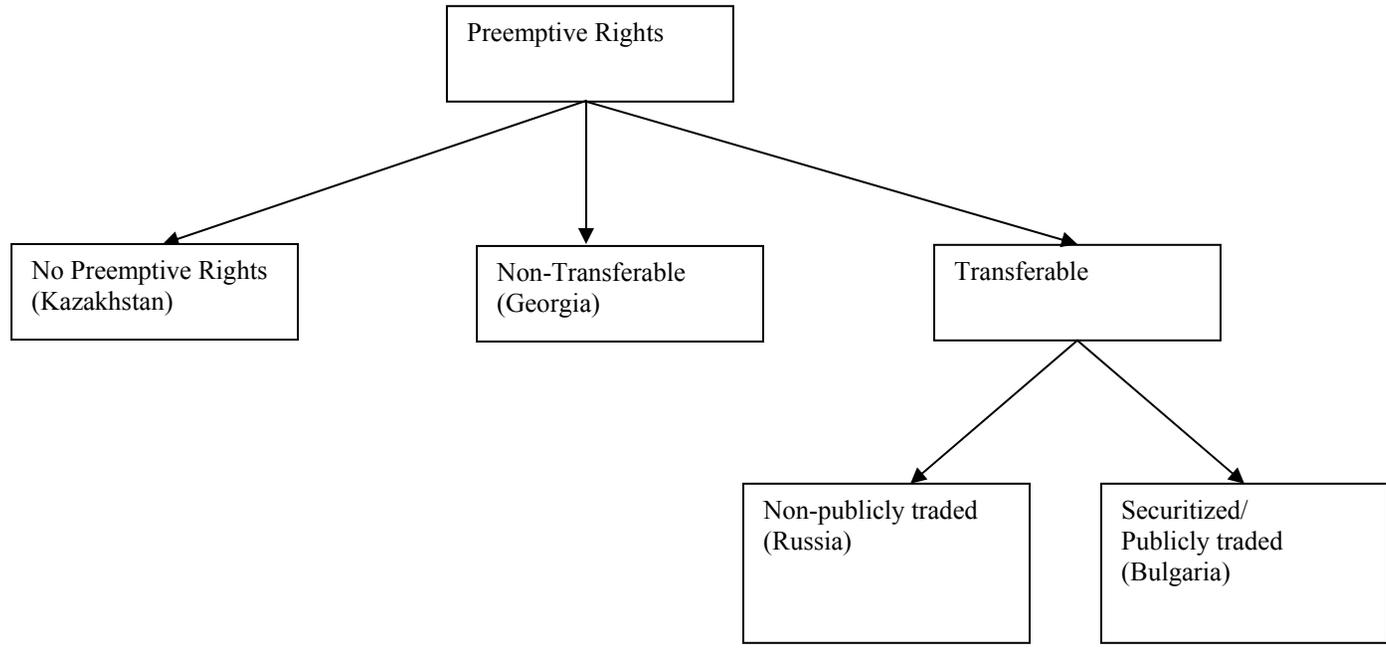Figure 2. A Tree Classification of Preemptive Rights

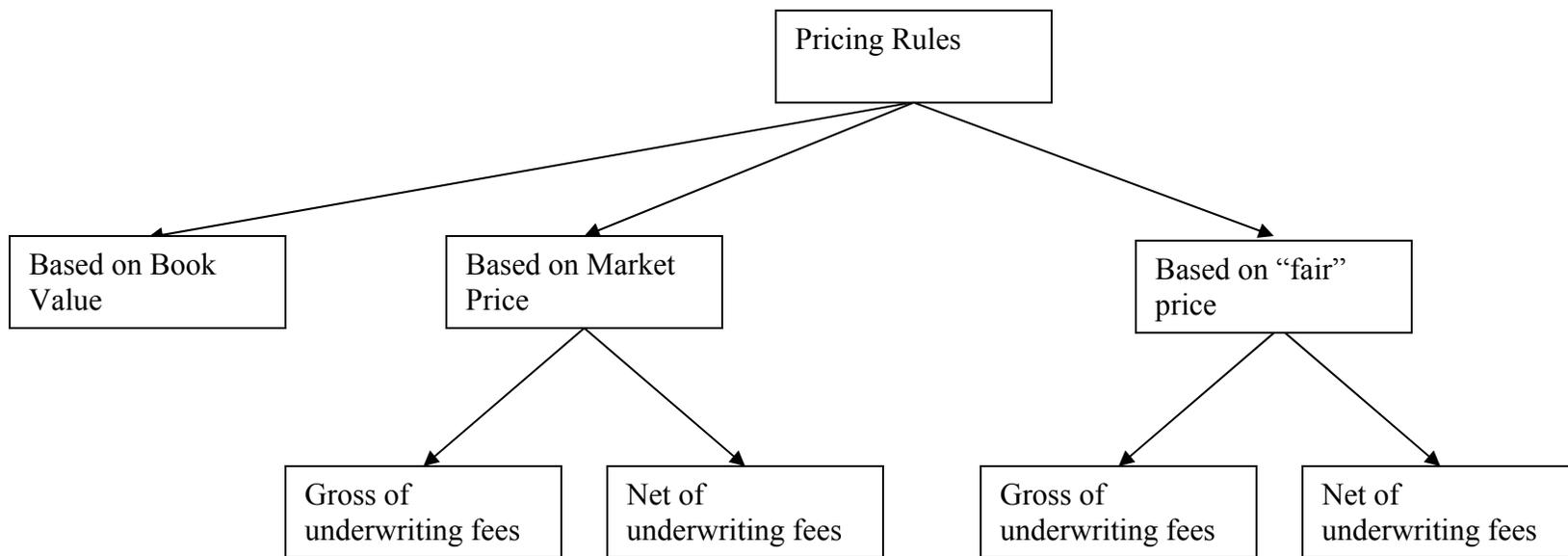Figure 3. A Tree Classification of Pricing Rules

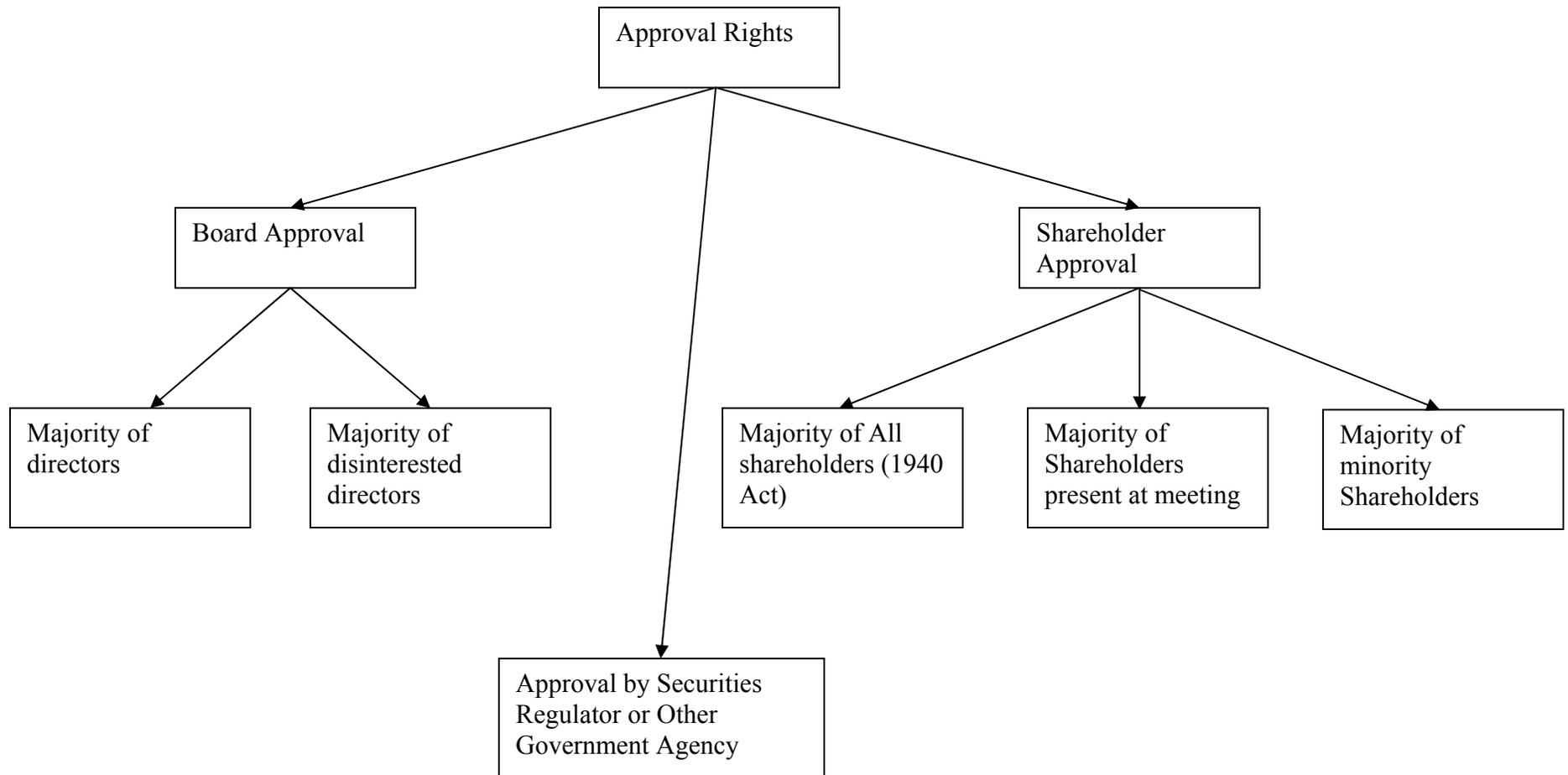Figure 4. A Tree Classification of Shareholder Approval Rights

Figure 5. Model Timeline

t = 0 | t = 1 | t = 2 | t = 3 | t = 4

Firm is set with ownership stakes α_0 of controlling shareholder C and $\alpha_{j,0}$, j = 1 to M, of minority shareholders.

C chooses the size of equity offering i and the discount d_{dilute}, given legal constraints.

Each shareholder j = 1 to M decides to participate in offering, a proportion equal to p_j.

Investors trade rights (if transferable) with other shareholders or outside investors. Afterwards all rights are exercised.

C freezes-out our minority shares at discount d_{freeze} and liquidated the company.