

International IPO Underpricing, Earnings Quality, and Governance[☆]

Thomas J. Boulton^{a,*}, Scott B. Smart^a, Chad J. Zutter^b

^a*Kelley School of Business, Indiana University, Bloomington, IN 47405, USA*

^b*Katz Graduate School of Business, University of Pittsburgh, Pittsburgh, PA 15260, USA*

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Abstract

Examining a sample of more than 4,600 IPOs across 24 countries from 2000-2004, we find that firm- and deal-specific characteristics widely used in IPO single-country underpricing studies (e.g., offer size, underwriter reputation, and industry) can explain variation in an international cross section of initial returns. More importantly, we also find that country-level measures of earnings quality and governance characteristics explain differences in the international cross section of IPO underpricing. We find lower initial returns in countries with higher earnings quality and that underpricing is generally higher in countries with corporate governance systems that strengthen the position of investors relative to insiders.

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* Corresponding author. Tel.: + 1-812-856-0749; fax: + 1-812-855-5875.

E-mail address: tboulton@indiana.edu (T. Boulton).

1. Introduction

Few corporate events garner more attention from researchers, practitioners, the media, and the public than initial public offerings (IPOs). Generally, the focus is on the large, sometimes spectacular, first-day gains to new issues. While most studies examine underpricing in the U.S., several studies document that IPO underpricing is a global phenomenon observed when companies list shares on any of the world's stock exchanges.¹ Most underpricing studies using data from outside the U.S. either test whether underpricing patterns found in the U.S. extend to international markets or exploit a unique feature of the IPO environment in a particular country to test one or more theories of IPO underpricing.

Surprisingly few papers examine variation in underpricing across countries. Loughran, Ritter, and Rydqvist (1994) document that average underpricing varies widely across countries. They show that differences in selling mechanisms, characteristics of firms going public, and government regulation of the IPO process are correlated with average first-day returns across countries. However, much of their analysis is descriptive and makes informal connections between results reported in other published studies and observations about various institutional features of the security offering process around the world.

This paper attempts to fill a gap in the literature, first by documenting recent underpricing patterns in 24 countries from 2000-2004 and second, by demonstrating a systematic relation between IPO underpricing and country-level measures of earnings quality and governance characteristics. We draw our earnings quality measures from two related strains of the accounting literature which focus on quantifying earnings opacity (e.g., Bhattacharya, Daouk, and Welker, 2003) and earnings management (e.g., Leuz, Nanda, and Wysocki, 2003). A possible connection

¹ For evidence on underpricing in countries outside the U.S. see Derrien and Womack (2003) and Derrien (2005) for France, Brennan and Franks (1997) and Ellul and Pagano (2006) for the U.K., Kandel, Sarig, and Wohl (1999) for Israel, and Kutsuna and Smith (2004) for Japan.

between the quality of accounting information and underpricing is suggested by what is perhaps the most widely cited explanation of IPO underpricing, Rock's (1986) winner's curse hypothesis. To the extent that more opaque earnings information leads to greater information asymmetries among investors, we would expect higher underpricing in countries with less reliable accounting data. The accounting literature confirms that earnings opacity influences a range of capital market outcomes. For example, Bhattacharya, Daouk, and Welker (2003) find that in countries with greater earnings opacity, firms face a higher cost of capital. These points give rise to our earnings quality hypothesis—is the level of underpricing inversely related to country-level earnings quality?

Underpricing theories suggest several channels through which cross-country differences in the corporate governance environment might influence underpricing. Tinic (1988), Hughes and Thakor (1992), and Hensler (1995) argue that firms may underprice to reduce expected legal liabilities after the IPO. Extending that logic to an international setting, firms should underprice more when going public in countries with legal systems which do more to protect the rights of outside investors. A similar prediction emerges from several recent papers in the IPO literature which examine the connection between the going public decision, underpricing, and corporate control. Models by Zingales (1995), Mello and Parson (1998), and Brennan and Franks (1997) all suggest that IPO firms may desire a dispersed ownership structure, leaving insiders with more autonomy from outside shareholders. While none of these models explicitly address the country-level corporate control environment within which firms operate, a natural interpretation of their results is that the preference on the part of insiders for greater ownership dispersion arises from the potential influence that outside investors might exercise once the firm is public. Therefore, in countries where outside investor rights receive greater protection from the governance system, we expect firms to underprice more to achieve greater ownership dispersion. These arguments provide the bases for our governance quality hypothesis—is the level of underpricing positively related to country-level governance quality?

Examining 4,628 IPO events representing 24 countries for the period 2000-2004, we first document that IPOs are underpriced, on average, in every country in the sample, with a mean initial return of almost 30 percent. We examine the extent to which firm- and deal-specific characteristics can explain cross-sectional differences in initial returns using control variables widely used in IPO underpricing studies (e.g., offer size, underwriter reputation, and industry). Next, we add country-level earnings quality measures to the analysis, and indeed we find support for the earnings quality hypothesis. Initial returns are significantly higher in countries with less transparent earnings. The analysis continues by examining the relation between underpricing and country-level governance quality measures, such as antidirector rights (i.e., shareholder rights), creditor rights, property rights, M&A intensity and CEO turnover (i.e., corporate control activity). The results indicate that IPOs are underpriced more on average when countries do more to protect outside investors.

The remainder of this paper is structured as follows. Section 2 highlights previous research on IPO underpricing, earnings quality, managerial control, and governance quality related to this study. Section 3 describes our sample construction and empirical methodology, and illustrates that many of the conventional variables used in single-country studies of IPO underpricing also explain the international cross section. Section 4 contains our primary results on the relations between IPO underpricing and the quality of earnings and governance. Section 5 summarizes and concludes.

2. Previous research

A. IPO underpricing

A significant amount of empirical research, dating back at least to Ibbotson's (1975) study, documents short-run underpricing of initial public offerings in the U.S. Similar studies present consistent evidence of short-run underpricing of initial public offerings in many international markets (e.g., Loughran, Ritter, and Rydqvist, 1994). In sum, underpricing of IPOs across time

and in all countries is well documented. However, the factors that influence variation in underpricing across countries are not yet fully understood.

Theories of IPO underpricing began to appear shortly after the introduction of the literature documenting the large initial returns to new issues. Characteristics of the issuing firm, the issue, and the general market climate have all been cited as possible determinants of IPO underpricing. Rock (1986) puts forth a winner's curse explanation for IPO underpricing that arises due to information asymmetries among investors participating in the new issues market. In Rock's model, investors with better information demand higher allocations of "hot" IPOs, leaving less informed investors with larger allocations of "cold" IPOs. Underpricing, on average, is a necessary condition for both types of investors to participate in the new issues market in equilibrium. Nearly all cross-sectional empirical studies include variables intended to proxy for information asymmetries and, in general, there is widespread empirical support for the notion that underpricing is higher for IPOs where information asymmetries are greater.

Benveniste and Spindt (1989) hypothesize that underpricing is used to acquire information from potential purchasers of the issue. As such, IPO underpricing is a cost of acquiring information during the bookbuilding process. Carter and Manaster (1990) conjecture that firms use prestigious underwriters to signal low risk in an effort to combat the effects of information asymmetry. Consistent with their hypothesis, they find that firms using more reputable underwriters exhibit lower initial returns on average. Additional theories of IPO underpricing include information cascades (Welch, 1992), legal liability avoidance (Tinic, 1988), absence of motivation to avoid underpricing (Habib and Ljungqvist, 2001), and "analyst lust" (Loughran and Ritter, 2002).

Brennan and Franks (1997) hypothesize that one motivation for underpricing is management's desire to control the firm. Utilizing a sample of U.K. IPOs, the authors present empirical evidence consistent with their hypothesis that underpricing is used strategically to influence ownership dispersion. By reducing the probability that ownership blocks form at the

time of the offering, the likelihood of management maintaining control increases, allowing managers to continue to enjoy private control benefits. While it is possible that ownership blocks form following the issue, the initial ownership dispersion makes it more costly to form these blocks.²

B. Earnings quality

Bhattacharya, Daouk, and Welker (2003) study the extent to which cross-country variation in the quality of accounting information influences the cost of capital and trading volume in international equity markets. Using data from 34 countries covering 1985-1998, they measure three dimensions of earnings opacity for each country—earnings aggressiveness, loss avoidance, and earnings smoothing. They find robust evidence that an increase in overall earnings opacity leads to an increase in the required return demanded by shareholders and a decrease in trading activity.

In a similar vein, Leuz and Verrecchia (2000) study a group of German firms that switch from German accounting standards to an international reporting standard (either GAAP or IAS). They find that compared to German firms which do not make this switch, firms committing to higher disclosure standards experience a decline in information asymmetry as measured by the bid-ask spread and trading volume. Bushee and Leuz (2005) find similar results when they examine the market's reaction to a regulatory change that required OTC Bulletin Board firms to comply with the 1934 Securities Exchange Act, namely that newly compliant firms experience increased liquidity, consistent with a reduction in information asymmetries.

² Smart and Zutter (2003) argue that lower underpricing among dual-class IPOs is consistent with the reduced monitoring hypothesis. Field and Karpoff (2002) provide additional evidence that managers of IPO firms value control. In particular, the authors document that takeover defenses are employed by a significant number of firms at the time of the initial public offering and that these mechanisms are effective in allowing management to maintain control of the firm.

These studies and others suggest that the quality of earnings information available to outside investors influences information asymmetries in the market. Given the central role of asymmetric information in theories of IPO underpricing, we conjecture that cross-country variation in earnings quality will be tied to variation in underpricing. Below, we will use the earnings quality measures in Bhattacharya, Daouk, and Welker (2003) and Leuz, Nanda, and Wysocki (2003) to test this prediction.

C. Managerial control

The benefits that a controlling position imparts on the manager-entrepreneur have a number of implications. A large body of literature, centered on the pioneering work of Jensen and Meckling (1976), examines the mechanisms designed to align the interests of management and shareholders. Such mechanisms include firm-specific characteristics such as the board of directors, managerial compensation plans, the structure and size of managerial and block ownership positions, and external influences such as the managerial labor market and the market for corporate control. Each of these governance mechanisms plays a role in providing incentives for management to make decisions not only with their own interests in mind, but also the interests of other stakeholders in the firm, particularly shareholders.

A primary area of study related to control explores the actions which managers take in an effort to maintain and strengthen their hold on the firm. Such actions include, but are not limited to, holding controlling ownership stakes (e.g., Demsetz and Lehn, 1985), diversifying the firm's operations (e.g., Shleifer and Vishny, 1989), implementing a dual-class equity structure (e.g., Nenova, 2003), and strategically configuring the board of directors (e.g., Baker and Gompers, 2004). A recurrent theme in this literature is that control has inherent value. Because control has value, managers have incentives to take actions which allow them to maintain, or even strengthen, their control over the firm. The devices available to managers depend on the environment in which their firms operate.

D. Governance quality

International corporate governance is a burgeoning area of research in finance. Over the past decade, La Porta, Lopez-de-Silanes, and Shleifer (1997, 1998, 2000a, 2000b, and 2002) and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999, 2006) examine the association between country-level governance characteristics and the development of capital markets. The central message emerging from this literature is a nation's legal system influences the development of its capital markets. Specifically, countries with legal systems based on English common law tend to have larger, more liquid financial markets, with more dispersed share ownership and a higher pace of entrepreneurial activity. We draw the country-level governance metrics for our study from the international governance studies by La Porta et al.

Bhattacharya and Daouk (2002) examine the association between one aspect country-level governance, insider trading laws, and the cost of capital. Their research finds that the mere presence of insider trading laws does not affect the cost of equity. It is the enforcement of insider trading laws that matters. They find that when a country first prosecutes an insider trading case, the cost of equity in that country falls. Similarly, Hail and Leuz (2006) observe that firms in countries with more effective legal institutions and securities regulations face a lower cost of capital.

The hypothesis presented here assumes that control is valuable to a certain degree in all countries. Because control is valuable, managers are motivated to take actions to ensure they maintain control. Countries with weaker governance environments allow management to maintain their control to a greater degree simply based on the rules and norms of the country. For example, countries with infrequent corporate control events insulate management from losing control in a takeover transaction. Alternatively, control is more tenuous in countries with strong investor protections. As such, managers are forced to seek alternative ways to maintain control in such countries. We posit that IPO underpricing is one such alternative mechanism, resulting in greater underpricing in countries with better country-level governance characteristics.

3. Sample selection and descriptive statistics

A. Sample selection

We begin constructing our sample by considering the intersection of the 49 countries used in the La Porta et al. studies with the 39 countries Dyck and Zingales (2004) examine. This intersection results in an initial sample of 37 countries for which we attempt to gather IPOs. We identify IPO events using Thomson Financial's SDC Platinum New Issues database. We retrieve IPOs for the period 2000-2004 from the various country and regional New Issues databases. We retrieve price and volume information for the new issues from Datastream, which requires manually matching the IPO issuer to their unique Datastream identifier. To eliminate the impact of outliers on the results, we trim the top and bottom 1.5 percent based on their initial return. These steps result in a final sample of 4,628 IPO events. In 13 countries the number of IPOs is very small during our sample period, so we focus our analysis on 24 countries which have at least 75 IPOs.

Although common in the IPO literature, we do not impose a minimum offer price restriction on our sample. For example, Ritter (1991) evaluates U.S. IPOs with a minimum offer price of \$1 so as to mitigate the impact of the bid-ask bounce. However, imposing this filter on our sample would not only greatly reduce the number of IPOs in many of the countries, but it would also eliminate a number of countries entirely. Applying even a \$1 minimum offer price eliminates almost one-third of the sample events. Precedent for the absence of a minimum offer price is found in Ljungqvist (2005), who does not mention such a restriction in his examination of IPO underpricing across various international markets. Thus, the analysis presented here does not impose a minimum offer price requirement.³

B. Descriptive statistics

³ Robustness tests were performed using the following minimum offer price restrictions: \$1, \$3, \$5, and \$10. The main conclusions of the analysis are the same when these minimums were applied.

Figure 1 displays the total number of IPOs and the average IPO underpricing by issue year. The figure clearly illustrates the slow down in equity offerings following the downturn in many of the world's equity markets in 2000. The number of yearly IPOs in our sample is 1,410 in 2000, declines by over 50 percent to 652 in 2001, remains relatively flat for 2002 and 2003, and then increases to 1,199 issues in 2004. Consistent with the "hot issues market" phenomenon identified in the literature (e.g., Ritter, 1984), average underpricing is highly correlated with the number of IPOs in a given year with a correlation coefficient of 0.73. To account for the hot market phenomenon, we control for issue year and recent market returns in the regression analysis.

Coffee (1999, 2002) suggests that firms list in foreign countries in order to bond themselves to the listing standards within the foreign market. In particular, firms listing in the U.S. are subject to the powers of the SEC, required to meet generally accepted accounting principles (GAAP), and face the scrutiny of the financial intermediaries involved in the security markets. While most sample IPOs originate and list in the same country, a number of companies choose to list outside their country of origin. The vast majority of these firms list in the United States. Since listing in a foreign market is thought to serve as a way to bond management to the standards of the listing country, the country in which the firm lists is the important location for this study. Figure 2 shows the average underpricing and number of IPOs for each listing country in our sample. Average underpricing ranges from almost 60 percent in South Korea to less than six percent in Sweden. The variation in underpricing pricing across countries, however, appears to be largely unrelated to the number of IPOs conducted in the country. Not surprisingly, the country with the greatest number of IPOs in the sample is the U.S., followed by Japan, the U.K., Australia, and Hong Kong.

Figure 3 reflects the composition of the IPO sample based on the industry of the issuing firm. The broad industry classifications identified in Dyck and Zingales (2004) form the basis for the industry distribution. The industry decomposition in Figure 3 shows that the sample is drawn from a wide range of industries. To account for the industry composition of the sample, industry

dummy variables are employed in the regression analysis. We also identify high-tech firms according to the classification provided by Loughran and Ritter 2004. The partitioning of high-tech firms into a unique category is motivated by the IPO literature finding of greater levels of underpricing for high-tech firms in the late 1990s and early 2000s, including the study of Ljungqvist and Wilhelm (2003). Consistent with the results of Ljungqvist and Wilhelm and others, Figure 3 demonstrates greater average underpricing for firms in high-tech industries compared to other industries in the sample. In fact, high-tech firms experience an initial price increase of nearly 40 percent on average, while the average for all IPOs outside of the high-tech industry classification is approximately 26 percent. Outside of the high-tech industry, average IPO underpricing ranges from 16.5 percent for mining firms to 33.8 percent for agricultural firms.

Table 1 provides descriptive statistics for the variables used in our baseline regression analysis exploring the international cross section of underpricing. The mean initial return across all IPOs in our sample is 30.5 percent. Most studies of IPO underpricing include measures designed to capture information asymmetries, including the size of the offer. We include this measure in our analysis as well, but with slight modifications to make international comparisons more meaningful. Rather than simply using the size of the offer, we calculate an offer size ratio which measures the size of each offer relative to the average offer size for IPOs listed in a particular country. Therefore, we are not measuring whether an offer is large or small in an absolute sense, but whether an offer is large or small relative to other deals in the same country. The mean offer size ratio is one, which is the case by definition.

As suggested in numerous papers, including Ritter (1984), we include variables to control for hot markets effects. Two country-level controls that we use are the log of recent IPO activity and the rate of return on the stock market in a given country. Similarly, many studies report higher underpricing for high-tech firms, so we include a dummy for firms in a high-tech industry as defined by Loughran and Ritter (2004). About 27 percent of our sample firms fall into the high-tech category. We also include a country-level stock market turnover ratio, which is defined and

reported in Beck, Demirgüç-Kunt, and Levine (2000). This measure is designed to capture the liquidity of a stock market relative to its size and is defined as the ratio of the value of total shares traded to market capitalization.

In some countries, underwriters may engage in price stabilization once the stock begins to trade. We do not have detailed data on the regulations and practices with respect to price stabilization in all countries, so we attempt to construct a country-level proxy for the importance of price stabilization in the market. If price stabilization is widespread, then we expect to see an unusually large probability mass in the distribution of first-day returns just to the right of zero percent and an unusually small probability mass to the left of zero. Therefore, for each country we count the number of IPOs with initial returns greater than zero and less than or equal to one percent, subtract the number of IPOs with initial returns less than zero and greater than or equal to negative one percent, and divide this difference by the total number of IPOs in the market. The more prevalent is price stabilization in a given market, the higher should be this ratio.

Bradley, Cooney, Jordan, and Singh (2004) report that IPOs with integer prices experience higher underpricing. Exactly 62 percent of our IPOs have an integer price, which compares to 76 percent of U.S. IPOs as reported in Bradley et al. Sherman (2005) finds that methods for taking firms public worldwide are converging towards the traditional U.S. bookbuilding approach, whereas auction mechanisms have been largely abandoned. Sixty-one percent of the firms in our sample are taken public through a firm commitment offering, while 61.3 percent of the deals are bookbuilt offerings. Deals that are both firm commitment and bookbuilt represent 37.7 percent of the sample.

Prior research finds that venture-backed IPOs experience greater underpricing, while reverse LBOs and equity carve-outs are underpriced less. Nearly 14 percent of our IPOs receive venture capital backing, and fewer than 5 percent of the firms in our sample have prior histories as public entities and are going public as part of an equity carve-out or reverse LBO. Given that

underwriter quality is also an established determinant of underpricing, we create an underwriter market share variable similar to that proposed by Megginson and Weiss (1991). In our analysis, the underwriter reputation measure equals the fraction of IPOs underwritten by a particular underwriter in a particular country. Table 1 indicates that the mean underwriter has a market share of 6.9 percent.

Table 2 presents the results of two baseline cross-sectional regression models. In model 1, we include only those control variables that are available for all countries in our sample, and in model 2 we include a broader set of controls, but at the cost of a smaller sample size. In Model 1, all of the coefficients are significant, save for price stabilization, and have the expected sign, save for underdevelopment. Generally, smaller IPOs are underpriced more, as are IPOs that occur during hot markets, IPOs following periods of high market returns, IPOs in stock markets with high turnover, IPOs in more developed markets, high-tech IPOs, or IPOs with integer prices. In Model 2, we add several additional explanatory variables that are known to explain cross-sectional variation in underpricing on an individual country level. Of the explanatory variables included in Model 1, the only differences in Model 2 are that price stabilization is positive and significant and underdevelopment, high-tech, and integer offer price are no longer significant. The additional right-hand-side variables in Model 2 suggest that initial returns are greater for non-bookbuilt deals, venture backed deal, and deals with higher reputation underwriters.⁴ Finally, in this setting the estimates for firm commitment, equity carve-out, or reverse LBO deals are insignificant.

Numerous studies report results similar to those in Table 2 for U.S. IPOs, or for IPOs in other countries. However, these studies usually restrict their focus to one country at a time. So an initial contribution of our paper is to apply the traditional cross-sectional analysis to a broader variety of

⁴ Recent underpricing studies, including Loughran and Ritter (2004), report that the relation between underwriter reputation and underpricing flipped in the 1990s, with greater underpricing associated with deals underwritten by more reputable banks.

IPOs drawn from many different countries. Of course, the availability of firm-specific and deal-specific data is not uniform across countries, so our models in Table 2 do not contain as rich a set of control variables as one might find in a single-country study. In the next section we make additional contributions to the literature by adding country-level earnings and governance quality measures to the analysis.

4. Country-level results

A. Country-level earnings quality

In this section, we study the link between country-level earnings quality and IPO underpricing by using two different sets of earnings quality measures from prior studies. For all of these measures, the underlying principle is that managers can take various actions that cause the distribution of reported earnings to obscure the true underlying performance distribution. Our first set of earnings measures comes from Bhattacharya, Daouk, and Welker (2003), who construct three component-level measures of earnings opacity. First, they define earnings aggressiveness as the tendency to accelerate the recognition of gains and delay the recognition of losses. Their measure of earnings aggressiveness is the median for country i in year t of the ratio of total accruals divided by lagged assets. A higher value of this ratio implies more aggressive (and more opaque) earnings.

Second, they calculate a loss avoidance measure for each country by taking the ratio of the number of firms with small positive earnings divided by the number of firms with small negative earnings. In this context, “small” means a ratio of net income to assets of plus or minus one percent. The intuition for this measure is that if managers manipulate earnings to avoid showing losses, then there will be a missing probability mass in the earnings distribution just to the left of breakeven, and a higher than expected frequency of firms reporting earnings just above zero. Therefore, the higher is the loss avoidance ratio, the greater is the incidence of loss avoidance behavior in a given country, and the more opaque are the earnings figures in that country.

Third, they construct a measure of earnings smoothing equal to the cross-sectional correlation in country i in year t between the change in accruals and the change in cash flows (both scaled by assets). The more negative is the correlation, the more likely that earnings smoothing behavior obscures variability in the true underlying performance of a firm. Finally, Bhattacharya et al. construct a single aggregate measure of earnings opacity for each country based on a ranking methodology. Specifically, they construct deciles for each earnings measure, and then average the decile ranks across the three measures to arrive at an overall earnings opacity ranking for each country. Countries that earn a higher average ranking have more opaque earnings.

For an alternative approach to measuring the quality of earnings information, we use the measures from Leuz, Nanda, and Wysocki (2003). They construct four country level earnings management measures. The first of these, denoted EM1, is an earnings smoothing measure equal to the median value in each country of the ratio of the firm-level standard deviation of operating earnings divided by the standard deviation of cash flow from operations. Low values of EM1 correspond to more aggressive earnings smoothing by managers. Their second measure, EM2, matches the earnings smoothing metric from Bhattacharya et al., the cross-sectional correlation between changes in accruals and cash flows. More negative values of EM2 correspond to greater earnings smoothing.

The third measure, EM3, is the median value in each country of the absolute value of firms' accruals scaled by the absolute value of cash flow from operations. A higher value of EM3 is an indicator of greater earnings management. The final metric, EM4, measures loss avoidance behavior and is calculated in essentially the same manner as in Bhattacharya et al. EM4 equals the ratio of the number of firms reporting small profits over the number of firms reporting small losses. Higher values of EM4 correspond to greater earnings management behavior. Leuz et al. calculate an overall earnings management figure, aggregate earnings management, for each country by ranking each country on each of the four earnings management measures and then taking the average ranking, where higher rankings signify more earnings management. Figure 4

shows the Leuz et al. aggregate earnings management by country for sample.⁵ There is considerable variation in the level of aggregate earnings management across our 24 sample countries. Austria has the highest level at 28.3 and the U.S. has the lowest value of two. Only Indonesia and Thailand have equal levels of aggregate earnings management, whereas every other country has a unique value.

Table 3 reports regression results for models that include both the “standard” control variables from Table 2 as well as the Bhattacharya et al. earnings quality measures described above. We estimate regressions with each earnings measure separately as well as a regression that includes the overall earnings opacity measure and its interaction with underwriter reputation. To the extent that earnings quality is related to information asymmetry, we expect poorer earnings quality to be associated with higher underpricing on average. Recall that for earnings aggressiveness and loss avoidance, a higher value for the variable implies more opaque earnings, so we expect a positive sign in the regression. Indeed, Models 1 and 2 show that both coefficients are positive and significant. For earnings smoothing a lower value implies more opaque earnings, so we expect a negative sign in the regression, and that is the result we obtain in Model 3. Finally, Model 4 reveals that the overall earnings opacity variable, which captures a country’s overall earnings opacity ranking, shows a positive and highly significant correlation with underpricing. All of these results are consistent with our earnings quality hypothesis and the idea that underpricing is higher in countries where investors face greater earnings uncertainty.

Clearly, the idea that uncertainty, or the lack thereof, can influence the level of underpricing is well established in the IPO literature. In an attempt to deal with the uncertainty faced by IPO investor, theories of IPO underpricing suggest that certain reputable intermediaries, such as investment banks, can reduce investor uncertainty by certifying the earnings of IPO firms. In order to test this hypothesis Model 5 includes an interaction between our underwriter reputation

⁵ A nearly identical figure can be created using the Bhattacharya et al. earnings opacity measure.

measure and the Bhattacharya et al. earnings opacity measure. If in fact higher quality underwriters are able to certify the earnings of IPO and thereby reduce the uncertainty faced by investors then we expect the interaction term to have a negative sign. In deed the interaction term is negative and significant at the 1 percent level. This result indicates that IPO investors benefit more from underwriter quality the less transparent a countries earnings.

Table 4 uses the earnings management variables from Leuz et al. Recall that for EM1 and EM2, a lower value means greater earnings management, whereas for EM3, EM4, and the overall earning management variable, a higher value means more earnings management. Therefore, our earnings quality hypothesis predicts a negative coefficient on EM1 and EM2, and positive coefficients on the other variables. With the exception of the coefficient on EM1 being statistically insignificant, the results presented in Models 1-5 provide strong support the earnings quality hypothesis. When managers engage in activities to manipulate earnings, or when weak accounting standards make it difficult for investors to interpret financial information, IPO underpricing is higher.⁶ Finally, it can be seen from Model 6, that the certification effect provided by underwriters' reputation is greater in countries with worse earnings management.

B. Country-level governance quality

⁶ We estimate two unreported regression models using variables suggested by La Porta et al. (1998) and La Porta et al. (2006). The accounting standards variable ranks the quality of firms' financial statements based on the inclusion or exclusion of 90 items. The disclosure standards variable is an index that measures the range and quality of disclosures required of public companies in a given country. We refer readers to La Porta et al. (1998) and La Porta et al. (2006) for a more complete description of the construction of these variables. For our purposes, higher values imply better accounting information, so we expect a negative correlation between these variables and underpricing. The accounting standards variable is negative and highly significant. The coefficient on disclosure standards, while negative, is not significant.

A growing contingent of IPO papers suggest a connection between the going public decision, underpricing, and corporate control. Models by Zingales (1995), Brennan and Franks (1997), and Mello and Parson (1998) all suggest that IPO firms may desire a dispersed ownership structure, leaving insiders with more autonomy from outside shareholders. An obvious extension of their arguments is that the preference on the part of insiders for greater ownership dispersion arises from the potential influence that outside investors might exercise once the firm is public. Therefore, in countries where outside investor rights receive greater protection from the governance system, we expect firms to underprice more to achieve greater ownership dispersion. For our purposes, the level governance quality in a country is directly a function of the degree of stakeholder protection.

The law and finance literature examines the association between country-level characteristics such as the protections afforded to antidirectors (i.e., shareholders) and creditors, efficiency judiciary system, and enforcement of property rights and the development of a country's capital markets. A number of earlier studies, including La Porta et al. (1998), Jagers and Marshall (2000), Kaufmann, Kraay, and Mastruzzi (2004), La Porta et al. (2006), and Djankov et al. (2006), present summary measures of country-level governance characteristics from which the current study benefits. The hypothesis we are testing maintains that in countries that do more to protect the rights of outside investors, insiders will underprice more to create greater ownership dispersion.

Table 5 reports cross-sectional regression results for the country-level governance measures. The upper part of the table repeats the set of widely available control variables from Table 2. The models in Table 5 show the influence of each governance measure on underpricing. Five of the eleven governance measures are positive and significant, and therefore consistent with the governance motivation for underpricing. In particular, Creditor rights, efficiency of judiciary system, anti-self dealing public enforcement, CEO turnover, M&A intensity are all consistent with our governance quality hypothesis, which posits higher underpricing in countries with

poorer governance. Public enforcement and rule of law, however, are negative and significant. The one exception to this pattern is the coefficient on public enforcement, which points to significantly lower underpricing in countries that give more power and authority to the regulator charged with monitoring a country's main stock exchange.

In sum, we interpret the generally positive relation between underpricing and governance as consistent with theories that suggest that managers engage in strategic underpricing in an effort to strengthen their position of control. These papers suggest that in the presence of country-level governance mechanisms that favor investors' rights, management has the incentive to pursue actions designed to positively impact their ability to control the firm following the IPO. Existing research, including Brennan and Franks (1997) suggests that underpricing is one such mechanism.

Leuz, Nanda, and Wysocki (2003) find that country-level earnings management is in part a function of country-level governance. To be sure that our measures of country-level governance are robust to their possible correlation with earnings management, we examine an unreported correlation matrix for our earnings management and governance variables. There appears to be no strong measures of correlation. Rather than simply view the correlations, we go one step further by adding the Leuz et al. (2003) aggregate earnings management measure to our underpricing regressions on governance. Table 6 presents the same regressions as Table 5, but with the notable addition of aggregate earnings management. The governance measures are largely robust to the inclusion of aggregate earnings management. In addition to the positive and significant governance measures from Table 5, antidirector rights, anti-self dealing, and democracy also exhibit strong positive effects on underpricing. The property rights measure, which was negative and insignificant in Table 5, is negative and significant coefficient in Model 7 of Table 6. Both the rule of law and CEO turnover estimates are no longer significant when controlling for the level aggregate earnings management. Finally, ten of the eleven models in Table 6 show a significant and positive earnings management impact on underpricing. Aggregate earnings

management has a negative effect on underpricing in Model 8, which includes a negative and significant public enforcement estimate.⁷

5. Conclusions

In this paper we examine IPO underpricing across many different countries. Many of the relations documented previously in single-country studies (e.g., the relation of underpricing with offer size, underwriter reputation, and integer pricing) hold up in an international setting. However, our primary contribution is not simply to verify the robustness of established effects within the cross section of an international sample, but to study how country-level differences in earnings informativeness and governance characteristics influence underpricing.

Using a wide range of earnings quality measures, we find higher underpricing in countries with greater earnings opacity (or greater earnings manipulation by managers) even after controlling for many firm-specific and deal-specific characteristics. This evidence is consistent with Rock's classic winner's curse explanation for underpricing. Just as other researchers have found that poor accounting information can lead to a higher cost of capital for firms, our evidence suggests that the cost of going public rises when investors have greater difficulties interpreting financial information.

Our results also suggest that IPO underpricing is greater in countries offering stronger protections to investors. These results hold for various (but not all) country-level proxies of governance and are both economically and statistically significant. In countries that offer lower levels of investor protection, underpricing is less likely to be used as an instrument to limit legal liability or to maintain control because managerial control is implicit due to a general disregard for investor's rights, leading to lower initial returns (on average) in these countries.

⁷ The results in Table 6 are remarkably unchanged by using the Bhattacharya et al. earnings opacity measure.

The results presented here are also consistent with various studies examining issues of ownership structure related to the IPO. Zingales (1995) and Mello and Parsons (1998) hypothesize that one goal of the IPO is the creation of a dispersed outside ownership structure. A dispersed outside ownership structure facilitates managerial control over the firm, while also allowing management to determine the terms under which a transfer of control should take place. In the presence of strong investor protections, a dispersed outside ownership structure becomes more important for maintaining managerial control. In the context of this paper, underpricing is one mechanism which allows management to maintain or even strengthen control over the firm.

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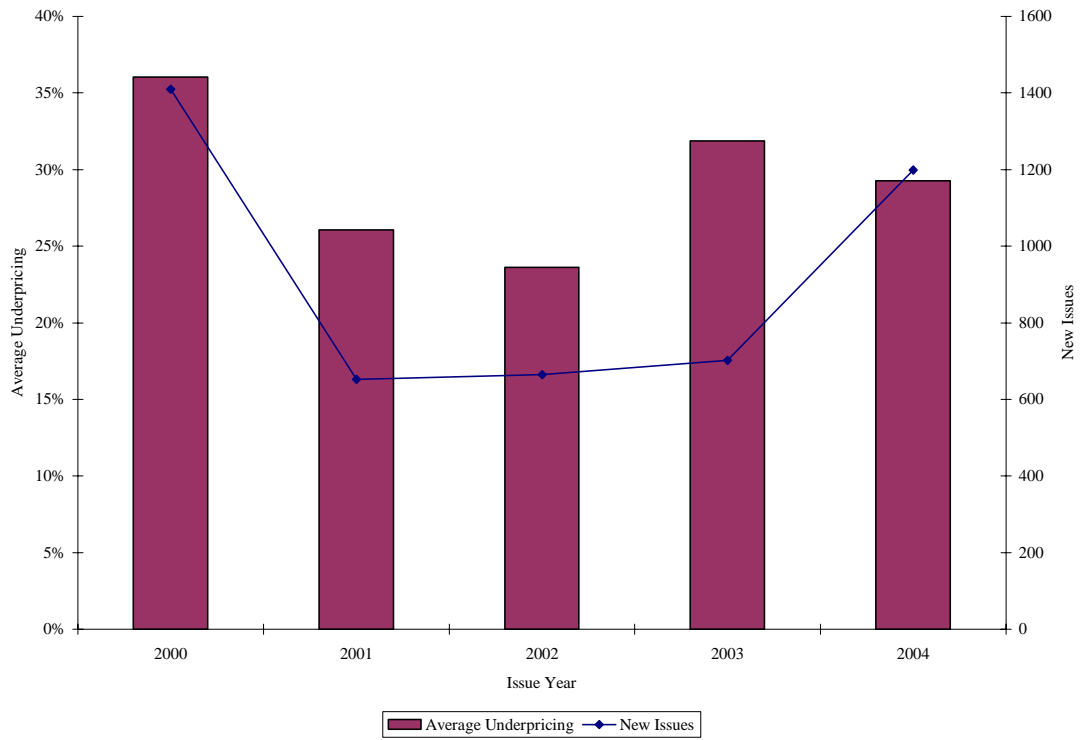


Fig. 1. Average underpricing and number of IPOs by year. Bars show average underpricing by year and correspond to the left axis. Line points show the number of new issues by year and correspond to the right axis.

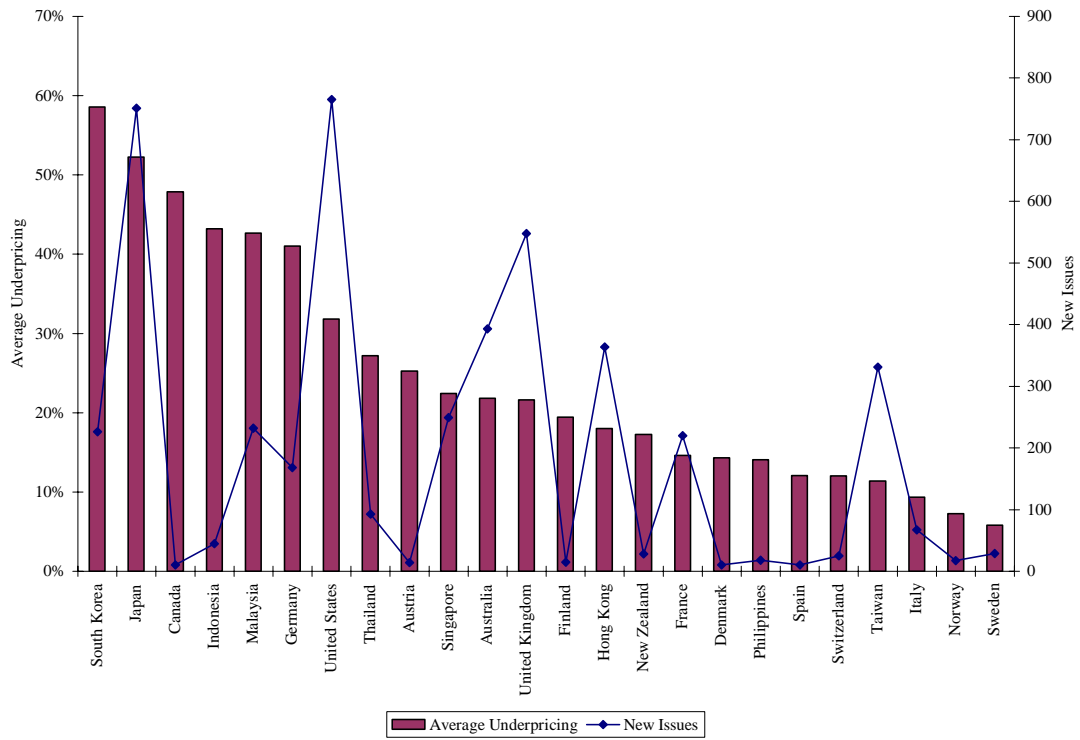


Fig. 2. Underpricing and number of IPOs by country. Bars show average underpricing by country and correspond to the left axis. Line points show the number of new issues by country and correspond to the right axis.

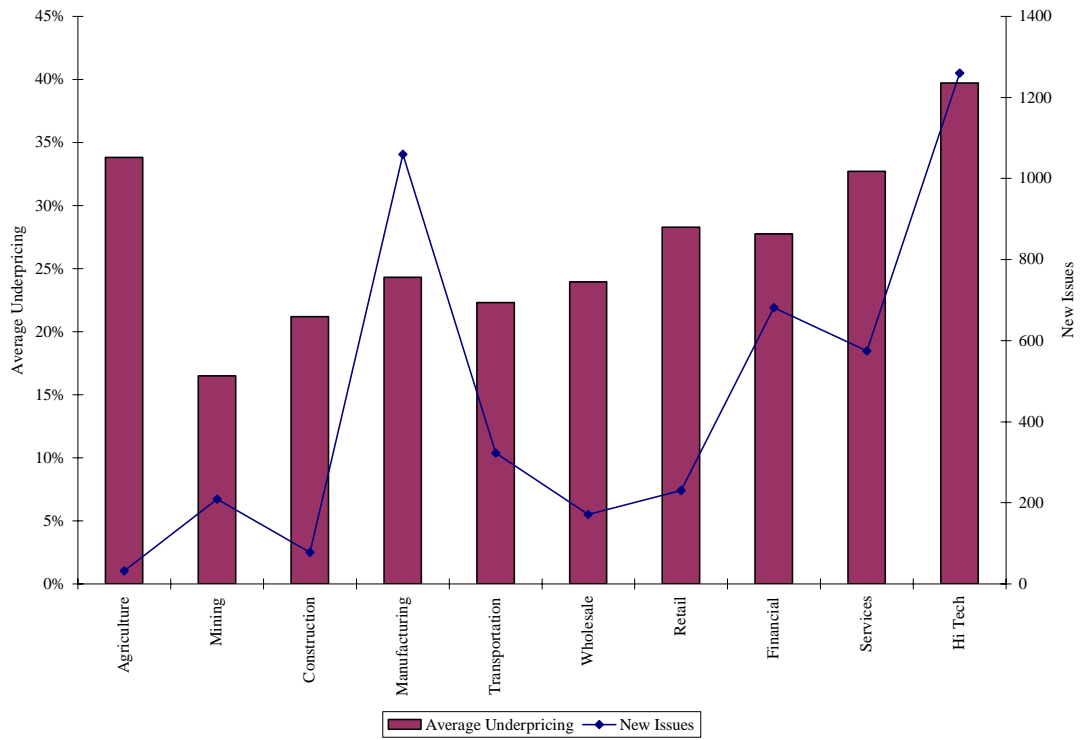


Fig. 3. Underpricing and number of IPOs by industry. Bars show average underpricing by industry and correspond to the left axis. Line points show the number of new issues by industry and correspond to the right axis.

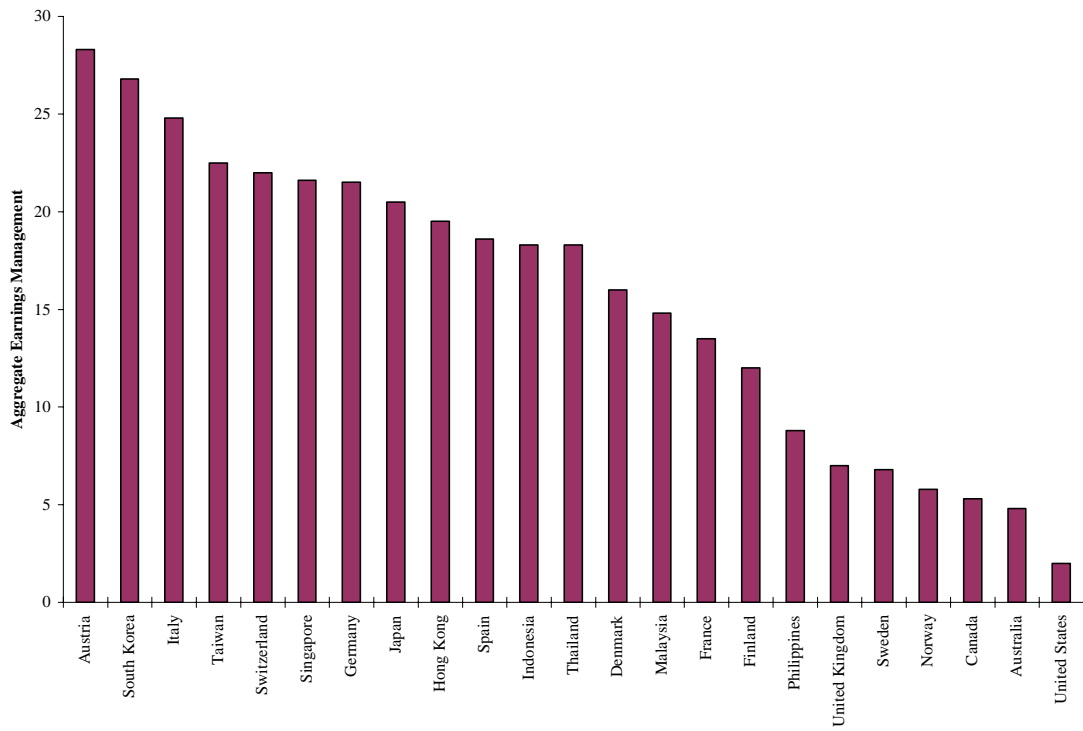


Fig. 4. Aggregate earnings management by country. Aggregate earnings management is defined and reported by Leuz, Nanda, and Wysocki (2003). Higher values correspond with greater earnings management.

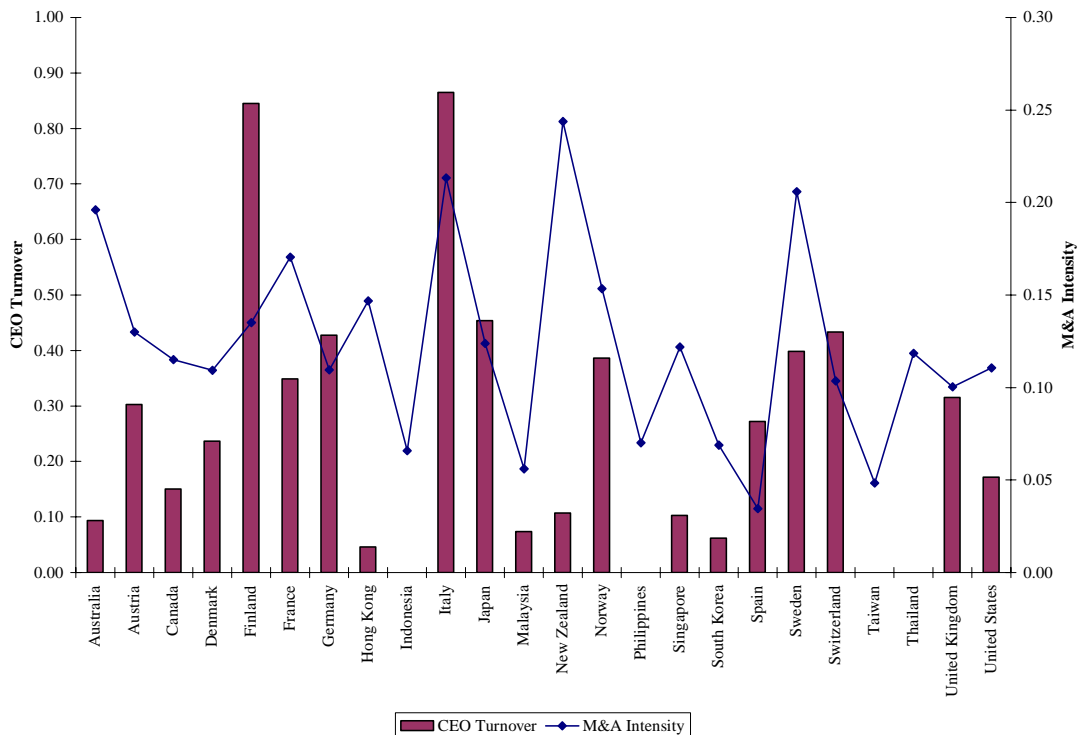
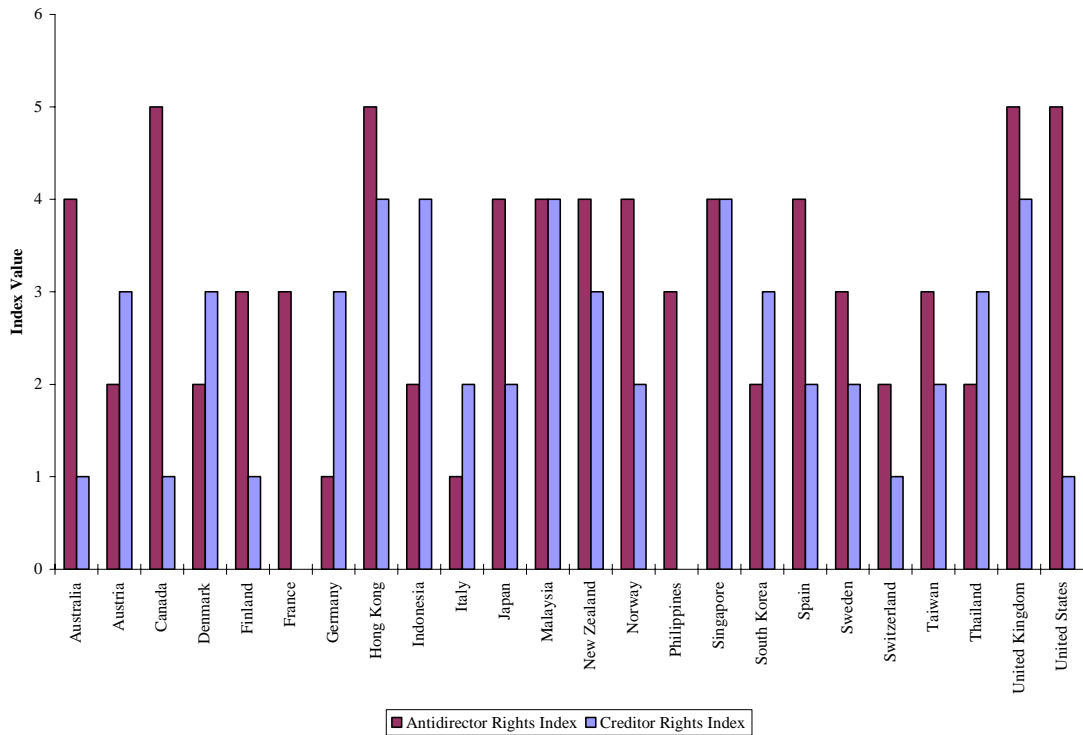


Fig. 5. Governance measures by country. Antidirector rights and creditor rights index values are those reported by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). CEO turnover is the total number of CEO changes over the 1993 to 1998 period relative to the number of publicly listed firms in a given country as of 1996. M&A intensity is the total number of completed mergers and acquisitions reported by

Thomson Financial's SDC Platinum Mergers and Acquisitions Database relative to the number of publicly listed firms in a given country as of 2000. Higher values correspond with better governance.

Table 1
IPO Sample Descriptive Statistics

This table presents descriptive statistics for the entire sample of 4,628 IPOs. Initial return is the first-day secondary market closing price divided by the final offer price, minus one. Offer size ratio is the CPI-adjusted offer value divided by the average CPI-adjusted offer value for the country of listing. IPO activity is the log of one plus the ratio of the total number of IPOs in the issue year divided by the number of publicly listed firms for the country of listing as of 2000. Market return is the return on the main stock index for the country of listing over the three calendar months preceding the offering. Stock market turnover ratio is defined and reported in Beck, Demirgüç-Kunt, and Levine (2000). Price stabilization is the difference in the number of IPOs with small positive first day returns (greater than zero and less than or equal to one percent) and the number of IPOs with small negative first day returns (less than zero and greater than or equal to negative one percent) divided by the total number of IPOs issued in the country of listing. Underdevelopment is the sum of the rankings of infant mortality, internet users per population, literacy, unemployment rate, and paved airport runways as reported by Butler and Fauver 2006. Indicator variables are set equal to one for integer offer price, high-tech, equity carve-out, bookbuilt, firm commitment, reverse LBO, and venture backed deals. High-tech firms are identified following the classification in Loughran and Ritter (2004). Underwriter reputation is the country of listing Megginson-Weiss underwriter market share measure, which is the fraction of total CPI-adjusted offer value underwritten by a given underwriter for the sample.

Variable	N	Mean	Std Dev	Minimum	Maximum
Initial return	4,628	0.305	0.604	-0.527	5.943
Offer size ratio	4,628	1.000	3.717	0.000	118.209
IPO activity	4,628	0.079	0.045	0.000	0.181
Market return	4,628	0.011	0.110	-0.368	0.578
Stock market turnover ratio	4,628	1.103	0.749	0.083	9.896
Price stabilization	4,628	0.007	0.025	-0.100	0.080
Underdevelopment	4,628	0.283	0.085	0.200	0.560
High tech	4,628	0.272	0.445	0.000	1.000
Integer offer price	4,628	0.620	0.486	0.000	1.000
Bookbuilt	4,502	0.613	0.487	0.000	1.000
Firm commitment	4,577	0.609	0.488	0.000	1.000
Equity carve-out	4,582	0.042	0.200	0.000	1.000
Reverse LBO	3,463	0.002	0.042	0.000	1.000
Venture backed	3,897	0.136	0.343	0.000	1.000
Underwriter reputation	4,324	0.069	0.113	0.000	0.722

Table 2
Base Underpricing Regressions

This table presents OLS regressions of IPO underpricing on IPO firm and deal characteristics. The dependent variable is the IPO initial return, which is the first-day secondary market closing price divided by the final offer price, minus one. Offer size ratio is the CPI-adjusted offer value divided by the average CPI-adjusted offer value for the country of listing. IPO activity is the log of one plus the ratio of the total number of IPOs in the issue year divided by the number of publicly listed firms for the country of listing as of 2000. Market return is the return on the main stock index for the country of listing over the three calendar months preceding the offering. Stock market turnover ratio is defined and reported in Beck, Demirgüç-Kunt, and Levine (2000). Price stabilization is the difference in the number of IPOs with small positive first day returns (greater than zero and less than or equal to one percent) and the number of IPOs with small negative first day returns (less than zero and greater than or equal to negative one percent) divided by the total number of IPOs issued in the country of listing. Underdevelopment is the sum of the rankings of infant mortality, internet users per population, literacy, unemployment rate, and paved airport runways as reported by Butler and Fauver 2006. Indicator variables are set equal to one for integer offer price, high-tech, equity carve-out, bookbuilt, firm commitment, reverse LBO, and venture backed deals. High-tech firms are identified following the classification in Loughran and Ritter (2004). Underwriter reputation is the country of listing Megginson-Weiss underwriter market share measure, which is the fraction of total CPI-adjusted offer value underwritten by a given underwriter for the sample. Regressions include year and industry dummies. Industry classifications reflect those reported by Dyck and Zingales (2004). Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

	Model 1	Model 2
Intercept	0.407***	0.362***
Offer size ratio	-0.007***	-0.006**
IPO activity	0.025*	0.029**
Market return	0.768***	0.879***
Stock market turnover ratio	0.030**	0.032**
Price stabilization	0.313	0.882**
Underdevelopment	-0.379***	0.096
High tech	0.131**	0.071
Integer offer price	0.063***	-0.001
Bookbuilt		-0.052*
Firm commitment		0.024
Equity carve-out		-0.060
Reverse LBO		-0.038
Venture backed		0.109***
Underwriter reputation		0.225**
Adjusted R-square	4.32%	9.36%
Number of observations	4,628	3,224

Table 3**Underpricing Regressions on Earnings Opacity**

This table presents OLS regressions of IPO underpricing on IPO firm and deal characteristics and country-level earnings opacity measures. The dependent variable is the IPO initial return, which is the first-day secondary market closing price divided by the final offer price, minus one. Offer size ratio is the CPI-adjusted offer value divided by the average CPI-adjusted offer value for the country of listing. IPO activity is the log of one plus the ratio of the total number of IPOs in the issue year divided by the number of publicly listed firms for the country of listing as of 2000. Market return is the return on the main stock index for the country of listing over the three calendar months preceding the offering. Stock market turnover ratio is defined and reported in Beck, Demirgüç-Kunt, and Levine (2000). Price stabilization is the difference in the number of IPOs with small positive first day returns (greater than zero and less than or equal to one percent) and the number of IPOs with small negative first day returns (less than zero and greater than or equal to negative one percent) divided by the total number of IPOs issued in the country of listing. Underdevelopment is the sum of the rankings of infant mortality, internet users per population, literacy, unemployment rate, and paved airport runways as reported by Butler and Fauver 2006. Indicator variables are set equal to one for integer offer price, high-tech, equity carve-out, bookbuilt, and firm commitment. High-tech firms are identified following the classification in Loughran and Ritter (2004). Underwriter reputation is the country of listing Megginson-Weiss underwriter market share measure, which is the fraction of total CPI-adjusted offer value underwritten by a given underwriter for the sample. Earnings aggressive, loss avoidance, earnings smoothing, and earnings opacity measures are defined in Bhattacharya, Daouk, and Welker (2003). Regressions include year and industry dummies. Industry classifications reflect those reported by Dyck and Zingales (2004). Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	0.601***	0.278***	-1.530***	0.093	0.077
Offer size ratio	-0.010***	-0.009***	-0.009***	-0.009***	-0.009***
IPO activity	0.022	0.023	-0.026	-0.013	-0.010
Market return	0.891***	0.861***	0.890***	0.898***	0.896***
Stock market turnover ratio	0.011	-0.003	0.026*	0.013	0.011
Price stabilization	0.678	0.601	0.918**	1.132**	1.196***
Underdevelopment	-0.554***	-0.388***	-0.071	-0.509***	-0.641***
High tech	0.128**	0.121*	0.126*	0.120*	0.116*
Integer offer price	0.067***	0.053**	0.062***	0.047**	0.043*
Bookbuilt	0.062**	0.031	0.053*	0.049*	0.048*
Firm commitment	0.096***	0.115***	0.115***	0.100***	0.101***
Equity carve-out	-0.081*	-0.092**	-0.098**	-0.094**	-0.103**
Underwriter reputation	0.196**	0.202**	0.154*	0.145*	1.128***
Earnings aggressiveness	6.535***				
Loss avoidance		0.219***			
Earnings smoothing			-1.947***		
Earnings opacity				0.041***	0.054***
Underwriter reputation * earnings opacity					-0.170***
Adjusted R-square	6.97%	6.65%	7.80%	7.39%	7.70%
Number of observations	4,146	4,146	4,146	4,146	4,146

Table 4
Underpricing Regressions on Earnings Management

This table presents OLS regressions of IPO underpricing on IPO firm and deal characteristics and country-level earnings management measures. The dependent variable is the IPO initial return, which is the first-day secondary market closing price divided by the final offer price, minus one. Offer size ratio is the CPI-adjusted offer value divided by the average CPI-adjusted offer value for the country of listing. IPO activity is the log of one plus the ratio of the total number of IPOs in the issue year divided by the number of publicly listed firms for the country of listing as of 2000. Market return is the return on the main stock index for the country of listing over the three calendar months preceding the offering. Stock market turnover ratio is defined and reported in Beck, Demirgüç-Kunt, and Levine (2000). Price stabilization is the difference in the number of IPOs with small positive first day returns (greater than zero and less than or equal to one percent) and the number of IPOs with small negative first day returns (less than zero and greater than or equal to negative one percent) divided by the total number of IPOs issued in the country of listing. Underdevelopment is the sum of the rankings of infant mortality, internet users per population, literacy, unemployment rate, and paved airport runways as reported by Butler and Fauver 2006. Indicator variables are set equal to one for integer offer price, high-tech, equity carve-out, bookbuilt, and firm commitment. High-tech firms are identified following the classification in Loughran and Ritter (2004). Underwriter reputation is the country of listing Megginson-Weiss underwriter market share measure, which is the fraction of total CPI-adjusted offer value underwritten by a given underwriter for the sample. Earnings management 1, earnings management 2, earnings management 3, earnings management 4, and aggregate earnings management are defined and reported in Leuz, Nanda, and Wysocki (2003). Regressions include year and industry dummies. Industry classifications reflect those reported by Dyck and Zingales (2004). Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	0.377***	-0.888***	0.103	0.191**	0.174*	0.172*
Offer size ratio	-0.010***	-0.009***	-0.010***	-0.009***	-0.009***	-0.010***
IPO activity	0.029	-0.012	0.016	0.013	-0.003	0.001
Market return	0.843***	0.876***	0.835***	0.882***	0.865***	0.861***
Stock market turnover ratio	0.001	0.013	0.008	0.021	0.007	0.005
Price stabilization	0.163	1.037**	0.487	1.038**	0.737*	0.877**
Underdevelopment	-0.267*	-0.181	-0.276**	-0.611***	-0.388***	-0.493***
High tech	0.123*	0.121*	0.118*	0.127**	0.118*	0.118*
Integer offer price	0.075***	0.064***	0.072***	0.047**	0.064***	0.061***
Bookbuilt	0.043	0.052*	0.055**	0.004	0.042	0.041
Firm commitment	0.129***	0.102***	0.129***	0.092***	0.110***	0.108***
Equity carve-out	-0.091**	-0.099**	-0.097**	-0.103**	-0.100**	-0.101**
Underwriter reputation	0.245***	0.151*	0.214**	0.115	0.174**	0.850***
EM1	-0.107					
EM2		-1.295***				
EM3			0.324***			
EM4				0.083***		
Aggregate EM					0.008***	0.011***
Underwriter reputation * aggregate EM						-0.043***
Adjusted R-square	6.46%	7.31%	6.77%	7.89%	7.08%	7.38%
Number of observations	4,164	4,164	4,164	4,164	4,164	4,164

Table 5

Underpricing Regressions on Governance Characteristics

This table presents OLS regressions of IPO underpricing on IPO firm and deal characteristics and country-level governance measures. The dependent variable is the IPO initial return, which is the first-day secondary market closing price divided by the final offer price, minus one. Offer size ratio is the CPI-adjusted offer value divided by the average CPI-adjusted offer value for the country of listing. IPO activity is the log of one plus the ratio of the total number of IPOs in the issue year divided by the number of publicly listed firms for the country of listing as of 2000. Market return is the return on the main stock index for the country of listing over the three calendar months preceding the offering. Stock market turnover ratio is defined and reported in Beck, Demirgüç-Kunt, and Levine (2000). Price stabilization is the difference in the number of IPOs with small positive first day returns (greater than zero and less than or equal to one percent) and the number of IPOs with small negative first day returns (less than zero and greater than or equal to negative one percent) divided by the total number of IPOs issued in the country of listing. Underdevelopment is the sum of the rankings of infant mortality, internet users per population, literacy, unemployment rate, and paved airport runways as reported by Butler and Fauver 2006. Indicator variables are set equal to one for integer offer price, high-tech, equity carve-out, bookbuilt, and firm commitment. High-tech firms are identified following the classification in Loughran and Ritter (2004). Underwriter reputation is the country of listing Megginson-Weiss underwriter market share measure, which is the fraction of total CPI-adjusted offer value underwritten by a given underwriter for the sample. Antidirector rights, creditor rights, and efficiency of judiciary system indices are defined and reported in La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). Anti-self-dealing and anti-self-dealing public enforcement indices are defined and reported in Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2006). Democracy index is defined in Jagers and Marshall (2000) and reported in La Porta, Lopez-de-Silanes, and Shleifer (2006). Property rights index is defined in the 1997 Index of Economic Freedom and reported in La Porta, Lopez-de-Silanes, and Shleifer (2006). Public enforcement index is defined in La Porta, Lopez-de-Silanes, and Shleifer (2006). Rule of law index is defined in Kaufmann, Kraay, and Mastruzzi (2004) and reported in La Porta, Lopez-de-Silanes, and Shleifer (2006). CEO turnover is the total number of CEO changes over the 1993 to 1998 period relative to the number of publicly listed firms in a given country as of 1996. M&A intensity is the total number of completed mergers and acquisitions reported by Thomson Financial's SDC Platinum Mergers and Acquisitions Database relative to the number of publicly listed firms in a given country as of 2000. Regressions include year and industry dummies. Industry classifications reflect those reported by Dyck and Zingales (2004). Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Intercept	0.338***	0.223**	0.145	0.356***	0.265***	0.316**	0.512***	0.381***	0.446***	0.387***	0.414***
Offer size ratio	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.016***	-0.010***	-0.008***	-0.010***	-0.009***	-0.010***
IPO activity	0.035**	0.011	0.035**	0.037**	0.039***	0.082***	0.074***	0.007	0.038***	0.072***	0.033**
Market return	0.835***	0.862***	0.849***	0.834***	0.821***	0.969***	0.859***	0.869***	0.831***	1.000***	0.831***
Stock market turnover ratio	0.001	0.014	0.014	0.000	0.011	0.050***	0.053***	0.014	-0.005	0.079***	0.013
Price stabilization	0.061	-0.212	-0.331	0.108	0.148	-0.651	-0.272	1.042**	0.362	0.011	0.019
Underdevelopment	-0.242*	-0.414***	-0.158	-0.221	-0.235*	-0.062	-0.209	0.159	-0.368**	0.326	-0.131
High tech	0.123*	0.134**	0.122*	0.121*	0.124*	0.171**	0.149**	0.112*	0.125*	0.171**	0.119*
Integer offer price	0.075***	0.067***	0.087***	0.074***	0.090***	0.136***	0.114***	0.031	0.066***	0.097***	0.083***
Bookbuilt	0.042	0.039	0.027	0.039	0.062**	-0.039	-0.015	0.020	0.054*	-0.078**	0.041
Firm commitment	0.124***	0.146***	0.121***	0.120***	0.136***	0.174***	0.137***	0.078***	0.119***	0.169***	0.123***
Equity carve-out	-0.091**	-0.091**	-0.091**	-0.092**	-0.096**	-0.072	-0.091**	-0.100**	-0.087*	-0.104**	-0.095**
Underwriter reputation	0.246***	0.246***	0.245***	0.240***	0.233***	0.283***	0.300***	0.074	0.241***	0.247***	0.267***
Antidirector rights	-0.003										
Creditor rights		0.034***									
Efficiency of judiciary system			0.017**								
Anti-self dealing				-0.036							
Anti-self dealing public enforcement					0.092***						
Democracy						0.004					
Property rights							-0.026				
Public enforcement								-0.289***			
Rule of law									-0.045**		
CEO turnover										0.097***	
M&A intensity											0.067***
Adjusted R-square	6.42%	6.76%	6.54%	6.43%	6.69%	8.90%	8.13%	7.89%	6.52%	8.89%	6.74%
Number of observations	4,187	4,187	4,187	4,187	4,187	3,426	3,910	4,187	4,187	3,619	4,064

Table 6

Underpricing Regressions on Governance Characteristics and Aggregate Earnings Management

This table presents OLS regressions of IPO underpricing on IPO firm and deal characteristics, country-level governance measures, and the an aggregate earnings management measure. The dependent variable is the IPO initial return, which is the first-day secondary market closing price divided by the final offer price, minus one. Offer size ratio is the CPI-adjusted offer value divided by the average CPI-adjusted offer value for the country of listing. IPO activity is the log of one plus the ratio of the total number of IPOs in the issue year divided by the number of publicly listed firms for the country of listing as of 2000. Market return is the return on the main stock index for the country of listing over the three calendar months preceding the offering. Stock market turnover ratio is defined and reported in Beck, Demirgüç-Kunt, and Levine (2000). Price stabilization is the difference in the number of IPOs with small positive first day returns (greater than zero and less than or equal to one percent) and the number of IPOs with small negative first day returns (less than zero and greater than or equal to negative one percent) divided by the total number of IPOs issued in the country of listing. Underdevelopment is the sum of the rankings of infant mortality, internet users per population, literacy, unemployment rate, and paved airport runways as reported by Butler and Fauver 2006. Indicator variables are set equal to one for integer offer price, high-tech, equity carve-out, bookbuilt, and firm commitment. High-tech firms are identified following the classification in Loughran and Ritter (2004). Underwriter reputation is the country of listing Megginson-Weiss underwriter market share measure, which is the fraction of total CPI-adjusted offer value underwritten by a given underwriter for the sample. Antidirector rights, creditor rights, and efficiency of judiciary system indices are defined and reported in La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). Anti-self-dealing and anti-self-dealing public enforcement indices are defined and reported in Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2006). Democracy index is defined in Jagers and Marshall (2000) and reported in La Porta, Lopez-de-Silanes, and Shleifer (2006). Property rights index is defined in the 1997 Index of Economic Freedom and reported in La Porta, Lopez-de-Silanes, and Shleifer (2006). Public enforcement index is defined in La Porta, Lopez-de-Silanes, and Shleifer (2006). Rule of law index is defined in Kaufmann, Kraay, and Mastruzzi (2004) and reported in La Porta, Lopez-de-Silanes, and Shleifer (2006). CEO turnover is the total number of CEO changes over the 1993 to 1998 period relative to the number of publicly listed firms in a given country as of 1996. M&A intensity is the total number of completed mergers and acquisitions reported by Thomson Financial's SDC Platinum Mergers and Acquisitions Database relative to the number of publicly listed firms in a given country as of 2000. Aggregate earnings management is defined and reported in Leuz, Nanda, and Wysocki (2003). Regressions include year and industry dummies. Industry classifications reflect those reported by Dyck and Zingales (2004). Respectively, ***, **, and * denote significance of the coefficient at the 1, 5, and 10 percent level.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Intercept	-0.056	0.099	-0.213	0.000	0.133	-0.183	0.470**	0.593***	0.251**	0.172	0.265***
Offer size ratio	-0.009***	-0.009***	-0.009***	-0.010***	-0.009***	-0.014***	-0.009***	-0.008***	-0.009***	-0.009***	-0.009***
IPO activity	-0.020	-0.020	-0.016	-0.024	0.003	0.044**	0.031*	0.035**	0.000	0.030	-0.014
Market return	0.907***	0.884***	0.893***	0.887***	0.850***	1.002***	0.888***	0.860***	0.861***	1.018***	0.857***
Stock market turnover ratio	0.017	0.017	0.031**	0.017	0.014	0.100***	0.066***	0.015	0.003	0.076***	0.023
Price stabilization	0.666	0.479	0.208	0.632	0.799*	-0.255	0.739	0.846**	0.918**	0.257	0.807*
Underdevelopment	-0.489***	-0.518***	-0.259*	-0.536***	-0.371***	0.174	-0.430***	0.598***	-0.457***	-0.221	-0.267*
High tech	0.122*	0.127*	0.114*	0.129**	0.119*	0.161**	0.141**	0.111*	0.119*	0.162**	0.111*
Integer offer price	0.070***	0.058***	0.083***	0.069***	0.077***	0.129***	0.101***	0.017	0.058***	0.091***	0.074***
Bookbuilt	0.022	0.041	0.015	0.052*	0.060**	-0.103***	-0.021	0.004	0.050*	-0.022	0.039
Firm commitment	0.086***	0.131***	0.102***	0.114***	0.123***	0.162***	0.124***	0.067***	0.109***	0.142***	0.107***
Equity carve-out	-0.098**	-0.100**	-0.105**	-0.098**	-0.104**	-0.094**	-0.105**	-0.095**	-0.098**	-0.110**	-0.108**
Underwriter reputation	0.164*	0.178**	0.149*	0.182**	0.166**	0.144	0.210**	0.049	0.172**	0.207**	0.186**
Antidirector rights	0.043***										
Creditor rights		0.028***									
Efficiency of judiciary system			0.031***								
Anti-self dealing				0.158***							
Anti-self dealing public enforcement					0.077***						
Democracy						0.026***					
Property rights							-0.051*				
Public enforcement								-0.479***			
Rule of law									-0.027		
CEO turnover										0.019	
M&A intensity											0.089***
Aggregate EM	0.013***	0.007***	0.010***	0.011***	0.007***	0.013***	0.010***	-0.009***	0.008***	0.009***	0.009***
Adjusted R-square	7.40%	7.29%	7.45%	7.23%	7.24%	10.52%	9.11%	8.11%	7.09%	9.58%	7.60%
Number of observations	4,164	4,164	4,164	4,164	4,164	3,403	3,887	4,164	4,164	3,596	4,041