THE EFFECT OF IFRS ON IPO ACTIVITIES THROUGHOUT THE WORLD

by

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Abstract

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This dissertation consists of three essays. The first essay discusses IPO procedures and literature on IPO underpricing. The second essay examines the impact of International Financial Reporting Standards (IFRS) on IPO underpricing in an international setting. Controlling for firms' choice of accounting standards, I find that IPO underpricing is lower for IPO firms using IFRS than those using domestic GAAP. In particular, I show that the impact of IFRS on IPO underpricing is larger for IPO firms listed in stronger enforcement jurisdictions. Focusing on comparability, I show that the use of IFRS reduces IPO underpricing compared with domestic GAAP because IFRS allow for a greater degree of comparability (i.e., a larger number of listed industry peers using the same accounting standards). However, the benefit of enhanced comparability from IFRS arises only when these industry peers are themselves listed in jurisdictions with high-quality enforcement. That is to say, high-quality enforcement is critical in enhancing the overall benefit of increased comparability under IFRS.

The third essay examines global integration of accounting standards and firms' cross-listing decisions. Global capital markets are highly fragmented; however, the widespread adoption of a single set of global accounting standards – International Financial Reporting Standards (IFRS) – may broaden the horizons of cross-border capital markets. Specifically, this paper examines, partitioning sample IPO firms that use IFRS into voluntary and mandatory IFRS adopters, whether their decision to list abroad is different from that of matched IPO firms that use domestic GAAP. Results show that compared with matched IPO firms, voluntary IFRS adopters show (1) a decreasing likelihood of listing abroad to raise a large amount of proceeds, (2) a increasing likelihood of listing abroad to bond to credible disclosure practices in a foreign country, (3) a decreasing likelihood of listing abroad in the face of a small number of local industry peers that use the same set of accounting standards. Results of changes in these likelihoods following mandatory IFRS adoption are mixed or weaker than those using voluntary IFRS

adopter sample. In addition, I find that the large number of foreign IFRS-reporting industry peers encourages IFRS-reporting IPO firms, in both voluntary and mandatory adopter samples, to list abroad. These results provide evidence of how the worldwide adoption of IFRS changes firms' cross-border listing decisions throughout the world.

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Table of Contents

List of Tables

CHAPTER 1

IPO PROCEDURES AND LITERATURE REVIEW

1.1 Introduction

Chapter 2 examines how a firm's choice of accounting standards between IFRS and domestic GAAP affects the degree of information asymmetry between different investors about firm value, by looking at the degree of IPO underpricing. IPO underpricing refers to a phenomenon in which the offer price of newly issued shares of an IPO firm tends to be lower than their underlying value. IPO underpricing is widely observed throughout time and across countries, providing an excellent opportunity to examine the impact of the use of IFRS on IPO underpricing. For example, Eckbo (2007) reports that underpricing exists in stock markets throughout the world, from those in Latin America and Asia-Pacific to those in Europe. Eckbo (2007) also shows that the U.S. capital market, one of the most active IPO markets in the world, also experienced IPO underpricing of 10 to 20 percent on average in the past decades.

I review in this chapter two streams of prior literature that attributes IPO underpricing to information asymmetry between different investors about firm value. First, I discuss the results of Rock (1986) and Beatty and Ritter (1986). Rock (1986) explains IPO underpricing under an assumption that the information about firm value is asymmetrically distributed between informed and uninformed investors. Beatty and Ritter (1986) propose that uncertainty about firm value is positively associated with IPO underpricing, while the uncertainty is likely to grow as information asymmetry increases. These papers are supported by subsequent empirical papers, such as Carter and Manaster (1990), Megginson and Weiss (1991), Michaely and Shaw (1994), and Aggarwal, Prabhala, and Puri (2002).

Second, I introduce Benveniste and Spindt (1989), which assume information asymmetry between different investors with heterogeneous opinions about firm value. Their arguments are empirically examined by studies such as Hanley (1993), Cornelli and Goldreich (2001), Ljungqvist and Wilhelm (2002), and Aggarwal et al. (2002)

Some researchers argue that IPO underpricing is caused by managers' incentives to signal firms' future performance or to reduce tax or litigation risks. However, these arguments either lack empirical evidence or fail to be generalized across different institutions.

Section 1.2 describes general IPO procedures implemented throughout the world. Section 1.3 introduces Rock (1986), Beatty and Ritter (1986), and their subsequent empirical studies. Benveniste and Spindt (1989) and the subsequent empirical evidence are introduced in Section 1.4.

1.2 IPO Procedures

This section introduces general IPO procedures implemented throughout the world, as well as a few additional procedures that are unique to a few countries.

1.2.1 PRICING

Underwriters, together with an issuer, evaluate new shares and set the offer price range around two months prior to the offer date. Offer price range is determined using various valuation methods. Among others, comparable-firms approach, which uses a multiple such as price/earnings or price/book ratio of industry peers, is widely used. Discounted free cash flow (DCF) method is also often used for sensitivity analyses. Underwriters narrow down the offer price range during the subsequent book-building process.

1.2.2 BOOK-BUILDING

Book-building and fixed-price methods are the two most frequently used IPO pricing methods throughout the world. Under the book-building method, underwriters set the offer price after gauging investors' demand. Under the fixed-price method, the offer price is fixed without any investigation about investors' demand. New shares are allocated after fixing the offer price. Underwriters often allocate new shares pro rata (i.e., in an even-handed manner) under the fixed-price method. Underwriters usually exercise much more discretion over the allocation under the book-building method than they do under the fixed-price method.

Book-building has gained in popularity throughout the world over the recent two decades as the global IPO market tends to follow the U.S. practice. However, the fixed-price method is still used in some European and Asian countries.

Underwriters prepare a book to record investors' indication of demand. A book-building takes around two weeks with procedures as follows. Before the roadshow begins, underwriters propose the initial offer price range. Some countries permit only institutional investors to participate in the roadshow (e.g. U.K. or South Korea). Investors indicate their interest, which are not necessarily firm-orders or commitment. However, if investors who regularly participate in the IPO market flip their interest, underwriters may put these investors at a disadvantage in the next IPOs. The book contains each bid's information, such as bidder identification, the number of shares requested, a bidding price if the bidder specifies, the underwriter who receives the bid, and a revision or cancellation identifier. A book classifies bids into three types (Cornelli and Godreigh, 2001); (1) a strike bid that does not specify a preferred offer price but specifies the amount of money on demand, (2) a limit bid that indicates the price as well as the amount of money on demand, and (3) a step bid that expresses the demand as a step function of price and quantity. A limit bid and a step bid specify the price, whereas a strike bid does not. Therefore, an underwriter can gather more information useful for pricing from a limit or a step bid than from a strike bid. Offer price is finalized after the book is closed, usually a day before the offer date. After closing the book, underwriters along with the issuer analyze information about the strength of demand, price sensitivity, recent IPO market trend, etc, to determine the offer price. After finalizing the offer price, new shares are allocated.

1.2.3 ALLOCATION

Underwriters allocate new shares to investors. New shares are usually allocated to long-term investors with good reputation and to those who show a strong interest during the book-building process. These are to ensure a stable share price after trading begins. If shares are allocated to speculators or to investors with weak demand, the trading price may plummet, which may negatively affect the underwriters' reputation.

Underwriters allocate most of new shares to institutional investors, leaving around 10% for retail investors. Some Asian countries such as Hong Kong or Singapore mandate to allocate some portion to retail investors.

1.2.4 AFTERMARKET STABILIZATION

An overallotment option, or a Greenshoe option, refers to underwriters' option to issue more shares than the registered shares after trading begins. Using an overallotment option, underwriters stabilize the trading price as follows: they buy back the new shares at the offer price when the market price decreases, and exercise the overallotment option when the market price increases from the offer price. In the U.S., the shares that can be overalloted must be less than 15% of the total shares originally planned. An overallotment option is usually exercised during 30 days after the offer date.

1.3 Fixed-Price Method and IPO Underpricing

1.3.1 THEORETICAL EXPLANATION

Rock (1986) and Beatty and Ritter (1986) theoretically explains IPO underpricing under the fixed-price method. Rock (1986) assumes that new shares are priced under the fixed-pricing method. He further assumes that information about value of IPO firms' new shares is asymmetrically distributed between informed and uninformed investors. Informed investors have perfect information about value of the new shares, whereas uninformed investors are ignorant about the value. As a result, informed investors' investment decision is clearly foreseeable; they demand new shares when the offer price is lower than the underlying value of the new shares. Uninformed investors' demand for the new shares, however, is less clear. An even-handed allocation of new shares creates a bias in the probabilities of receiving an allocation between underpriced and overpriced issues; overpriced issues are more likely to be allocated. This bias lowers uninformed investors' expected profit and keeps uninformed investors from participating in the IPO market. Rock (1986) demonstrates that underwriters can induce uninformed investors to participate in the IPO market by discounting the offer price and creating IPO underpricing. As the offer price decreases, uninformed investors' demand will obviously increase. Nevertheless, any discount in the offer price lowers uninformed investors' demand also, since discounted new shares will attract informed investor as well and exacerbate the bias in probabilities of receiving an allocation. After all, even though underwriters discount the new shares, the decrease in uninformed investors' demand arising from the bias may counteract any increase in their demand arising from the discount. Rock (1986) shows that when the IPO market is sufficiently large, an increase in uninformed investors' demand for

discounted shares dominates a decrease in their demand arising from the bias; uninformed investors participate in the IPO market when new shares are underpriced, in spite of the increase in the bias.

Beatty and Ritter (1986) show that uncertainty about the value of new shares is positively associated with IPO underpricing. In addition to the assumptions introduced by Rock (1986), Beatty and Ritter (1986) assume that investors become informed at some cost to acquire information about the underlying value of the new shares. Informed investors cost to acquire information as much as their expected profit from the investment on the new shares. In contrast, uninformed investors participate in the IPO market as long as their expected profit from underpriced issues covers their expected loss from overpriced issues. Beatty and Ritter (1986) show, under certain conditions, that the offer price is negatively associated with the level of the dispersion of the information about the underlying value; as the dispersion or the uncertainty increases, the offer price lowers and IPO underpricing aggravates.

1.3.2 EMPIRICAL EVIDENCE

Beatty and Ritter (1986) empirically supports their analytical result that relates uncertainty to IPO underpricing. They employ two proxies for uncertainty: (1) the log of one plus the number of uses of proceeds and (2) the reciprocal of the gross proceeds. They argue that it is the SEC's practice that makes the number of the uses of proceeds as a measure of the uncertainty. Firms are inherently reluctant to disclose the use of proceeds, since disclosure about the use may increase ligation risk and firms often desire to keep proprietary information from their competitors. The SEC requires disclosing the uses of proceeds additionally only if they regard the issue as speculative. As a result, firms tend to disclose more uses of proceeds when the SEC requires doing due to uncertainties than when the SEC does not. Beatty and Ritter's (1986) second proxy for the uncertainty is the inverse of the gross proceed; the smaller the offering is, the more speculative it is. Using the U.S. IPO data during 1981 and 1982, Beatty and Ritter (1986) show that IPO underpricing is positively related to the two proxies of uncertainty.

Beatty and Ritter (1986) also argue that information intermediaries such as underwriters may reduce the uncertainty about IPO firms' value. If issuers discount the offer price, uninformed investors would participate in the IPO. Nevertheless, issuers do not have any incentive to discount since an issuer goes public only once. Rather, issuers are more likely to set an offer price much higher than IPO firms'

underlying value, and exit from the IPO market. If the investors are not assured that the issuers will discount the offer price, they will not participate in the IPO market, which will lead to a 'lemons' problem. Underwriters can take on the assuring role, as an information intermediary. Investment banks are going to underwrite many other issuers' offerings over time, and have business with investors and issuers repeatedly. Therefore, underwriters have reputational capital that can be damaged if the offer price is too low or too high relative to the underlying value of new shares. Beatty and Ritter (1986) empirically show that as issuers of an underwriter experience a large dispersion of IPO underpricing in a period, the underwriter's market share decreases in the subsequent period. This implies that underwriters may put efforts to reduce uncertainty, thereby mitigating IPO underpricing.

Consistent with the empirical results of Beatty and Ritter (1986), Carter and Manaster (1990) show that underwriter reputation is negatively associated with IPO underpricing. Issuers desire to maximize the proceeds and minimize IPO underpricing, and this can be accomplished by reducing the uncertainty. Carter and Manaster (1990) argue that issuers can accomplish it by hiring underwriters with a reputation for underwriting IPOs with low uncertainty. Carter and Manaster (1990) contribute to the IPO underpricing literature, particularly by employing a proxy for the underwriter reputation. They examine the hierarchy of underwriters in the "tombstone announcements" at the beginning part of prospectuses. The most prestigious underwriter is listed first, the rests are followed, and the least is placed at the last. Using the locations of underwriters in the tombstone announcements, Carter and Manaster (1990) assign zero to nine for each underwriter so that the most prestigious underwriters have the highest value for the reputation variable. After controlling for the firm age, which is inversely related to the inherent uncertainty about firm value, Carter and Manaster (1990) show that their measure of underwriter reputation is negatively associated with IPO underpricing. This result implies that issuers may send a signal about their low-level uncertainty to investors by hiring prestigious underwriters.

Megginson and Weiss (1991) provide evidence similar to Carter and Manaster (1990), using a dummy variable that identifies whether an IPO is backed by venture capitalists or not. Megginson and Weiss (1991) show that when IPOs are backed by venture capitalists, underpricing and gross spreads paid to underwriters is low, thereby maximizing the net proceeds and minimizing the costs of going public. In addition, they show that when IPOs are backed by venture capitalists, the issuers are likely to go public

with more reputable underwriters, with higher-quality auditors, and with higher level of institutional holdings after the offering.

Based on the implications from Rock (1986) and Beatty and Ritter (1986), Michaely and Shaw (1994) expect that IPO underpricing is mitigated as information held by different investors becomes homogeneous. In order to test this expectation, they employ a sample of IPO master limited partnerships (MLPs) and a control sample of regular IPOs. Income received from the MLPs is classified as unrelated business income, and institutional investors have to pay tax on earnings from MLPs they own. Therefore, institutional or informed investors are unwilling to participate in MLP IPOs and uninformed investors presumably know this unwillingness of informed investors. As a result, investors in IPO MLPs are relatively homogeneous in terms of the amount of information they hold; they are uninformed investors. Michaely and Shaw (1994) show that underpricing for MLP IPOs is lower than that for the regular IPOs, a result which implies that uninformed investors demand fewer discount on the offer price when fewer informed investors participate in the IPO.

Aggarwal et al. (2002) analyze proprietary 174 IPOs data that include information about the allocation to institutional and retail investors. Their descriptive statistics show that the percentage of allocations to institutional investors increases as IPO underpricing aggravates. 59.73% of the total proceeds are allocated to institutional investors when IPO underpricing is less than 0%, while 76.69% are allocated to institutional investors when underpricing is greater than 20%. About this phenomenon, a potential explanation consistent with Rock (1986) is that institutional investors have private information, in addition to the public information that they reveal during a book-building process. When institutional investors have public information, they indicate their interest based on this public information and underwriters allocate the new shares according to the indication of interest. Such allocation practice stemming from institutional investors' public information creates a positive association between IPO underpricing and allocation to the institutional investors, since strong interests of institutional investors increase share price after trading begins. If institutional investors have private information which creates IPO underpricing according to Rock (1986), the association between IPO underpricing and allocation to institutional investors will not be fully explained by the public information that are revealed by institutional investors' indication of interest.

Aggarwal et al. (2002) model a regression of IPO underpricing on two variables of their interest: (1) the proportion of allocation to institutional investors and (2) the percentage difference between the mid-point of the filing range and the offer price. The latter is a proxy for the public information about firm value; this variable measures the strength of institutional investors' indication of interest based on public information about firm value (Hanley, 1993). If IPO underpricing is not fully explained by this latter variable, the coefficient of the former variable (proportion of allocation to institutional investors) after controlling for the latter variable (a proxy for the public information) must be significant. Aggarwal et al. (2002) show that the coefficient on the former variable is significantly positive after controlling for the latter variable. They argue that this is evidence of the private information held by informed investors, which is consistent with Rock (1986).

1.4 Book-building Method and IPO Underpricing

1.4.1 THEORETICAL EXPLANATION

While the fixed-price method, which is assumed in Rock (1986) and Beatty and Ritter (1986), was a popular pricing method in the U.S. until 1980s, the book-building method wins popularity worldwide in the recent two decades. Benveniste and Spindt (1989) introduce an analytical model about IPO underpricing under the book-building method. Benveniste and Spindt (1989) further assume information asymmetry among different investors with heterogeneous opinions about firm value. When underwriters solicit investors for their opinions about an IPO firm's value, investors express mild or strong interests and underwriters analyze their indication of interest to finalize offer price and allocation. An offer price and allocation (OP&A) schedule that induces investors to reveal their opinions truthfully must satisfy the following two conditions. First, an investor holding a good opinion must expect to profit by expressing a truthful opinion rather than by doing a deceitful opinion. Second, investors' expected profit from participating in the IPO market must be nonzero so that investors have incentive to participate. Under these conditions, an OP&A schedule that maximizes the expected proceeds results in underpricing. In addition, Benveniste and Spindt (1989) show that underpricing is directly related to the difference between good and bad opinions about firm value.

1.4.2 EMPIRICAL EVIDENCE

Underwriters incorporate investors' opinions revealed during a book-building process into the final offer price, by adjusting the initial offer price documented at the preliminary prospectus. This adjustment is to be merely a "partial" adjustment and does not eliminate IPO underpricing completely according to Benveniste and Spindt (1989), since some degree of underpricing is required to induce investors to reveal their positive opinions. Unless, the adjustment will effectively remove underpricing and underpricing must be unassociated with the adjustment. Hanley (1993) shows that IPO underpricing is positively associated with the adjustment of the proposed offer price. This result implies that underpricing is underwriters' strategic decision to compensate investors for revealing their truthful opinion.

Cornelli and Goldreich (2001) examine whether a book-building process is merely practice of recording investors' requests or practice of gathering information held by investors; the latter is consistent with the assumption in Benveniste and Spindt (1989). Using a proprietary international IPO dataset, Cornelli and Goldreigh (2001) document that underwriters indeed allocate more shares to investors who bid with a price (a limited bid or a step bid) than those who bid only with a quantity (a strike bid). In addition, underwriters favor (i.e., allocate more shares to) investors who revise their opinion during the book-building procedure. A revision of an opinion can be useful for underwriters since underwriters can update investors' opinions as well as the initial offer price. These results imply that underwriters reward investors for revealing more information by allocating more shares to them.

Aggarwal et al. (2002) analyze a proprietary dataset of 174 IPOs and show that the percentage of the new shares allocated to institutional investors is positively associated with IPO underpricing. About this positive association they suggest an explanation that is consistent with Benveniste and Spindt (1989); underwriters must compensate institutional investors for revealing their positive opinions. Underwriters allocate more (less) shares to institutional investors and underprice more (less) when the institutional investors express strong (weak) indication of interest. Measuring the level of interest of institutional investors as the percentage difference between filing price and offer price, Aggarwal et al. (2002) show that this measure of interest is positively associated with the percentage of shares allocated to institutional investors.

Ljungqvist and Wilhelm (2002) test whether underwriters' allocation to institutional investors is discretionary or discriminatory. If underwriters' allocation is discretionary and intends to gather more information, as argued by Benveniste and Spindt (1989), such discretionary allocation practice should benefit issuers. In contrast, if underwriters' allocation is discriminatory and serves only underwriters' interest, constraints on underwriters' allocation practice will benefits issuers. Ljungqvist and Wilhelm (2002) examine whether constraints on underwriters affect IPO underpricing, using a sample of IPOs that are offered in countries with different levels of constraints on underwriters. First, Ljungqvist and Wilhelm (2002) find that constraints on underwriters' allocation practice results in less revision to the offer price, where the revision to the offer price indicates the extent of price discovery from the institutional investors. Second, they find that the less revision to the offer price results in less allocation to the institutional investors. This implies that institutional investors become more difficult to get rewarded from revealing their own information. Third, they show that the less allocation to the institutional investors results in more IPO underpricing, which reduces total proceeds of issuers. In conclusion, constraints on underwriters' allocation practice results in more IPO underpricing and negatively affects issuers. Ljungqvist and Wilhelm (2002) argue that these results indicate that underwriters' discretionary allocation promotes price discovery and benefits issuers.

CHAPTER 2

THE IMPACT OF INTERNATIONAL FINANCIAL REPORTING STANDARDS ON IPO UNDERPRICING

2.1 Introduction

This paper examines the effect of International Financial Reporting Standards (IFRS) on IPO underpricing. IFRS have been promoted as a globally accepted single set of accounting standards. However, whether firms benefit from using IFRS instead of domestic generally accepted accounting principles (GAAP) is still open to debate among researchers, regulators, and practitioners. The global IPO market provides an ideal setting to examine the effects of IFRS on firms' reporting quality, since information asymmetry about firm value is high before a firm goes public. In addition, the IPO setting allows for a test of the effect of IFRS on comparability because comparison measures such as industry peers' price-earnings ratios are widely used in valuing IPO firms.

IPO underpricing refers to the phenomenon whereby the offer prices of the newly issued shares of firms going public tend to be lower than the first trading-day closing prices.[1] IPO underpricing has been attributed to information asymmetry among investors regarding the value of an IPO firm (Rock, 1986; Beatty and Ritter, 1986; Benveniste and Spindt, 1989). Rock (1986) and Beatty and Ritter (1986) attribute IPO underpricing to information asymmetry between informed and uninformed investors (e.g., between institutional and retail investors) with the former having invested resources to acquire information about an IPO firm's value. Uninformed investors are at an information disadvantage and can therefore be exploited. The offer price must be set low enough to leave "money on the table" in order to attract uninformed investors to participate in the IPO market and to compensate informed investors for the cost of acquiring information. Benveniste and Spindt (1989) attribute IPO underpricing to information asymmetry between different investors who have heterogeneous information about an IPO firm's value. When investors disagree about the value of an IPO firm, underwriters need investors to reveal their positive view regarding the IPO. Because investors with positive opinions have no incentive to reveal this information, underwriters set the offer price low enough to compensate interested investors for revealing their opinion. While underpricing may be necessary to attract investors into an IPO market, leaving money on the table reduces the proceeds of an IPO. From the perspective of the firm going public, underpricing can be costly.

[1] Following prior studies, I measure the degree of IPO underpricing by the first trading-day stock return relative to the offer price. For example, when LinkedIn went public on May 19, 2011, the offer price was $45 whereas the closing price on the first trading-day was $94.25. In this case, the degree of IPO underpricing is 109% (= $94.25/$45 – 1)

This paper examines the impact on IPO underpricing of IFRS compared with domestic GAAP. I expect IFRS to affect IPO underpricing through two mechanisms: (1) reporting quality that promotes the ability of investors to evaluate IPO firms based on IPO firms' own financial reports (hereafter, reporting quality), and (2) the ability of investors to compare financial reports of an IPO firm to its industry peers that use the same set of accounting standards (hereafter, comparability). First, as a global set of accounting standards, IFRS possibly provide improved reporting quality, on average, as compared with domestic GAAP, which in turn, may reduce IPO underpricing. While many countries have adopted IFRS with the expectation that IFRS would benefit financial statement users (Barth, Landsman, and Lang, 2008), it is unclear whether the use of IFRS actually provides improved reporting quality compared with domestic GAAP (Ahmed, Neel, and Wang, 2010; Capkun, Collins, and Jeanjean, 2011). Second, IFRS may affect IPO underpricing by increasing the comparability of financial reports among industry peers that use the same accounting standards. Enhanced comparability facilitates the process by which investors and underwriters make comparative assessments of firms' accounting performance and share prices. That is, enhanced comparability allows investors to clarify commonalities and differences among industry peers and helps investors extract useful information, which decreases information asymmetry. As a result, enhanced comparability may mitigate IPO underpricing. While a number of recent studies explore the outcomes associated with the use of IFRS to draw inferences on the comparability of IFRS as compared with that of domestic GAAP (DeFond, Hu, Hung, and Li, 2011; Lang, Maffett, and Owens, 2010), [2] their findings are mixed; therefore this study focuses on the question of whether IFRS decrease IPO underpricing by increasing comparability. In addition, this paper examines whether strong enforcement helps to decrease IPO underpricing. Previous studies have documented that the level of enforcement plays a role in firms' actual compliance with accounting standards (Ball, 2006; Daske, Hail, Leuz, and Verdi, 2008; Byard, Li, and Yu, 2011). Strong enforcement in jurisdictions where IPO firms are listed is likely to improve IPO firms' reporting quality under IFRS. In addition, strong enforcement in jurisdictions where comparable firms are listed is also likely to contribute to the comparability between an IFRS-using IPO firm and its comparable firms.

[2] This paper differs from a few other recent studies about comparability of IFRS (Ozkan, Singer, and You, 2012; Yip and Young, 2012). This paper examines the impact of industry peers that use the same set of accounting standards, while they examine whether comparability improves as firms use a single set of accounting standards, IFRS, rather than different sets of domestic GAAP.

Employing a two-stage model that controls for IPO firms' accounting standards choice, [3] this paper analyzes the impact on IPO underpricing of (1) IPO firms' use of IFRS as compared with domestic GAAP, and (2) the number of comparable firms. I use the number of comparable firms as a proxy for the level of comparability. Comparable firms are defined as listed industry peers[4] that use the same set of accounting standards as an IPO firm. Thus, the number of comparable firms reflects the extent of the widespread use of a set of accounting standards. If IFRS provide improved reporting quality and enhanced comparability compared with domestic GAAP, then IPO underpricing under IFRS will be lower than under domestic GAAP, and it will decrease with the number of comparable firms reporting in IFRS. The sample for this study consists of non-U.S. IPOs that went public between 2003 and 2007.[5]

I find that IPO firms are more likely to use IFRS than domestic GAAP when they have few listed industry peers that use domestic GAAP in a domestic market. Controlling for IPO firms' choice of accounting standards, I find that IPO underpricing is lower for firms using IFRS than those using domestic GAAP. IPO underpricing also decreases in the number of comparable firms. However, this decrease is only significant for IFRS-reporting IPOs; it is not significant for domestic GAAP-reporting IPOs. Moreover, I find IPO underpricing is lower for IFRS-reporting IPOs listed in strong enforcement jurisdictions than for those listed in weak enforcement jurisdictions. I also find that IPO underpricing of IFRS-reporting IPOs decreases with the number of comparable firms only when these comparable firms are themselves listed in strong enforcement jurisdictions.

In summary, the results show that IPO underpricing decreases (1) when IPO firms use IFRS rather than domestic GAAP, and (2) when IPOs have a large number of comparable firms. In addition, the decrease in IPO underpricing is greater for IFRS-reporting IPOs (3) when they are listed in stronger enforcement environments, and (4) when comparable firms are themselves listed in stronger enforcement environments. These results are economically significant in that IPO underpricing predicted in the model

[3] Over the sample period 2003 to 2007, many countries permit listed firms to use IFRS (e.g., European countries' permission for earlier IFRS adoption before 2005). Moreover, exchanges throughout the world often permit multiple sets of accounting standards. See Section 2.3.1 for a detailed discussion about IPO firms' self-selection of accounting standards and Section 2.4.4.1 for a robustness test that uses a subsample of IPOs adopting IFRS voluntarily.

[4] Based upon Fama and French (1997) industry classifications.

[5] I exclude firms using U.S. GAAP from the sample, since U.S. GAAP are another set of globally accepted accounting standards, in addition to IFRS. See Section 2.3.2 for the detailed discussion about the sample selection.

is 19.3% for an average IFRS-reporting IPO whereas it is 40.0% for an average domestic GAAP-reporting IPO. These predictions correspond to leaving $3.3 million less on the table for an IPO that raises $15.9 million, which is the average proceeds amount of the sample, if the IPO uses IFRS rather than domestic GAAP. Results are robust to the use of country or industry fixed-effects, to the use of a subsample that consists of IPOs that voluntarily adopt IFRS, and to alternative specifications of the level of enforcement and the number of comparable firms (see Section 2.4.4 for additional tests and robustness tests).

This paper makes a number of contributions. First, it shows the benefits of having a large number of comparable firms using the same accounting standards. Results show that the impact of a one-percent increase in the number of comparable firms on IPO underpricing can be similar for IFRS and domestic GAAP, particularly when the comparable firms are in strong enforcement jurisdictions. However, the results also show that the total impact of the number of comparable firms is greater for IPOs using IFRS than for those using domestic GAAP. This is because the average number of comparable firms is much larger for IPOs using IFRS. While concurrent studies of the impact of IFRS on comparability provide mixed evidence (Lang et al., 2010; DeFond et al., 2011), the results in this paper point toward the importance of the number of industry peers that use the same accounting standards for a study about comparability of accounting standards.

Second, to the best of my knowledge, this is the first study to provide direct evidence that the level of enforcement plays a critical role in determining comparability. Previous studies show that the level of enforcement is critical in determining firms' own reporting quality (Ball, 2006; Holthausen, 2009). The results here highlight that enforcement quality is also critical in determining comparability. Thus, the results suggest that global enforcement quality is critical in determining the extent to which enhanced global comparability will be realized following IFRS adoption.

Third, this paper shows that the likelihood of an IPO firm's choice of IFRS decreases in the number of listed industry peers that use domestic GAAP. This result suggests that IPO firms are less likely to use IFRS as the level of comparability associated with domestic GAAP-reporting industry peers is expected to increase. That is, firms going public consider the level of comparability that is expected to arise under a set of accounting standards.

Overall, the results in this study provide a number of implications for policymakers, regardless of whether IFRS adoption has been mandated. The results highlight the role of enforcement in determining the potential benefits of increased comparability under IFRS. Rigorous implementation under strong enforcement not only enhances firms' actual reporting quality (Ball, 2006; Byard et al., 2011), but also generates positive externalities in the form of an increase in comparability.

The rest of this paper is organized as follows. Section 2.2 reviews the prior literature and develops hypotheses. Section 2.3 details study design and sample selection. Section 2.4 provides estimation results of regression models that control for firms' accounting standards choices. Section 2.5 concludes.

2.2 Prior Studies and Hypotheses

2.2.1 IPO UNDERPRICING

IPO underpricing refers to the phenomenon whereby the offer prices of the newly issued shares of IPO firms are lower than the first trading-day closing prices. IPO underpricing is widely observed throughout the world. Loughran, Ritter, and Rydqvist (1994) report that underpricing exists in stock markets from Latin America and Asia-Pacific to Europe. As such, IPO underpricing lends itself to a study about the effect of IFRS, which are inherently international.

Theoretical studies attribute IPO underpricing to information asymmetry among investors about the value of an IPO firm (Rock, 1986; Benveniste and Spindt, 1989). Prior to an IPO, investors in public capital markets are not exposed to the financial information of a firm, and therefore IPO firms are subject to a heightened level of information asymmetry. Beatty and Ritter (1986) argue that IPO underpricing is positively associated with the degree of uncertainty about an IPO firm's underlying value, while the degree of uncertainty is likely to increase with information asymmetry. Similarly, Benveniste and Spindt (1989) show that information asymmetry among investors with heterogeneous opinions about firm value is a critical driver of IPO underpricing. If IFRS provide investors with more useful information than domestic GAAP, thus mitigating the information asymmetry among investors, then IPO firms using IFRS may have a lower level of IPO underpricing than those using domestic GAAP.

2.2.2 IFRS AND IPO UNDERPRICING

IPO firms' use of IFRS rather than domestic GAAP may affect IPO underpricing through two mechanisms: (1) reporting quality, and (2) the comparability of financial reports. First, IFRS may reduce IPO underpricing if IFRS provide higher reporting quality than domestic GAAP. However, academic research comparing reporting quality under IFRS with that under domestic GAAP provides mixed results (Barth et al., 2008; Ahmed et al., 2010). Barth et al. (2008) examine the accounting quality of firms that voluntarily adopt International Accounting Standards (IAS)/IFRS during the period between 1994 and 2003.[6] They find that these firms have higher accounting quality (less earnings management, more timely loss recognition, and higher value relevance of accounting amounts) than those using domestic GAAP. Nevertheless, Ahmed et al. (2010) find that accounting quality deteriorates following mandatory IFRS adoption in 2005. They argue that principles-based IFRS increase the opportunities for managers to exercise discretion rather than to faithfully report the underlying firm value. They show that firms mandated to adopt IFRS increase income smoothing and aggressive accruals and decrease timely loss recognition.

Second, IPO underpricing may also be affected by an IPO firm's use of IFRS if IFRS provide a higher level of comparability than domestic GAAP. As a global set of accounting standards, IFRS provide a larger number of industry peers than does domestic GAAP and, as a result, may provide enhanced comparability. However, IFRS may not provide enhanced comparability if IFRS are not uniformly implemented throughout the world, and do not really provide a genuine global financial reporting platform (see Section 2.2.3 for a detailed discussion).

The first hypothesis stated in null form is:

> *Hypothesis 1:* There is no association between IPO underpricing and the accounting standards used by an IPO firm.

2.2.3 IFRS AND IPO UNDERPRICING: THE ROLE OF COMPARABILITY

Enhanced comparability facilitates investors' comparisons of different firms' accounting performance to their share prices.[7] In addition, increased comparability enables investors to clarify

[6] Barth et al. (2008) control for variables such as growth and leverage so that they can mitigate the effect of firms' incentives to voluntarily adopt IFRS.

[7] For example, the price/earnings ratios of firms that are similar to an IPO firm are widely used by investment banks in determining the offer price of an IPO. Groupon, a firm that went public on November 4, 2011, states in its Form S-1 registration statement filed with the SEC that "among the factors to be

commonalities and differences among industry peers and helps investors extract useful information. As a result, enhanced comparability may mitigate information asymmetry among investors regarding the value of firms going public, thereby reducing IPO underpricing. IFRS are likely to provide a higher level of comparability than domestic GAAP, since IFRS, as a global set of accounting standards, may generate a greater number of comparable firms than domestic GAAP. Thus, enhanced comparability under IFRS may reduce IPO underpricing compared with that under domestic GAAP.

Nevertheless, there are at least three reasons why IFRS may not necessarily increase comparability compared with domestic GAAP. First, if the reporting quality of firms using IFRS is lower than that of firms using domestic GAAP (Ahmed et al., 2010), then comparability under IFRS could be lower than that under domestic GAAP. Second, it might be difficult for investors to compare IFRS-reporting firms domiciled in different jurisdictions. Different jurisdictions provide heterogeneous levels of investor protection and reporting incentives for firms (Leuz, Nanda, and Wysocki, 2003). In contrast, firms using a set of domestic GAAP by definition consist of relatively homogenous firms in the same jurisdiction. Third, comparability among firms using IFRS will be further limited if there are variations in country-level and firm-level interpretations of IFRS. [8]

Evidence so far is mixed about whether or not IFRS provide greater comparability than domestic GAAP. On the one hand, DeFond et al. (2011) show that firms using IFRS benefit from increased comparability following the mandatory adoption of IFRS. Specifically, DeFond et al. (2011) show that foreign mutual fund ownership increases with the increase in comparability. They measure increased comparability by the increase in the number of industry peers using IFRS relative to those using domestic GAAP. On the other hand, Lang et al. (2010) find that comparability under IFRS is similar to that under domestic GAAP. They employ a comparability measure developed by De Franco, Kothari, and Verdi

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considered in determining the initial public offering price will be the future prospects and those of our industry in general, our revenue, earnings and certain other financial and operating information in recent periods, and the price-earnings ratios, price-sales ratios, market prices of securities, and certain financial and operating information of companies engaged in activities similar to ours."

[8] The endorsement process of each country might include selective adoption of IFRS, creating carve-outs and carve-ins. In addition, there can be firm-level variations in the application of IFRS. For example, the New York State Society of Certified Public Accountants (NYSSCPA) comments on the SEC's IFRS endorsement plan as follows: "Comparability across jurisdictions may be further reduced by the tendency of preparers and auditors to apply IFRS in a manner that is as similar to their current or former national GAAP as possible." NYSSCPA's comments are available at: http://www.sec.gov/comments/s7-27-08/s72708.shtml.

(2011) to examine how close two firms' earnings are in representing the same economic events that are measured by stock returns.[9] Lang et al. (2010) conclude that their test sample of firms using IFRS does not have a greater increase in the comparability measure than their control sample of firms using domestic GAAP.

Hypothesis 2 stated in null form is as follows:

> *Hypothesis 2*: The impact on IPO underpricing of the number of comparable firms using IFRS is not different from that of comparable firms using domestic GAAP.

2.2.4 IFRS AND IPO UNDERPRICING: THE ROLE OF ENFORCEMENT

The quality of enforcement is critical to a firm's actual reporting practice (Ball, 2006). Strong enforcement requires enhanced auditing and regulation, thereby limiting managers' exercise of discretion and opportunism (Leuz, Nanda, and Wysocki, 2003). Consistent with these arguments, previous empirical studies of the effects of mandatory IFRS adoption show that improved reporting quality under IFRS is realized only in high-quality enforcement environments (Daske et al., 2008; Byard et al., 2011).

The quality of countries' enforcement environments is likely to contribute to the efficacy of the two mechanisms whereby IFRS reduce IPO underpricing: (1) reporting quality and (2) comparability of financial reports. Although IFRS may improve firms' reporting quality compared with domestic GAAP, this will happen only if firms actually comply with the requirement of IFRS. That is, the first mechanism where IFRS may reduce IPO underpricing – a high level of reporting quality – is likely to be more effective when IPO firms are in strong enforcement jurisdictions.

> *Hypothesis 3*: For an IPO firm using IFRS, the quality of the enforcement environment in which the IPO firm is listed does not affect the degree of IPO underpricing.

The second mechanism whereby IFRS lower IPO underpricing – enhanced comparability – is also likely to be affected by the quality of the enforcement environment. While the enforcement environment in which an IPO firm is listed is critical to the valuation of IPO firms, the enforcement environments in which the IPO firm's comparable firms are listed are also critical to the comparability between an IPO firm and its comparable firms. Although IFRS, with a larger number of comparable firms across countries, potentially provide a higher level of comparability than domestic GAAP, comparability

[9] For the detailed discussions about this comparability measurement, see pp. 899–902 in De Franco et al. (2011).

under IFRS is only likely to be realized if the comparable firms listed in other jurisdictions are faithfully following IFRS. The hypothesis about the quality of the enforcement environments of comparable firms is stated in null form:

> *Hypothesis 4*: For an IPO firm using IFRS, the quality of enforcement environments in which comparable firms are listed does not affect the degree of IPO underpricing.

2.3. Study Design and Sample Selection

2.3.1 STUDY DESIGN

This study examines the impact of IFRS on IPO underpricing by estimating the degree of IPO underpricing, *IniRet*, which is defined as the ratio of the closing market price on the first trading-day to the offer price minus 1. The main regressor related to the use of accounting standards is *IFRS*, which equals one for IPOs using IFRS (hereafter, IFRS-IPOs), or zero for IPOs using domestic GAAP (hereafter, domestic GAAP-IPOs). The primary variables of interest for accounting standards usage and comparability are *IFRSComp* and *GAAPComp*. *IFRSComp* equals the natural logarithm[10] of one plus the number of comparable firms throughout the world for IFRS-IPOs, and zero for domestic GAAP-IPOs; comparable firms are defined as listed industry peers, based on Fama and French (1997) industry classification, that use the same accounting standards as an IPO firm. Similarly, *GAAPComp* equals the natural logarithm of one plus the number of comparable firms in a jurisdiction for domestic GAAP-IPOs, and 0 for IFRS-IPOs.

In examining the impact of accounting standards on IPO underpricing, it is imperative to control for firms' incentives to choose one set of accounting standards instead of the other, i.e. IFRS or domestic GAAP (Christensen, 2012). If the use of a single set of accounting standards is mandatory in a country and therefore largely exogenous, controlling for IPO firms' selection of accounting standards may not be necessary. [11] However, over my sample period from 2003 to 2007, many countries did not mandate a single set of accounting standards; rather they permitted listed firms to use IFRS instead of or in addition to domestic GAAP. Many (but not all) European countries (e.g. Austria, Belgium, Denmark, Finland, and Germany) allowed early adoption of IFRS before 2005. China allowed listed firms to report in IFRS

[10] Log-transformation is used since I expect a diminishing effect of the number of comparable firms on IPO underpricing. See Section 2.4.1 for the distributions of *IFRSComp* and *GAAPComp*.
[11] See Section 2.4.4.1 for an additional test that uses a subsample of IPO firms adopting IFRS voluntarily.

(instead of Chinese GAAP) before 2007 under certain conditions.[12] Moreover, several stock exchanges around the world – for example, AIM in the UK, Alternext in France, and SGX Mainboard in Singapore – allowed listed firms to report in either IFRS or domestic GAAP over the sample period.[13] Even firms domiciled in countries that mandate the use of domestic GAAP can voluntarily issue IFRS statements, e.g., by listing abroad in foreign countries that adopt IFRS. In these cases, firms will strategically choose accounting standards that satisfy their own reporting objectives. Thus, a failure to control for firms' possible choice of accounting standards (i.e., a tendency of certain types of IPO firms to choose to use IFRS when going public) could result in biased estimates in a model that examines the impact of IFRS on IPO underpricing.

Therefore, this study models a firm's choice of accounting standards using a two-stage procedure. The first stage equation, Equation (1), examines an IPO firm's decision to use IFRS or domestic GAAP, and the second stage equation, Equation (2), estimates the degree of IPO underpricing of IFRS-IPOs and domestic GAAP-IPOs as follows:

$$Prob(IFRS) = \boldsymbol{Z'\gamma} + \varepsilon; \quad (1)$$

$$IniRet = \beta_0 + \beta_1 IFRS + \beta_2 IFRSComp + \beta_3 GAAPComp + \boldsymbol{X'\beta} + \delta_{IFRS} Mills \times IFRS + \delta_{GAAP} Mills \times (1 - IFRS) + u. \quad (2)$$

where $\boldsymbol{Z}$ is a vector of the determinants of an IPO firm's choice between IFRS and domestic GAAP, and $\boldsymbol{X}$ is a vector of the determinants of IPO underpricing. *Mills* is the inverse Mills ratio that equals $\frac{\phi(\boldsymbol{Z'\gamma})}{\Phi(\boldsymbol{Z'\gamma})}$ for IFRS-IPOs and $\frac{-\phi(\boldsymbol{Z'\gamma})}{1-\Phi(\boldsymbol{Z'\gamma})}$ for domestic GAAP-IPOs, where $\phi(\cdot)$ stands for the standard normal probability distribution function and $\Phi(\cdot)$ stands for the standard normal cumulative distribution function. In reporting statistics of Equation (2), I use heteroskedasticity-consistent standard errors (Greene, 2003).

2.3.1.1 Tests of Hypothesis 1 and Hypothesis 2

The coefficient β_1 on *IFRS* in Equation (2) measures the average difference in IPO underpricing between IFRS- and domestic GAAP-IPOs. If IPO underpricing is lower for IFRS-IPOs than domestic

[12] China allowed listed firms with B-shares, which foreign investors can trade, to report in IFRS. In contrast, China mandates that listed firms with only A-shares, which are held by domestic investors, must report in Chinese GAAP.

[13] AIM allowed listed firms to use UK GAAP until 2007. While firms listed on Euronext Paris are required to report in IFRS, those listed on Alternext Paris are allowed to report in either domestic GAAP or IFRS.

GAAP-IPOs, then I expect that $\beta_1 < 0$.

The coefficient β_2 on *IFRSComp* measures the impact of a 1% increase in the number of comparable firms on the degree of IPO underpricing (hereafter, the "marginal effect of comparable firms") of IFRS-IPOs. Similarly, β_3 on *GAAPComp* measures the marginal effect of comparable firms of domestic GAAP-IPOs. If IPO underpricing decreases in the number of comparable firms, then I expect $\beta_2 < 0$ for IFRS-IPOs and $\beta_3 < 0$ for domestic GAAP-IPOs. In addition, if the marginal effect of comparable firms of IFRS-IPOs is greater than that of domestic GAAP-IPOs, then I expect that $\beta_2 < \beta_3$.

The marginal effect of comparable firms may not explain the full extent of the impact of comparable firms on IPO underpricing. The marginal effect of comparable firms explains only an incremental change in IPO underpricing in response to a one-percent change in the number of comparable firms. Nevertheless, it remains to be seen whether the *overall* change in IPO underpricing is substantial. If the total number of comparable firms is relatively small, then the overall impact of comparable firms could be small even though the marginal effect is relatively large. I estimate the overall effect of comparable firms by multiplying the marginal effect of comparable firms by the average number of comparable firms (hereafter, "overall effect of comparable firms"). The distinction between the overall and marginal effect of comparable firms can be critical to this study. Since IFRS-IPOs are likely to have a far greater number of comparable firms, IFRS-IPOs may have a greater overall effect of comparable firms than domestic GAAP-IPOs even when IFRS-IPOs have a smaller marginal effect.

The overall effect of comparable firms for IFRS-IPOs is $\beta_2 \times \overline{IFRSComp}$ and that for domestic GAAP-IPOs is $\beta_3 \times \overline{GAAPComp}$, where the upper bar represents the average. If the overall effect of comparable firms of IFRS-IPOs is greater than that of domestic GAAP-IPOs, then I expect that $\beta_2 \times \overline{IFRSComp} < \beta_3 \times \overline{GAAPComp}$.

2.3.1.2 Tests of Hypothesis 3 and Hypothesis 4

To test Hypotheses 3 and 4, I add a variable named *Enforce* to Equation (2); *Enforce* equals 1 if an IPO firm is listed in a strong enforcement jurisdiction and 0 otherwise.[14] In addition to including *Enforce*

[14] *Enforce* equals 1 if an IPO firm is listed in a country where the Rule of Law index as of 2005 (Kaufmann, Kraay, and Mastruzzi, 2007) is above the median (0.975) of the 42 countries in the sample and 0 otherwise. A higher value of the Rule of Law index denotes a stronger enforcement environment.

as a stand-alone independent variable, I interact *Enforce* with *GAAPComp*. I also replace *IFRSComp* with two variations: $IFRSComp_{Strong}$ and $IFRSComp_{Weak}$. $IFRSComp_{Strong}$ ($IFRSComp_{Weak}$) is the natural logarithm of one plus the number of IFRS-reporting comparable firms in strong (weak) enforcement jurisdictions.[15] The variables, *Enforce*, $IFRSComp_{Strong}$, and $IFRSComp_{Weak}$ measure differences in the quality of the enforcement environment. However, *Enforce* differs from $IFRSComp_{Strong}$ and $IFRSComp_{Weak}$ in that *Enforce* captures the quality of the enforcement environment for IPO firms, while $IFRSComp_{Strong}$ and $IFRSComp_{Weak}$ are for IPO firms' comparable firms.

If IPO underpricing of IFRS-IPOs in strong enforcement jurisdictions is smaller than that of IFRS-IPOs in weak enforcement jurisdictions, then I expect the coefficient on *Enforce*×*IFRS* to be negative. If strong enforcement environments in countries where comparable firms are listed enhance the marginal effect of IFRS-reporting comparable firms, then I expect the coefficient on $IFRSComp_{Strong}$ < the coefficient on $IFRSComp_{Weak}$.

2.3.2 SAMPLE SELECTION

Data on IPOs for the period 2003-2007 are from the SDC database. I exclude U.S. IPOs from the sample. This study aims to examine whether the use of a single set of global accounting standards (rather than domestic GAAP) improves comparability among firms using the same set of accounting standards. U.S. GAAP, which are widely adopted by countries outside the U.S. in addition to their own domestic GAAP, are considered to be another set of globally accepted accounting standards rather than being purely domestic GAAP. [16] Therefore, including U.S. IPOs in this study would cloud the effect of the use of IFRS compared with domestic GAAP. IPOs issued during the period before January 2003 and after December 2007 are excluded to eliminate the impact of the information technology bubble and the subprime mortgage crisis. If there are multiple observations for the same firm on the same day, only one

[15] In collecting values for *IFRSComp*, $IFRSComp_{Strong}$, $IFRSComp_{Weak}$, and *GAAPComp*, I restrict countries to be covered by Compustat Global (see Section 2.4.1 for the detailed definition of *IFRSComp*). $IFRSComp_{Strong}$ ($IFRSComp_{Weak}$) includes comparable firms listed in countries where the Rule of Law index of a country is above (below) the median value of the countries covered in Compustat Global. The median value of Rule of Law index, which distinguishes $IFRSComp_{Strong}$ from $IFRSComp_{Weak}$, is 0.45.

[16] Switzerland requires listed firms to use either IFRS or U.S. GAAP (Switzerland is not a member country of the EU); the UK allows non-EU IPO firms to use U.S. GAAP; Singapore requires IPO firms to use Singaporean GAAP, U.S. GAAP, or IFRS.

observation is used.[17] This results in a sample of 7,126 observations, as reported in Table 2.1. I retain observations for ordinary common shares only. The closing market prices on the first trading-day are also from SDC. Accounting standards data are from Datastream or Compustat Global. [18] If an IPO firm uses U.S. GAAP, the IPO is excluded from the sample. Market return and trading volatility data are from Compustat Global. These procedures result in a final sample of 4,089 IPOs.

2.4. Results

2.4.1 DESCRIPTIVE STATISTICS

Panel A of Table 2.2 provides descriptive statistics for the variables used in the main analyses. All reported statistics in this study are after winsorizing at the 1% and 99% level. The mean (median) *IniRet*, the degree of IPO underpricing, is 34.7% (11.4%). This shows that the IPOs in the sample are underpriced, on average. The mean value of IFRS is 25.8%; that is, 25.8% of the sample IPO firms use IFRS.

IFRSComp (raw) is the raw number of comparable firms using IFRS throughout the world, where comparable firms are defined as listed industry peers that use the same accounting standards as an IPO firm.[19] *IFRSComp* equals zero for domestic GAAP-IPOs; the mean value of *IFRSComp* in Table 2.2 (163.5) is calculated using only IFRS-IPOs (N = 1,056). *GAAPComp* (raw) is the raw number of domestic GAAP-reporting comparable firms.[20] *GAAPComp* equals zero for IFRS-IPOs; the mean value of *GAAPComp* (47.4) is calculated using only domestic GAAP-IPOs (N = 3,033). The mean value of comparable firms is much greater for IFRS-IPOs than for domestic GAAP-IPOs. This implies that

[17] A firm may have several observations in the SDC IPO dataset if the firm lists new shares on different stock exchanges at different points of time. Some firms go public on the same stock market for the second time as they were suspended at some point following the first IPO. Results are robust if I restrict the sample to only one observation per an IPO firm.

[18] Data on the accounting standards used are obtained from Compustat, only when they are unavailable from Datastream. I follow Table A1 of Daske, Hail, Leuz, and Verdi (2011) in classifying Datastream's and Compustat Global's coding into domestic GAAP and IFRS.

[19] In addition, I exclude industry peers of which sales data are unavailable from Datastream for the fiscal period ending within three months prior to the IPO offer date. This exclusion is to ensure that the accounting information of an IPO firm's comparable firms is publicly available when the IPO firm is evaluated.

[20] This paper defines comparable firms as listed industry peers that use the same accounting standards as an IPO firm. In practice, I require comparable firms of a domestic GAAP-IPO to be located in the same jurisdiction as the IPO firm. This is because Datastream and Compustat Global do not identify which set of domestic GAAP a firm uses.

comparability arising from the number of comparable firms is likely to be greater for IFRS-IPOs than for domestic GAAP-IPOs.

Panel B of Table 2.2 reports the average *IniRet*, *IFRSComp*, and *IFRS* by each industry. IPO underpricing is observed across all industries. There are a larger number of comparable firms using IFRS in the Mining and Construction (56.0), Finance (95.8), and Service (64.8) industries than in any other industries. The Mining and Construction industry also have the largest number of IFRS-IPOs (52.2%).

Table 2.3 reports the mean values of the major variables for the 42 countries represented in the sample. Higher values of the Rule of Law index (2005 value from Kaufmann et al., 2007) indicate countries with stronger enforcement environments. *IFRSdiff*, which proxies for the difference between IFRS and each country's domestic GAAP, increases as the country's domestic GAAP deviates from IFRS (Bae, Tan, and Welker, 2008).[21] IPO underpricing is observed throughout the world regardless of the accounting standards used. The total number of IFRS-IPOs dramatically increases over the sample period, from 44 for the pre-2005 period to 1,012 for the post-2005 period. IPO underpricing of domestic GAAP-IPOs (36% in the pre-2005 period and 44% in the post-2005 period) appears to be higher than that of IFRS-IPOs (25% in the pre-2005 period and 19% in the post-2005 period). For *IFRSComp* and *GAAPComp* reported in Tables 2.3 to 2.10, I use the natural logarithms of one plus the raw values.[22] Mean value of *IFRSComp* increases from 3.2 for the pre-2005 period to 4.8 for the post-2005 period (an increase in raw number from 24.5 to 121.5).

Table 2.3 reports a number of Australian and European IPOs that use domestic GAAP between 2005 and 2007, even though Australia and European countries mandate the use of IFRS after 2005. There are at least three reasons for this behavior. First, mandatory IFRS adoption is applied to financial reports for the fiscal year beginning on or after January 2005. Therefore, some IPOs that took place in 2005, but before December 2005, may not be subject to the mandatory IFRS adoption. Second, the

[21] Bae et al. (2008) use a list of 21 key accounting items in order to measure the differences between two different sets of accounting standards. They then use survey data from major accounting firms to identify if domestic GAAP include each of these 21 key accounting items. Finally, Bae et al. (2008) identify differences in these 21 key accounting items between domestic GAAP and IFRS and name the differences *gaapdiff1*. $IFRSdiff_{Pre\text{-}IPO}$ is *gaapdiff1* scaled by its maximum value so the variable ranges between 0 and 1. *IFRSdiff* equals $IFRSdiff_{Pre\text{-}IPO}$ for domestic GAAP-IPOs and 0 for IFRS-IPOs.

[22] Results in Tables 2.4 to 2.10 are robust to different specifications of the number of comparable firms (*IFRSComp*, *GAAPComp*, $IFRSComp_{Strong}$, and $IFRSComp_{Weak}$), such as deciles of the number of comparable firms or square root-transformation of the number of comparable firms.

sample includes cross-listed IPOs, and a number of countries allow foreign firms to report in their home countries' domestic GAAP. Third, many of the less-regulated EU exchanges, such as AIM in the UK and Alternext Paris in France, allow the use of domestic GAAP in the period after 2005. Similarly, Table 2.3 reports IFRS-IPOs in countries that mandate firms to use domestic GAAP. This is in part because these IPOs report in both IFRS and domestic GAAP.

2.4.2 REGRESSION RESULTS

Table 2.4 provides the results for the first and second stage estimates of the two-stage Heckman model. The first stage, Equation (1), estimates the probability that an IPO firm uses IFRS, using independent variables as follows. $GAAPComp_{Pre\text{-}IPO}$ is the number of domestic GAAP-reporting listed industry peers prior to the IPO, for both IFRS- and domestic GAAP-IPOs. As the number of domestic GAAP-reporting listed industry peers increases, the domestic GAAP-based informational environment of the industry improves and an IPO firm has less incentive to use IFRS; thus, I expect a negative coefficient on $GAAPComp_{Pre\text{-}IPO}$. *Proceeds* is the natural logarithm of the amount of IPO proceeds in millions of U.S. dollars. As the proceeds amount increases, an IPO firm has more incentive to use IFRS to attract foreign institutional investors (Covrig, DeFond, and Hung, 2007) and I expect a positive coefficient on *Proceeds*. *Leverage* is the natural logarithm of one plus the leverage ratio in the last fiscal year-end prior to the IPO date. Firms with a large amount of debt are likely to have a close relationship with local banks, and have less incentive to adopt IFRS (Christensen, Lee, and Walker, 2008). *ROA*, operating income over total assets, is included as a performance measure which is expected to affect firms' disclosure policy (Leuz and Verrecchia, 2000). *Cross Listing* equals 1 if an IPO firm lists outside of its home country and 0 otherwise. When an IPO firm lists abroad, the firm is more likely to use IFRS rather than domestic GAAP (Leuz and Verrecchia, 2000); therefore, I expect a positive coefficient on *Cross Listing*. $IFRSdiff_{Pre\text{-}IPO}$ measures the difference between IFRS and domestic GAAP prior to a firm's going public for both IFRS- and domestic GAAP-IPO firms (Bae et al., 2008). As the difference between domestic GAAP and IFRS increases, an IPO firm is more likely to benefit from using IFRS; thus, I expect a positive coefficient on $IFRSdiff_{Pre\text{-}IPO}$. In order to control for other country-level institutional characteristics, I include a common-law versus code-law indicator variable, *Common*, which equals 1 for firms domiciled in common-law countries and 0 otherwise. Yearly fixed-effects are included in Equation (1).

The results of the first stage regression provide evidence on the influence of a domestic GAAP-based informational environment on IPO firms' self-selection of accounting standards. First, IPO firms are more likely to use domestic GAAP than IFRS as the number of domestic GAAP-reporting listed industry peers increases. The number of domestic GAAP-reporting listed industry peers ($GAAPComp_{Pre\text{-}IPO}$) is a proxy for the expected comparability that arises when an IPO firm uses domestic GAAP. The negative relation between $GAAPComp_{Pre\text{-}IPO}$ and IPO firms' likelihood of using IFRS suggests that IPO firms are less likely to use IFRS as the expected level of comparability from the use of domestic GAAP increases. Second, the positive coefficient on $IFRSdiff_{Pre\text{-}IPO}$ implies that the net benefit of using IFRS increases as a domestic GAAP deviates from IFRS.

I test *Hypothesis 1* and *Hypothesis 2* using Equation (2). The variables of interest are *IFRS*, *IFRSComp,* and *GAAPComp*. If IFRS improve reporting quality compared with domestic GAAP and reduce IPO underpricing, I expect a negative coefficient on *IFRS*. However, if the discretion embedded in the principles-based approach of IFRS reduces an IPO firm's reporting quality, this could increase IPO underpricing, possibly resulting in a positive coefficient on *IFRS*. If comparing among industry peers using the same accounting standards reduces IPO underpricing, then I predict negative coefficients on both *IFRSComp* and *GAAPComp*.

As for the other IPO underpricing determinants, I use those reported in the IPO underpricing literature as follows. Habib and Ljungqvist (1998) show that a large number of newly-issued shares depress post-IPO share price, and I expect a negative coefficient on *Proceeds.* Hanley (1993) shows that partial adjustment (*PartAdj*) – the deviation of the final offer price from the median value of the initial offer price range – is positively associated with the degree of underpricing since the partial adjustment indicates the market's interest in the IPO. I expect a positive coefficient on *PartAdj.* Lang, Raedy and Wilson (2006) show that foreign firms cross-listed in a country are more likely to manage earnings than listed firms in the country. If investors face greater uncertainty about foreign firms than about domestic firms, then I expect the coefficient on *Cross Listing* to be positive. Derrien (2005) shows that the price of IPO shares increases with investors' demand, which is measured in this study using *MktRet*, *MktVol*, and #*IPO*. *MktRet* and *MktVol* are the mean and standard deviation of daily market returns within three weeks prior to the offer date. #*IPO* is the natural logarithm of one plus the raw number of other IPOs within 12

months prior to the offer date. I expect positive coefficients on *MktRet*, *MktVol*, and #*IPO*. Previous studies suggest that reporting quality decreases as the difference between domestic GAAP and IFRS increases (Bae et al., 2008; Byard et al., 2011), and as such, I expect a positive coefficient on *IFRSdiff*.

The signs of the estimated coefficients are consistent with these expectations. The coefficient estimates of the inverse Mills ratios are all significant. More importantly, the coefficients on *IFRS* and *IFRSComp* are negative and significant. Underpricing of IFRS-IPOs decreases because (1) IPO firms use IFRS rather than domestic GAAP (β_1), (2) having more IFRS-using industry peers is useful in pricing the new shares (β_2), and (3) there are many industry peers that also use IFRS (*IFRSComp*). The estimated coefficient on *GAAPComp* (-0.00) is insignificant. These results imply that IPO firms benefit more from the use of IFRS than from the use of domestic GAAP in the form of less underpricing.

Table 2.5 summarizes the key coefficient estimates from Table 2.4 so that we can compare the effect of comparable firms across IFRS and domestic GAAP. β_2 (β_3) measures the marginal effect of a 1% increase in the number of comparable firms on IPO underpricing for IFRS-IPOs (domestic GAAP-IPOs). $\beta_2\,\overline{IFRSComp}$ ($\beta_3\,\overline{GAAPComp}$) measures the overall effect of comparable firms on IPO underpricing for IFRS-IPOs (domestic GAAP-IPOs). The difference between β_2 and β_3 ($\beta_2\,\overline{IFRSComp}$ and $\beta_3\,\overline{GAAPComp}$) measures the difference in the marginal (overall) effect of comparable firms between IFRS and domestic GAAP.

Panel A of Table 2.5 shows the marginal effect, while Panel B shows the overall effect of comparable firms on IPO underpricing. In Panel A, the difference between β_2 and β_3 is significantly negative, -0.04, at the 5% level. In Panel B, the difference between the overall effect of comparable firms under IFRS and that under domestic GAAP ($\beta_2\,\overline{IFRSComp} - \beta_3\,\overline{GAAPComp}$) is significantly negative (-0.19) at the 1% level. These results imply that the decrease in IPO underpricing is greater for IFRS-IPOs than for domestic GAAP-IPOs, which is due to the enhanced comparability.

2.4.3 FURTHER ANALYSIS: DIFFERENCE BETWEEN IFRS AND DOMESTIC GAAP AND DIFFERENCE BETWEEN STRONG AND WEAK ENFORCEMENT

Table 2.6 provides empirical evidence on the role of enforcement. *Enforce*, which equals 1 if an IPO firm lists in a strong enforcement jurisdiction, is interacted with *IFRS* and *GAAPComp*. *IFRSComp* is

replaced by $IFRSComp_{Strong}$ and $IFRSComp_{Weak}$, which measure *IFRSComp* for the comparable firms listed only in strong and weak enforcement jurisdictions, respectively.

A negative coefficient on *IFRS×Enforce* suggests that the effect of IFRS on IPO underpricing is greater when an IFRS-IPO is listed in a stronger enforcement jurisdiction. The estimated coefficient on $IFRSComp_{Strong}$ is significantly negative (-0.04) at the 1% level, but the coefficient on $IFRSComp_{Weak}$ is insignificant. The coefficient on *GAAPComp* measures the marginal effect of domestic GAAP-reporting comparable firms when the comparable firms are listed in weak enforcement jurisdictions. The coefficient on *GAAPComp×Enforce* measures the difference in the marginal effect of comparable firms between domestic GAAP-reporting comparable firms in strong enforcement jurisdictions and those in weak enforcement jurisdictions. The estimated coefficient on *GAAPComp×Enforce* is significantly negative (-0.04) at the 10% level, while that on *GAAPComp* is insignificant (0.02). These results in Table 2.6 imply that the level of the enforcement of countries where an IPO firm is listed as well as its comparable firms is critical to the impact of IFRS on IPO underpricing.

Table 2.7 reports the marginal and overall effects of comparable firms and tests the differences in the marginal and overall effect (1) between comparable firms in strong and weak enforcement environments, and (2) between comparable firms using IFRS and domestic GAAP. The difference between comparable firms in strong and weak enforcement environments is significantly negative (-0.05), as shown in Panel A where $\beta_4 < \beta_5$. This implies that the marginal effect of comparable firms on IFRS-IPOs' underpricing is greater when IFRS-reporting comparable firms are listed in stronger enforcement jurisdictions. The results are similar when the overall effect of comparable firms is examined in Panel B, i.e., $\beta_4 \overline{IFRSComp}_{Strong} < \beta_5 \overline{IFRSComp}_{Weak}$. For domestic GAAP-IPOs and their comparable firms, the marginal and overall effects of comparable firms are significantly greater when the comparable firms are listed in stronger enforcement jurisdictions. These results imply that for comparable firms, the level of enforcement of the jurisdictions in which the comparable firms are listed is critical.

I also test the differences in marginal and overall effects between comparable firms using IFRS and those using domestic GAAP. These results, shown in Panels A and B of Table 2.7, appear to be mixed. When comparable firms are in strong enforcement environments, the difference in the marginal

effect between IFRS and domestic GAAP is insignificant (-0.02), while the difference in the overall effect between IFRS and domestic GAAP is significantly negative (-0.13) at the 1% level.

Such a discrepancy between the marginal and overall effect of comparable firms arises from *the number* of comparable firms. On the one hand, the marginal effect of comparable firms under IFRS is not different from that under domestic GAAP, since the marginal effect of comparable firms measures the change in IPO underpricing in response to a 1% change in the number of comparable firms. The insignificant difference in the marginal effect of comparable firms using IFRS and domestic GAAP is consistent with the results of Lang et al. (2010).

On the other hand, the difference in the overall level of comparability between IFRS- and domestic GAAP-reporting comparable firms in strong enforcement jurisdictions is significantly negative at the 1% level. This result is consistent with DeFond et al. (2011). They show that comparability increases following mandatory IFRS adoption because of the increase in the total number of industry peers.

2.4.4 ADDITIONAL TESTS

2.4.4.1 Voluntary IFRS Adoption

Table 2.8 provides the results for the subsample of IPOs that adopt IFRS voluntarily. Ideally, this subsample should be identified by examining historical records of accounting standards permitted by each stock exchange throughout the world during each year of the sample period. That is, an IPO firm adopts IFRS voluntarily if the stock exchanges in a country where an IPO firm is listing allow multiple sets of accounting standards. In contrast, IPOs are required to use specific accounting standards if all exchanges in the country mandate the use of those standards. Consequently all listed firms in such a country use a single set of accounting standards. In such a case, there is no option to select accounting standards. [23] Therefore, identifying IPOs that adopt IFRS voluntarily requires excluding IPOs issued in countries in which only one set of accounting standards is permitted. Because historical records of exchange-specific regulations are not always obtainable, nor are they necessarily always available in English, I use the following algorithm to construct a subsample of IPOs voluntarily adopting IFRS. I

[23] Even when an IPO firm chooses to list in its home country that mandates a particular set of accounting standards, it can still be considered to be a firm that has self-selected its accounting standards by forgoing the choice to list abroad in a foreign country where other sets of accounting standards are allowed.

exclude IPOs in a country where more than 97.5% of listed firms use a single set of accounting standards according to the Datastream database. [24] The 97.5% threshold is chosen because: (1) less than 97.5% of Chinese firms report in domestic GAAP when China allows multiple sets of accounting standards, [25] and (2) more than 97.5% of Australian and Japanese firms use a single set of accounting standards when Australia and Japan mandate listed firms to report using a single set of accounting standards. Australian, Chinese and Japanese IPO firms consist of 37.5% of the sample (see Table 2.3 for descriptive statistics by countries).

The results in Panel A of Table 2.8, which use IPOs in countries that allow multiple sets of accounting standards, are consistent with those in Tables 2.4 and 2.6. The results in Panels B and C of Table 2.8 are also similar to those in Tables 2.5 and 2.7, except for the insignificant difference in the marginal effect of IFRS-reporting comparable firms between strong and weak enforcement countries (-0.05). However, the difference in the overall effect is significantly negative (-0.22) at the 1% level. These analyses show that the main results in Tables 2.4 to 2.7 are robust to the use of a sample of IPOs adopting IFRS voluntarily.

2.4.4.2 Country Fixed-Effects

As a robustness test, I estimate Equations (1) and (2) in Table 2.9 including 41 country fixed-effects. Panel A shows that the estimated coefficient on *IFRS* is significantly negative (-0.69), while the estimated coefficient on $IFRSComp_{Strong}$ is insignificantly negative (-0.02).

Panels B and C in Table 2.9 summarize the key estimated coefficients from Panel A. The marginal effect of comparable firms on IPO underpricing is not statistically different between IFRS-IPOs and domestic GAAP-IPOs (see Panel B). Nevertheless, when these marginal effects are combined with the average number of comparable firms, the overall effect of comparability of IFRS is greater than that of domestic GAAP at the 1% level (see Panel C). The overall effect of increased comparability under IFRS decreases IPO underpricing by 8% relative to that under domestic GAAP. Similarly, the overall effect of

[24] Consistent with other tables, I do not include firms reporting U.S. GAAP as those reporting in domestic GAAP.
[25] China allowed listed firms with B-shares, which foreign investors can trade, to report in IFRS. In contrast, China mandates that listed firms with only A-shares, which are held by domestic investors, must report in Chinese GAAP.

IFRS-reporting comparable firms in strong enforcement jurisdictions decreases IPO underpricing by 5% compared with that of IFRS-reporting comparable firms in weak enforcement jurisdictions.

2.4.4.3 Pre- and Post-2005

The number of firms using IFRS worldwide increased markedly after 2005. A question arises as to whether the increase in the number of IFRS-reporting firms enhances comparability under IFRS in the post-2005 period compared with the pre-2005 period. However, an empirical analysis of this question is challenging due to the following reasons.

First, any increase in comparability arising from the increased number of IFRS-reporting comparable firms may be partially or fully offset by a decrease in comparability arising from a deterioration in reporting quality under IFRS after 2005. Capkun et al. (2011) argue that during the period between 2003 and 2005, the IASB issued more lenient standards that allowed more management judgment than before. They show that earnings management increases under these more lenient IFRS standards. Second, there may be a structural change around 2005 in the linear relation between the degree of IPO underpricing and the number of comparable firms using IFRS, since the distribution of the number of IFRS-reporting comparable firms changes around 2005. The mean *IFRSComp* (raw) before 2005 is 24.5, whereas after 2005 it is 121.5. Third, there is no clear benchmark for the time-series changes in the effect of comparable firms under IFRS on IPO underpricing. The effect of comparable firms under IFRS around 2005 can change because of either the increasing number of IFRS-reporting comparable firms or a market-wide change that impacts both domestic GAAP- and IFRS-reporting comparable firms around 2005.

To examine whether comparability of IFRS-reporting firms changes from the pre-2005 to the post-2005 period, I analyze Equations (1) and (2) adding a dummy variable *Post* that identifies IPOs that went public in the post-2005 period. Panel A of Table 2.10 shows that the coefficient on *IFRS* is significantly negative (-2.31) while that on *IFRS*×*Post* is significantly positive (1.73) at 5% level. This implies that the impact of IFRS on IPO underpricing decreases in the post-2005 period compared with the pre-2005 period. Results in Panel B of Table 2.10 show that there is no improvement in the marginal effect of comparable firms from the pre-2005 period to the post-2005 period, for both the IFRS-reporting and domestic GAAP-reporting samples.

Panel C of Table 2.10 shows that the overall effect of comparable firms on IPO underpricing is greater under IFRS than under domestic GAAP, in both the pre- and post-2005 samples. When the pre- and post-2005 IFRS-reporting samples are compared, the association between comparable firms using IFRS and IPO underpricing is less negative – decreasing in the absolute value – in the post-2005 sample than in the pre-2005 sample. Results are similar to domestic GAAP-reporting sample. While results using the IFRS-reporting sample suggest a decrease in the effect of comparable firms from the pre-2005 period to the post-2005 period, a similar decrease is also observed for the domestic GAAP-reporting sample. This similarity between IFRS- and domestic GAAP-reporting samples suggests the necessity for a proper benchmark sample that controls for the market-wide change in comparability.[26]

2.4.4.4 Prospectus Directive in EU

The inferences made in Sections 2.4.2 and 2.4.3 may not be valid if there are concurrent regulation changes that affect IFRS-IPOs' reporting quality. The European Union issued a new directive in 2003 regulating the prospectus content for firms going public on all EU-regulated stock markets, which was effective from 2005. As a result, this Prospectus Directive may have improved the reporting quality and comparability of European IFRS-IPOs' financial reports.

I examine whether the Prospectus Directive drives the results in Tables 2.4 to 2.7. I identify 360 IPOs that are subject to the Prospectus Directive and that are offered after July 2005. When a dummy variable that distinguishes these 360 IPOs is included and interacted with *IFRS*, *IFRSComp*, $IFRSComp_{Strong}$, and $IFRSComp_{Weak}$, the coefficients on these individual variables are consistent with those reported in Tables 2.4 to 2.7, while the coefficients on the interacted variables are insignificant (results untabulated). These results imply that the findings in Tables 2.4 to 2.7 are not driven by the possible changes in reporting quality initiated by the Prospectus Directive.

This is not to say that the Prospectus Directive had no impact on IPO firms' reporting quality. Rather, the results in this subsection imply that the impact of IFRS on IPO underpricing of IPOs subject to the Prospectus Directive is not different from that of IFRS-IPOs not subject to the Prospectus Directive

[26] Implications from the results in the marginal (overall) effect between the pre-2005 and post-2005 periods for the IFRS-reporting sample do not change when the comparable firms are limited to those listed in only strong enforcement jurisdictions.

either because they are listed on non-EU stock markets or they are listed on EU stock markets that are exchange-regulated (as opposed to EU-regulated). [27]

2.4.4.5 Additional Robustness Tests

I conduct several additional robustness tests. The inferences from Tables 2.4 to 2.7 are unaltered when (1) the model includes industry fixed-effects, (2) cross-listing IPOs are excluded, (3) firms listed in countries that consist of a large part of the IFRS-IPO sample (i.e., Australia and the UK) are eliminated from the sample, (4) the two-digit SIC codes are used for the industry classification, instead of the Fama-French (1997) industry classification, (5) alternative transformations are employed for the number of comparable firms, including the decile-ranks of the raw number of comparable firms and the square-root of the raw number of comparable firms, and (6) alternative ways are used to measure the quality of a country's enforcement environment, including the decile-ranks of the Rule of Law index, and different values of the Rule of Law index to define *Enforce*, $IFRSComp_{Weak}$, and $IFRSComp_{Strong}$.

2.5. Conclusion

This study examines the effect of the use of IFRS on IPO underpricing, as compared with domestic GAAP. Previous studies have documented mixed evidence about whether IFRS provide a net benefit as compared to domestic GAAP. An IPO setting is germane to a study about the effect of IFRS, because the information asymmetry about a firm's value is high before it goes public. I show that: (1) IPO underpricing is lower when IPO firms use IFRS rather than domestic GAAP and (2) the degree of IPO underpricing decreases with the number of comparable firms using IFRS in the same industry. These results imply that IFRS reduce IPO underpricing as compared with domestic GAAP.

In addition, this study analyzes the role of enforcement. IPO underpricing of IFRS-IPOs is lower when they are listed in stronger enforcement jurisdictions. Furthermore, the impact of comparable firms on IPO underpricing is greater when the comparable firms are also listed in stronger enforcement jurisdictions. These results imply that strong enforcement is vital in reducing IPO underpricing. This is true for the level of enforcement in countries where an IPO firm is listed as well as those where IFRS-reporting

[27] Exchange-regulated EU stock markets (e.g. AIM in the UK or Alternext in Continental Europe) are not subject to the Prospectus Directive. In my sample, 416 IPOs are listed on exchange-regulated EU stock markets and offered after July 2005.

industry peers are listed. Overall, these results underscore the importance of the number of comparable firms and country-level enforcement in understanding the impact of IFRS on IPO underpricing.

TABLE 2.1
Sample Selection

Description	# of observations
Non-U.S. IPOs around the world in 2003-2007 from SDC	7,126
(Not ordinary common shares)	(503)
(IPOs without identifiers)	(711)
(First trading-day price is unavailable)	(1,437)
(The use of accounting standards is unavailable)	(91)
(Unavailable control variables or U.S. GAAP-reporting IPOs)	(295)
IPOs in the final sample	4,089

Non-U.S. IPOs data for the sample period 2003-2007 are from the SDC database. If there are multiple observations for a firm's IPO on the same day, I retain only one observation. I use IPOs that SDC classifies as "Common Shares", "Ord/Common Shs.", "Ordinary Shares", or "Class A Ord Shs". The closing market price on the first trading-day is from SDC. Data for accounting standards, leverage, and ROA at the end of each fiscal year are from Datatream. When accounting standards data are unavailable from Datastream, they are obtained from Compustat Global. Market return and market trading volatility data are from Compustat Global.

TABLE 2.2
Descriptive Statistics

Panel A: Descriptive Statistics of All Variables

	N	Mean	1st Pctl.	Q1	Median	Q3	99th Pctl.
IniRet	4,089	34.7%	-35.8%	0.6%	11.4%	41.9%	407.7%
IFRS	4,089	25.8%	0	0	0	1	1
IFRSComp (raw)	1,056	163.5	5	52	125	250	541
GAAPComp (raw)	3,033	47.4	0	5	19	58	360
Proceeds	4,089	2.76	-1.27	1.50	2.61	3.77	7.38
PartAdj	4,089	0.5%	-17.0%	0	0	0	21.1%
Leverage	4,089	30.7%	0.5%	16.3%	31.1%	44.5%	68.4%
ROA	4,089	3.3%	-103.4%	-0.5%	7.1%	12.8%	41.7%
Cross Listing	4,089	9.6%	0	0	0	0	1
MktRet	4,089	0.11%	-0.63%	-0.04%	0.12%	0.25%	0.95%
MktVol	4,089	0.94%	0.30%	0.60%	0.82%	1.16%	2.94%
#IPO	4,089	3.1	2.7	2.8	2.8	3.4	4.3
IFRSdiff	3,033	0.28	0	0.14	0.29	0.43	0.57
Common	4,089	49.2%	0	0	0	1	1

Panel B: Descriptive Statistics of the Main Variables, Classified by Industry

Industry description	N	Mean *IniRet*	Mean *IFRSComp* (raw)	Mean *IFRS*
Agriculture	42	33.2%	10.0	16.7%
Mining and Construction	627	27.2%	56.0	52.2%
Manufacturing	1,554	41.8%	14.1	16.5%
Transportation	260	27.7%	35.1	28.5%
Trade	286	34.8%	17.9	12.6%
Finance	533	24.2%	95.8	35.1%
Service	769	36.5%	64.8	21.2%
Unclassified	18	16.4%	2.9	33.3%

This table provides descriptive statistics of the variables used in the main analyses. The industry classification used in Panel B is based on the first-digit SIC code.

Variable Definitions:

IniRet = (offer price/closing market price on the first trading-day) – 1

IFRS = 1 if an IPO firm uses IFRS for the last fiscal year-end prior to the IPO; 0 otherwise

IFRSComp (raw) = The number of IFRS-reporting comparable firms all over the world, where comparable firms are an IFRS-IPO firm's listed industry peers; 0 for domestic GAAP-IPOs. In Tables 2.3-2.10, *IFRSComp* is the natural logarithm of one plus the raw value of *IFRSComp*

$GAAPComp_{Pre\text{-}IPO}$ (raw) = The number of an IPO firm's listed industry peers that use domestic GAAP, for both IFRS-IPOs and domestic GAAP-IPOs. In Tables 2.3-2.10, $GAAPComp_{Pre\text{-}IPO}$ is the natural logarithm of one plus the raw value of $GAAPComp_{Pre\text{-}IPO}$

GAAPComp (raw) = The number of domestic GAAP-reporting comparable firms, where comparable firms are a domestic GAAP-IPO firm's listed industry peers; 0 for IFRS-IPOs. In Tables 2.3-2.10, *GAAPComp* is the natural logarithm of one plus the raw value of *GAAPComp*

$IFRSdiff_{Pre\text{-}IPO}$ = The difference between IFRS and domestic GAAP of the country where an IPO firm is listed (Bae, Tan, and Welker, 2008)

IFRSdiff = $IFRSdiff_{Pre\text{-}IPO}$ for domestic GAAP-IPOs; 0 for IFRS-IPOs

Proceeds = The natural logarithm of the amount of proceeds (in U.S. dollars) divided by one million

PartAdj = Partial adjustment, which is the difference between the offer price and the median value of the initial price range (Hanley, 1993). If the initial price range is missing in SDC, I assume the partial adjustment is zero

Leverage = The natural logarithm of one plus the leverage ratio

ROA = Operating income over total assets

Cross Listing = 1 if an IPO is a cross-listing; 0 otherwise

MktRet = 100 times the average daily market return of a country where an IPO firm is listing within 3 weeks prior to the offer date

MktVol = 100 times the standard deviation of the daily market returns of the country where an IPO firm is listing within 3 weeks prior to the offer date

#IPO = The natural logarithm of one plus the raw number of IPOs that went public (1) within 12 months prior to the offer date and (2) in the same country as an IPO firm

Common = 1 if an IPO firm is listed on a stock market in a common-law country; 0 otherwise

TABLE 2.3

Mean Values of the Main Variables, Classified by Countries

			2003-2004						2005-2007					
			Domestic GAAP-IPOs			IFRS-IPOs			Domestic GAAP-IPOs			IFRS-IPOs		
	Rule of Law	*IFRS diff*	*N*	*IniRet*	*GAAP Comp*	*N*	*IniRet*	*IFRS Comp*	*N*	*IniRet*	*GAAP Comp*	*N*	*IniRet*	*IFRS Comp*
Australia	1.74	0.19	184	20%	1.8	1	48%	4.3	101	15%	0.9	366	25%	4.5
Austria	1.83	0.57				2	0%	3.3	1	28%	0.0	11	5%	5.0
Belgium	1.44	0.62				1	6%	3.1	8	7%	0.2	16	5%	5.0
Brazil	-0.43	0.52	2	4%	1.4				39	6%	2.0			
Chile	1.17	0.62							2	13%	1.7			
China	-0.43	0.43	150	76%	3.4	2	36%	3.6	186	150%	3.6	12	43%	5.0
Czech	0.75	0.67										1	27%	5.4
Denmark	1.95	0.52							1	2%	0.0	8	17%	5.0
Egypt	0.02	0.43										1	-36%	5.4
Estonia	0.82	0.33										3	53%	4.4
Finland	1.91	0.71	1	6%	0.0				2	-9%	0.0	5	6%	4.4
France	1.33	0.57	20	3%	2.2	1	-4%	3.2	107	3%	1.3	43	3%	5.0
Germany	1.74	0.52				3	6%	3.5	20	7%	0.7	58	6%	5.0
Greece	0.65	0.81	6	10%	1.5	2	-6%	2.6				2	12%	5.0
Hong Kong	1.47	0.14	65	16%	2.7	2	11%	4.2	100	21%	2.6	35	28%	4.7
India	0.12	0.38	1	24%	2.2				18	49%	1.0			
Indonesia	-0.86	0.19	5	32%	2.0				11	45%	2.2			
Ireland	1.60	0.05	2	1%	0.3							3	7%	5.0
Israel	0.73	0.29							2	-19%	2.2	1	3%	1.8
Italy	0.53	0.57	1	0%	0.0	4	5%	3.1	3	2%	0.0	39	17%	4.7
Japan	1.35	0.43	234	62%	3.8	1	-36%	3.3	332	42%	4.7			
Luxembourg	1.91	0.86	1	5%	0.0									
Malaysia	0.57	0.38	115	43%	3.2	1	88%	4.0	91	19%	3.3			
Mexico	-0.50	0.05							3	17%	2.1			
Netherlands	1.72	0.19							1	-5%	0.0	5	7%	5.0
New Zealand	1.91	0.14	17	24%	0.6				1	-3%	0.0	5	7%	5.2
Norway	1.95	0.33	6	72%	2.1				7	2%	0.4	35	3%	4.7
Pakistan	-0.86	0.19							1	-36%	1.8			
Philippines	-0.44	0.48	5	30%	3.0				1	-4%	1.1	8	17%	4.9
Poland	0.34	0.57	3	17%	1.6	2	174%	2.6	12	40%	1.2	19	20%	5.0

			2003-2004						2005-2007					
			Domestic GAAP-IPOs			IFRS-IPOs			Domestic GAAP-IPOs			IFRS-IPOs		
	Rule of Law	*IFRS diff*	*N*	*IniRet*	*GAAP Comp*	*N*	*IniRet*	*IFRS Comp*	*N*	*IniRet*	*GAAP Comp*	*N*	*IniRet*	*IFRS Comp*
Portugal	1.09	0.62	1	0%	0.0									
Russia	-0.88	0.76										5	6%	3.9
Singapore	1.81	0.00	77	34%	2.1	10	30%	3.0	88	42%	2.2	31	14%	4.6
South Africa	0.18	0.00							1	1%	0.7	2	40%	5.3
South Korea	0.78	0.29	55	77%	2.4				134	53%	3.3			
Spain	1.11	0.76	1	19%	1.8				2	-8%	0.3	11	-1%	4.9
Sweden	1.79	0.48	2	-13%	1.7	1	7%	2.8	6	1%	1.4	11	40%	4.7
Switzerland	1.98	0.57				3	2%	3.3				12	47%	5.1
Taiwan	0.86	0.29	168	2%	3.6				113	56%	3.7			
Thailand	0.11	0.19	48	33%	2.5				47	4%	2.7			
Turkey	0.08	0.67										2	10%	5.3
UK	1.63	0.05	229	19%	2.6	8	28%	2.8	193	23%	2.4	262	18%	5.0
Total			1,399	36%	2.9	44	25%	3.2	1,634	44%	2.9	1,012	19%	4.8

This table provides the number of observations (*N*), average IPO underpricing (*IniRet*), and average number of listed industry peers of domestic GAAP-IPOs (*GAAPComp*) and IFRS-IPOs (*IFRSComp*) across countries. The second column, Rule of Law, is as of 2005 and is from Table C5 in Kaufmann et al. (2007); the enforcement environment of a country is stronger when Rule of Law is higher. *IFRSdiff* is the accounting standards difference between IFRS and domestic GAAP (Bae et al., 2008), which is scaled by the maximum value so that *IFRSdiff* ranges between 0 and 1. Higher *IFRSdiff* implies a greater difference between IFRS and domestic GAAP. *GAAPComp* and *IFRSComp* are log-transformed.

TABLE 2.4

The Effect of the Use of IFRS on IPO Underpricing

$Prob(IFRS) = \boldsymbol{Z'\gamma} + \varepsilon$; (1)

$IniRet = \beta_1 IFRS + \beta_2 IFRSComp + \beta_3 GAAPComp + \boldsymbol{X'\beta} + \delta_{IFRS} Mills \times IFRS + \delta_{GAAP} Mills \times (1\text{-}IFRS) + u$. (2)

	1st Stage: Eq. (1)			2nd Stage: Eq. (2)				
		pred.	Prob(*IFRS*)		*pred.*	*IniRet*	*IniRet*	*IniRet*
IFRS				β_1	?		-1.00***	-0.88***
							(-8.06)	(-4.78)
IFRSComp				β_2	?			-0.04**
								(-2.70)
$GAAPComp_{Pre\text{-}IPO}$	γ_1	(-)	-0.53***					
			(513.93)					
GAAPComp				β_3	?			-0.00
								(-0.28)
Firm-level controls								
Proceeds	γ_2	(+)	0.16***	β_4	(-)	-0.03***	-0.02***	-0.01**
			(76.34)			(-4.46)	(-2.63)	(-2.42)
PartAdj				β_5	(+)	1.29***	1.33***	1.35***
						(5.85)	(6.02)	(6.13)
Leverage	γ_3	(-)	-0.35**					
			(4.41)					
ROA	γ_4	?	-0.29**					
			(4.22)					
Cross Listing	γ_5	(+)	0.89***	β_6	(+)	-0.02	0.04	0.05
			(99.19)			(-0.58)	(1.38)	(1.54)
Country-level controls								
MktRet				β_7	(+)	0.30***	0.28***	0.28***
						(7.09)	(6.75)	(6.74)
MktVol				β_8	(+)	0.24***	0.23***	0.22***
						(8.06)	(7.61)	(7.51)
#IPO				β_9	(+)	0.08***	0.08***	0.08***
						(4.13)	(3.78)	(3.72)
$IFRSdiff_{Pre\text{-}IPO}$	γ_6	(+)	0.95***					
			(11.65)					
IFRSdiff				β_{10}	(+)	0.41***	0.32***	0.32***
						(6.59)	(4.09)	(4.05)
Common	γ_7	?	0.82***	β_{11}	?	-0.06**	-0.01	-0.01
			(50.75)			(-2.17)	(-0.28)	(-0.25)
Mills ratios								
IFRS×*Mills*				δ_{IFRS}	(-)		0.58***	0.61***
							(3.36)	(3.48)
(1-*IFRS*)×*Mills*				δ_{GAAP}	(+)		0.67***	0.72***
							(7.84)	(5.32)
Yr fixed-effects			Yes			Yes	Yes	Yes
Adjusted R^2			48.3%			10.8%	12.0%	12.1%
#obs. used			4,089			4,089	4,089	4,089

This table provides estimates of a two-stage Heckman model, where Equation (1) is the first stage and Equation (2) is the second stage. Heteroskedasticity-consistent standard errors are used in reporting p-values of Equation (2). *IFRS* equals 1 if an IPO firm uses IFRS and 0 otherwise. *Iniret* is the degree of IPO underpricing using the first trading-day return. *IFRSComp* (*GAAPComp*) equals the natural logarithm of one plus the number of listed industry peers that use IFRS (domestic GAAP) for IFRS-IPOs (domestic GAAP-IPOs) and 0 otherwise. $GAAPComp_{Pre\text{-}IPO}$ is the natural logarithm of the number of listed industry

peers that use domestic GAAP prior to the IPO, for both IFRS-IPOs and domestic GAAP-IPOs. *Mills* is the inverse Mills ratio. See the endnotes of Table 2.2 for definitions of the other control variables. Numbers in the parentheses are chi-square statistics in Equation (1) and t-statistics in Equation (2). Significance levels at 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively. Adjusted R^2 in Equation (1) is McFadden's pseudo R^2.

TABLE 2.5

Summary of the Effect of Comparable Firms on IPO Underpricing

Panel A: Marginal Effect of Comparable Firms on IPO Underpricing

IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
-0.04**	-0.00	-0.04**
(β_2)	(β_3)	

Panel B: Overall Effect of Comparable Firms on IPO Underpricing

IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
-0.20***	-0.01***	-0.19***
($\beta_2 \overline{IFRSComp}$)	($\beta_3 \overline{GAAPComp}$)	

This table summarizes the key results from Table 2.4. In Panel A, the coefficient estimates from Table 2.4 are re-organized according to comparable firms' characteristics, so that the coefficients are interpreted as the marginal effect of comparable firms on IPO underpricing. In addition, the coefficient difference is tested. In Panel B, the overall effects of comparable firms on IPO underpricing are evaluated by multiplying the coefficients from Panel A and the mean value of the number of comparable firms. Mean values are denoted with an upper bar. In addition, the difference between the two overall effects is tested. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

TABLE 2.6

The Role of Country-Level Enforcement in Reducing IPO Underpricing

$Prob(IFRS) = \boldsymbol{Z'\gamma} + \varepsilon$; (1)

$IniRet = \beta_1 IFRS + \beta_2 IFRS \times Enforce + \beta_3 IFRSComp + \beta_4 IFRSComp_{Strong} + \beta_5 IFRSComp_{Weak} + \beta_6 GAAPComp + \beta_7 GAAPComp \times Enforce + \boldsymbol{X'\beta} + \delta_{IFRS} Mills \times IFRS + \delta_{GAAP} Mills \times (1-IFRS) + u.$ (2)

	1st Stage: Eq. (1)			2nd Stage: Eq. (2)				
		pred.	Prob(*IFRS*)		*pred.*	*IniRet*	*IniRet*	*IniRet*
IFRS				β_1	?	-0.51***	-0.45**	-0.47**
						(-3.41)	(-2.39)	(-2.52)
IFRS×Enforce				β_2	(-)	-0.73***	-0.74***	-0.87***
						(-6.55)	(-6.55)	(-6.49)
IFRSComp				β_3	?		-0.04***	
							(-2.79)	
$IFRSComp_{Strong}$				β_4	(-)			-0.04***
								(-2.70)
$IFRSComp_{Weak}$				β_5	?			0.01
								(0.42)
$GAAPComp_{Pre\text{-}IPO}$	γ_1	(-)	-0.49***					
			(398.72)					
GAAPComp				β_6	?		-0.01	0.02
							(-0.89)	(0.82)
GAAPComp×Enforce				β_7	(-)			-0.04*
								(-1.82)
Firm-level controls								
Proceeds	γ_2	(+)	0.15***	β_8	(-)	-0.03***	-0.03***	-0.03***
			(68.49)			(-4.92)	(-4.74)	(-4.50)
PartAdj				β_9	(+)	1.59***	1.62***	1.64***
						(7.00)	(7.14)	(7.26)
Leverage	γ_3	(-)	-0.43**					
			(6.46)					
ROA	γ_4	?	-0.15					
			(1.05)					
Cross Listing	γ_5	(+)	0.70***	β_{10}	(+)	0.07**	0.08***	0.09***
			(59.61)			(2.37)	(2.62)	(2.77)
Country-level controls								
MktRet				β_{11}	(+)	0.25***	0.25***	0.25***
						(6.16)	(6.15)	(6.17)
MktVol				β_{12}	(+)	0.18***	0.18***	0.18***
						(6.40)	(6.32)	(6.34)
#IPO				β_{13}	(+)	0.08***	0.08***	0.08***
						(4.22)	(4.19)	(4.17)
Enforce	γ_6	?	3.24***	β_{14}	?	0.78***	0.79***	0.94***
			(82.49)			(7.76)	(7.73)	(7.32)
$IFRSdiff_{Pre\text{-}IPO}$	γ_7	(+)	5.94***					
			(67.90)					
$IFRSdiff_{Pre\text{-}IPO} \times Enforce$	γ_8	?	-5.95***					
			(65.92)					
IFRSdiff				β_{15}	(+)	2.18***	2.19***	2.23***
						(8.58)	(8.54)	(8.83)
IFRSdiff ×Enforce				β_{16}	?	-2.57***	-2.59***	-2.62***
						(-9.02)	(-8.98)	(-9.23)

	1st Stage: Eq. (1)			2nd Stage: Eq. (2)				
		pred.	Prob(*IFRS*)		*pred.*	*IniRet*	*IniRet*	*IniRet*
Common	γ_9	?	0.37**	β_{17}	?	-0.15***	-0.16***	-0.16***
			(5.73)			(-4.90)	(-4.91)	(-5.04)
Mills ratios								
IFRS×*Mills*				δ_{IFRS}	(-)	0.66***	0.69***	0.74***
						(3.77)	(3.92)	(4.15)
(1-*IFRS*)×*Mills*				δ_{GAAP}	(+)	0.76***	0.86***	0.93***
						(9.54)	(6.89)	(6.97)
Yr fixed-effects			Yes			Yes	Yes	Yes
Adjusted R^2			51.2%			15.4%	15.5%	15.6%
#obs. used			4,089			4,089	4,089	4,089

This table provides estimates of a two-stage Heckman model, where Equation (1) is the first stage and Equation (2) is the second stage. Heteroskedasticity-consistent standard errors are used in reporting p-values of Equation (2). *IFRS* equals 1 if an IPO firm uses IFRS and 0 otherwise. *Iniret* is the degree of IPO underpricing using the first trading-day return. *IFRSComp* (*GAAPComp*) equals the natural logarithm of one plus the number of listed industry peers that use IFRS (domestic GAAP) for IFRS-IPOs (domestic GAAP-IPOs) and 0 otherwise. $GAAPComp_{Pre\text{-}IPO}$ is the natural logarithm of the number of listed industry peers that use domestic GAAP prior to the IPO, for both IFRS-IPOs and domestic GAAP-IPOs. $IFRSComp_{Strong}$ ($IFRSComp_{Weak}$) is *IFRSComp* that is counted across only strong (weak) enforcement countries. *Enforce* equals 1 if an IPO firm is listed in a strong enforcement country; 0 otherwise. *Mills* is the inverse Mills ratio. See the endnotes of Table 2.2 for definitions of the other control variables. Numbers in the parentheses are chi-square statistics in Equation (1) and t-statistics in Equation (2). Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively. Adjusted R^2 in Equation (1) is McFadden's pseudo R^2.

TABLE 2.7

Summary of the Impact of Country-Level Enforcement on the Effect of Comparable Firms

Panel A: Marginal Effect of Comparable Firms on IPO Underpricing

Enforcement		IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
Strong	(a)	-0.04***	-0.02**	-0.02
		(β_4)	($\beta_6 + \beta_7$)	
Weak	(b)	0.01	0.02	-0.01
		(β_5)	(β_6)	
Diff.	(a) - (b)	-0.05*	-0.04**	

Panel B: Overall Effect of Comparable Firms on IPO Underpricing

Enforcement		IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
Strong	(c)	-0.19***	-0.07***	-0.13***
		($\beta_4 \overline{IFRSComp}_{Strong}$)	($\beta_6 \overline{GAAPComp} + \beta_7 \overline{Enforce \times GAAPComp}$)	
Weak	(d)	0.02***	0.05***	-0.03***
		($\beta_5 \overline{IFRSComp}_{Weak}$)	($\beta_6 \overline{GAAPComp}$)	
Diff.	(c) - (d)	-0.22***	-0.12***	

This table summarizes the key results from Table 2.6. Enforcement stands for the quality of enforcement jurisdictions of the countries where comparable firms are listed. In Panel A, the coefficient estimates from Table 2.6 are re-organized according to comparable firms' characteristics, so that the coefficients are interpreted as the marginal effect of comparable firms on IPO underpricing. In addition, the coefficient differences are tested. In Panel B, the overall effects of comparable firms on IPO underpricing are evaluated by multiplying the coefficients from Panel A and the mean value of the variables. Mean values are denoted with an upper bar. In addition, the differences between the two overall effects are tested. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

TABLE 2.8

Additional Test: Voluntary IFRS Adoption

$Prob(IFRS) = \boldsymbol{Z'\gamma} + \varepsilon$; (1)

$IniRet=\beta_1 IFRS+\beta_2 IFRSComp+\beta_3 IFRSComp_{Strong}+\beta_4 IFRSComp_{Weak}+\beta_5 GAAPComp+\boldsymbol{X'\beta}+ \delta_{IFRS} Mills\times IFRS + \delta_{GAAP} Mills\times (1\text{-}IFRS) + \upsilon.$ (2)

Panel A: Coefficient Estimates

		1st Stage: Eq. (1)			2nd Stage: Eq. (2)			
		pred.	Prob(*IFRS*)	Prob(*IFRS*)		*pred.*	*IniRet*	*IniRet*
IFRS					β_1	?	-2.44***	-2.42***
							(-5.15)	(-5.08)
IFRS×*Enforce*					β_2	(-)		-0.36**
								(-2.25)
IFRSComp					β_3	?	-0.09***	
							(-3.46)	
$IFRSComp_{Strong}$					β_4	(-)		-0.06*
								(-1.90)
$IFRSComp_{Weak}$					β_5	?		-0.01
								(-0.32)
$GAAPComp_{Pre\text{-}IPO}$	γ_1	(-)	-0.39***	-0.24***				
			(171.47)	(51.02)				
GAAPComp					β_6	?	0.01	0.11***
							(0.46)	(3.44)
GAAPComp×*Enforce*					β_7	(-)		-0.18***
								(-5.03)
Enforce controlled			No	Yes			No	Yes
Mills ratios							Yes	Yes
Firm-level controls			Yes	Yes			Yes	Yes
Country-level controls			Yes	Yes			Yes	Yes
Yr fixed-effects			Yes	Yes			Yes	Yes
Adjusted R^2			32.4%	40.0%			25.3%	27.4%
#obs. used			1,862	1,862			1,862	1,862

Panel B: Marginal Effect of Comparable Firms on IPO Underpricing

Enforcement		IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
Strong	(a)	-0.06*	-0.07**	-0.01
		(β_4)	($\beta_6 + \beta_7$)	
Weak	(b)	-0.01	0.11***	-0.12***
		(β_5)	(β_6)	
Diff.	(a) - (b)	-0.05	-0.18***	

Panel C: Overall Effect of Comparable Firms on IPO Underpricing

Enforcement		IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
Strong	(c)	-0.25***	-0.19***	-0.06***
		($\beta_4 \overline{IFRSComp}_{Strong}$)	($\beta_6 \overline{GAAPComp} + \beta_7 \overline{Enforce}\times\overline{GAAPComp}$)	
Weak	(d)	-0.03***	0.28***	-0.30***
		($\beta_5 \overline{IFRSComp}_{Weak}$)	($\beta_6 \overline{GAAPComp}$)	
Diff.	(c) - (d)	-0.22***	-0.47***	

Panel A provides estimates of a two-stage Heckman model, where Equation (1) is the first stage and Equation (2) is the second stage. Heteroskedasticity-consistent standard errors are used in reporting p-values of Equation (2). *IFRS* equals 1 if an IPO firm uses IFRS and 0 otherwise. *Iniret* is the degree of IPO underpricing using the first trading-day return. *IFRSComp* (*GAAPComp*) equals the natural logarithm

of one plus the number of listed industry peers that use IFRS (domestic GAAP) for IFRS-IPOs (domestic GAAP-IPOs) and 0 otherwise. $GAAPComp_{Pre\text{-}IPO}$ is the natural logarithm of the number of listed industry peers that use domestic GAAP prior to the IPO, for both IFRS-IPOs and domestic GAAP-IPOs. $IFRSComp_{Strong}$ ($IFRSComp_{Weak}$) is *IFRSComp* that is counted across only strong (weak) enforcement countries. *Enforce* equals 1 if an IPO firm is listed in a strong enforcement country; 0 otherwise. *Mills* is the inverse Mills ratio. Numbers in the parentheses are chi-square statistics in Equation (1) and t-statistics in Equation (2). Adjusted R^2 in Equation (1) is McFadden's pseudo R^2.

Panels B and C summarize the key results from Panel A. Enforcement stands for the quality of enforcement jurisdictions of the countries where comparable firms are listed. In Panel B, the coefficient estimates from Panel A are re-arranged so that the coefficients are interpreted as the marginal effect of comparable firms on IPO underpricing. In addition, the coefficient differences are tested. In Panel C, the overall effects of comparable firms on IPO underpricing are evaluated by multiplying the coefficients from Panel B and the mean value of the variables. Mean values are denoted with an upper bar. In addition, the differences between two overall effects are tested. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

TABLE 2.9

Additional Test: Country Fixed-Effects

$Prob(IFRS) = \boldsymbol{Z'\gamma} + \varepsilon$; (1)

$IniRet=\beta_1 IFRS+\beta_2 IFRSComp+\beta_3 IFRSComp_{Strong}+\beta_4 IFRSComp_{Weak}+\beta_5 GAAPComp+\boldsymbol{X'\beta}+\delta_{IFRS}\, Mills\times IFRS + \delta_{GAAP}\, Mills\times (1\text{-}IFRS) + \upsilon.$ (2)

Panel A: Coefficient Estimates

	1st Stage: Eq. (1)			2nd Stage: Eq. (2)			
		pred.	Prob(*IFRS*)		*pred.*	*IniRet*	*IniRet*
IFRS				β_1	(-)	-0.67***	-0.69***
						(-3.35)	(-3.47)
IFRSComp				β_2		-0.03**	
						(-1.98)	
$IFRSComp_{Strong}$				β_3	(-)		-0.02
							(-1.22)
$IFRSComp_{Weak}$				β_4	?		-0.01
							(-0.56)
$GAAPComp_{Pre\text{-}IPO}$	γ_1	(-)	-0.24***				
			(55.62)				
GAAPComp				β_5	(-)	-0.02*	-0.02*
						(-1.72)	(-1.72)
Firm-level controls			Yes			Yes	Yes
Mills ratios						Yes	Yes
Country fixed-effects			Yes			Yes	Yes
Yr fixed-effects			Yes			Yes	Yes
Adjusted R^2			55.4%			19.8%	19.8%
#obs. used			4,089			4,089	4,089

Panel B: Marginal Effect of Comparability on IPO Underpricing

Enforcement		IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
		-0.03**	-0.02*	-0.01
		(β_2)	(β_5)	
Strong	(a)	-0.02		
		(β_3)		
Weak	(b)	-0.01		
		(β_4)		
Diff.	(a) - (b)	-0.01		

Panel C: Overall Effect of Comparability on IPO Underpricing

Enforcement		IFRS (i)	Domestic GAAP (ii)	Diff. (i) - (ii)
		-0.13***	-0.05***	-0.08***
		($\beta_2\, \overline{IFRSComp}$)	($\beta_5 \overline{GAAPComp}$)	
Strong	(c)	-0.08***		
		($\beta_3\, \overline{IFRSComp}_{Strong}$)		
Weak	(d)	-0.03***		
		($\beta_4\, \overline{IFRSComp}_{Weak}$)		
Diff.	(c) - (d)	-0.05***		

Panel A provides estimates of a two-stage Heckman model, where Equation (1) is the first stage and Equation (2) is the second stage. Heteroskedasticity-consistent standard errors are used in reporting p-values of Equation (2). *IFRS* equals 1 if an IPO firm uses IFRS and 0 otherwise. *Iniret* is the degree of

IPO underpricing using the first trading-day return. *IFRSComp* (*GAAPComp*) equals the natural logarithm of one plus the number of listed industry peers that use IFRS (domestic GAAP) for IFRS-IPOs (domestic GAAP-IPOs) and 0 otherwise. $GAAPComp_{Pre\text{-}IPO}$ is the natural logarithm of the number of listed industry peers that use domestic GAAP prior to the IPO, for both IFRS-IPOs and domestic GAAP-IPOs. $IFRSComp_{Strong}$ ($IFRSComp_{Weak}$) is *IFRSComp* that is counted across only strong (weak) enforcement countries. *Enforce* equals 1 if an IPO firm is listed in a strong enforcement country; 0 otherwise. *Mills* is the inverse Mills ratio. Numbers in the parentheses are chi-square statistics in Equation (1) and t-statistics in Equation (2). Adjusted R^2 in Equation (1) is McFadden's pseudo R^2.

Panels B and C summarize the key results in Panel A. Enforcement stands for the quality of enforcement jurisdictions of the countries where comparable firms are listed. In Panel B, the coefficient estimates from Panel A are rearranged so that the coefficients are interpreted as the marginal effect of comparable firms on IPO underpricing. In addition, the coefficient differences are tested. In Panel C, the overall effects of comparable firms on IPO underpricing are evaluated by multiplying the coefficients from Panel B and the mean value of the variables. Mean values are denoted with an upper bar. In addition, the differences between the two overall effects are tested. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

TABLE 2.10

Additional Test: Time-Series Changes Around 2005

Panel A: Coefficient Estimates

	1st Stage: Eq. (1)			2nd Stage: Eq. (2)		
	pred.		Prob(*IFRS*)	*pred.*		*IniRet*
Post			2.33***	β_1	(-)	-1.74***
			(23.89)			(-3.70)
IFRS				β_2	(-)	-2.31***
						(-2.96)
IFRS×Post				β_3	(-)	1.73**
						(2.14)
IFRSComp				β_4		-0.18
						(-1.22)
IFRSComp×Post				β_5		0.15
						(1.00)
$GAAPComp_{Pre\text{-}IPO}$	γ_1	(-)	-0.24***	β_6		
			(15.43)			
$GAAPComp_{Pre\text{-}IPO}$×*Post*	γ_1	(-)	-0.34***	β_7		
			(27.17)			
GAAPComp				β_8	(-)	-0.02
						(-1.47)
GAAPComp×Post				β_9	(-)	0.04**
						(1.99)
Mills ratios						Yes
Firm-level control variables			Yes			Yes
Country-level control variables			Yes			Yes
Yr fixed-effects			Yes			Yes
Adjusted R^2			50.2%			13.5%
#obs. used			4,089			4,089

Panel B: Marginal Effect of Comparable Firms on IPO Underpricing

Period	IFRS (i)	Domestic GAAP (ii)	Diff.(i)-(ii)
Pre-2005 (a)	-0.18	-0.02	-0.16
	(β_4)	(β_8)	
Post-2005(b)	-0.03*	0.02	-0.01**
	(β_4+β_5)	(β_8+β_9)	
Diff. (a) - (b)	0.15	0.04**	

Panel C: Overall Effect of Comparable Firms on IPO Underpricing

Period	IFRS (i)	Domestic GAAP (ii)	Diff.(i)-(ii)
Pre-2005 (c)	-0.84***	-0.06***	-0.78***
	(β_4 $\overline{IFRSComp}$)	(β_8 $\overline{GAAPComp}$)	
Post-2005(d)	-0.16***	0.01***	-0.17***
	($\beta_4\overline{IFRSComp}$ +$\beta_5\overline{IFRSComp}$×$\overline{Post}$)	($\beta_8\overline{GAAPComp}$ +$\beta_9\overline{GAAPComp}$×$\overline{Post}$)	
Diff. (c) - (d)	0.68***	0.07***	

Panel A provides estimates of a two-stage Heckman model, where Equation (1) is the first stage and Equation (2) is the second stage. Heteroskedasticity-consistent standard errors are used in reporting p-values of Equation (2). *IFRS* equals 1 if an IPO firm uses IFRS and 0 otherwise. *Iniret* is the degree of IPO underpricing using the first trading-day return. *IFRSComp* (*GAAPComp*) equals the natural logarithm

of one plus the number of listed industry peers that use IFRS (domestic GAAP) for IFRS-IPOs (domestic GAAP-IPOs) and 0 otherwise. *Post* equals one if an IPO is offered after 2005 and 0 otherwise. $GAAPComp_{Pre\text{-}IPO}$ is the natural logarithm of the number of listed industry peers that use domestic GAAP prior to the IPO, for both IFRS-IPOs and domestic GAAP-IPOs. *Mills* is the inverse Mills ratio. Numbers in the parentheses are chi-square statistics in Equation (4) and t-statistics in Equation (5). Adjusted R^2 in Equation (1) is McFadden's pseudo R^2.

Panels B and C summarize the key results from Panel A. In Panel B, the coefficient estimates from Panel A are rearranged so that the coefficients are interpreted as the marginal effect of comparable firms on IPO underpricing. In addition, the coefficient differences are tested. In Panel C, the overall effects of comparable firms on IPO underpricing are evaluated by multiplying the coefficients from Panel B and the mean value of the variables. Mean values are denoted with an upper bar. In addition, the differences between the two overall effects are tested. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

CHAPTER 3

GLOBAL INTEGRATION OF ACCOUNTING STANDARDS AND FIRMS' CROSS-BORDER LISTING DECISION

3.1 Introduction

This paper examines whether the worldwide adoption of a single set of accounting standards, International Financial Reporting Standards (IFRS), has affected IPO firms' likelihood of issuing a global IPO as opposed to a domestic IPO. A global IPO is an IPO where some of the shares offered, if not all, are listed outside the IPO firm's home country.[28] Global IPO activities have been emerged as a key issue in the past couple of decades. Regulators and stock exchanges compete to attract foreign firms, by offering various incentives to encourage more foreign listings.[29] Researchers have examined why firms choose stock exchanges other than their own domestic market. They documented evidence of the benefits of global IPOs, including an increase in investor base (Foerster and Karolyi, 1999; King and Segal, 2009) and the opportunity to bond to more credible disclosure practices (Pagano et al., 2002; Stulz, 2009). These studies are based on the premise that markets are segmented with respect to cross-border investment, the amount of information available to foreign investors, disclosure practices, etc. As more countries adopt IFRS, especially after 2005, this global integration of accounting standards may have affected global IPO activities. However, to date little research has focused on how the worldwide IFRS adoption affects firms' cross-border listing decision.

The worldwide adoption of IFRS is likely to change global capital markets in at least three aspects: (1) cross-border investors' understanding about financial reports, (2) disclosure practices in local markets, and (3) the level of comparability among industry peers. First, cross-border investors are presumably more familiar with IFRS than domestic GAAPs. As a result, investors are likely to increase their investment in firms that use IFRS compared with firms that use domestic GAAP (DeFond, Hu, Hung, and Li, 2011; Covrig, DeFond, and Hung, 2007).

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[28] While studies on international financing did not reach a consensus on a uniform definition of a global IPO, the definition of a global IPO in this paper includes IPOs where (1) all shares are listed abroad and (2) some shares are listed abroad while the others are listed in their home country (Doidge, Karolyi, and Stulz, 2011). Global IPOs in this paper contrast with domestic IPOs that are listed only in an IPO firm's home country.

[29] For example, in 2007, the Securities and Exchange Commission (SEC) eliminated a regulation that mandated foreign issuers using IFRS to reconcile their IFRS financial statements with U.S. generally accepted accounting principles (GAAP). In Europe, more than eleven stock exchanges have been established since 1995, including AIM in London (Vismara et al., 2012).

Second, the widespread adoption of IFRS may change disclosure practices around the world. However, it is unclear whether or not the adoption of IFRS will level the reporting quality throughout the world. On the one hand, IFRS may provide a better platform for financial reporting than domestic GAAP (Barth et al., 2008), leveling disclosure practices among countries. On the other hand, if IFRS are adopted in name only, substantial improvements in disclosure practices will arise only in firms with strong incentives to 'seriously' adopt IFRS (Daske et al., 2011).

Third, comparability among industry peers is likely to be affected by the worldwide adoption of IFRS. IFRS adoption may change the reporting quality of listed firms, and, in turn, affect comparability among industry peers using IFRS (Lang et al., 2010). In addition, the worldwide adoption of IFRS may enhance cross-border comparability among industry peers domiciled in different countries (Yip and Young, 2012).

This paper examines these three aspects of the effect of IFRS in the context of IPO firms' decision to list abroad. Firms' IFRS adoption may reduce the likelihood of listing abroad to raise a large amount of capital relative to the market capitalization of their domestic market. If cross-border investors who are familiar with IFRS increase their shareholding in IFRS-reporting firms, IPO firms reporting in IFRS may be able to raise larger proceeds in their home country using a purely domestic IPO. The IFRS adoption may also affect firms' likelihood of listing abroad to bond to more credible disclosure practices in a foreign market. That is, changes in disclosure practices initiated by the worldwide adoption of IFRS may impact IPO firms' incentive to bond to more credible disclosure practices. Finally, the worldwide adoption of IFRS may affect the level of comparability with local and foreign industry peers, thereby impacting an IPO firm's likelihood to list abroad.

A challenge to this study is how to handle the endogenous nature of firms' choice of IFRS and their decision to list abroad. That is, when firms' choice of IFRS is not exogenously determined, a study about the effect of IFRS on firms' decision to list abroad is subject to firms' self-selection bias between IFRS and domestic GAAP. Therefore, in using a sample of IPO firms between 2000 and 2011 throughout the world, I partition the sample into voluntary IFRS adopters and mandatory IFRS adopters. I then match the voluntary IFRS adopters with domestic GAAP-reporting IPO firms by industry, year, and home country (hereafter, "voluntary adopter sample"). Employing a probit model that estimates firms' likelihood to list

abroad, I examine whether IPO firms that voluntarily adopt IFRS show different tendency to list abroad from that of matched domestic GAAP-reporting IPO firms.

For the mandatory IFRS adopters, I employ a difference-in-difference study design. Sampling IPO firms domiciled in countries that mandatorily adopt IFRS in 2005 and those in countries that did not yet as of 2011 (hereafter, "mandatory adopting sample"), I examine whether IPO firms' likelihood of listing abroad changes around 2005. Then I compare the likelihood of listing abroad for firms domiciled in countries that mandatorily adopt IFRS (test sample) with that for firms in countries that did not yet (control sample). This way, I control for a time-series trend that exists in both test and control sample.

The results show that, first, IPO firms tend to list abroad as the proceeds of an IPO increase, consistent with previous studies of the determinants of whether an IPO firm lists abroad or not (Pagano et al., 2002; Caglio et al., 2011). This likelihood is significantly lower for IPO firms voluntarily using IFRS than for a matched IPO firms using domestic GAAP. This result implies that when firms voluntarily use IFRS, they have less need to list abroad in order to raise larger sums of capital. Similarly, for IPO firms that are mandated to use IFRS in 2005, the positive association between proceed size and firms' likelihood to list abroad decreases following the mandatory IFRS adoption. However, when this decreased likelihood of IPO firms mandated to use IFRS is compared with that of IPO firms domiciled in countries that do not adopt IFRS, there is no significant difference between the two.

Second, I find that IPO firms are more likely to list abroad if their domestic disclosure practices are poor, consistent with previous findings (Reese and Weisbach, 2002; Doidge et al., 2004; Stulz, 2009). This likelihood is significantly higher for IPO firms that voluntarily use IFRS than for their matched domestic GAAP-reporting IPO firms. This result implies that firms in countries with poor disclosure practices have more to gain from voluntarily adopting IFRS in listing abroad. When the bonding incentive to list abroad is examined for IPO firms domiciled in countries that mandate IFRS in 2005, I find that the bonding incentive decreases following mandatory IFRS adoption. However, I find a similar decrease in bonding incentive using IPO firms domiciled in countries that do not adopt IFRS; there is no difference in time trend around 2005 between IPO firms in countries that mandate IFRS and those in countries that do not adopt.

Third, I find that the number of local industry peers that use the same set of accounting standards affects firms' decision to list abroad; firms are more likely to list abroad as the number of local industry peers decreases. This finding implies that firms regard comparability with industry peers that use the same set of accounting standards as a critical factor in choosing between foreign and domestic stock markets. Interestingly, using the voluntary IFRS adopter sample, I find that the effect of the number of local industry peers on firms' listing-abroad decision is stronger for voluntary IFRS-reporting IPO firms than for matched domestic GAAP-reporting IPO firms. This result shows that IFRS-reporting IPO firms have less of an incentive to list abroad in the presence of IFRS-reporting local industry peers than domestic GAAP-reporting IPO firms do with their domestic GAAP-reporting counterparts. This implies that comparability among industry peers reporting voluntarily in IFRS is greater than that among industry peers reporting in domestic GAAP. Following the mandatory adoption of IFRS, I do not find any significant change in the association between the number of local industry peers and IFRS-reporting IPO firms' likelihood to list abroad. Nevertheless, I find that IFRS-reporting IPO firms' likelihood to list abroad increases as the number of the foreign IFRS-reporting industry peers increases for both voluntary and mandatory IFRS adopting IPO firms.

This paper contributes to the IFRS and global IPO literature in a number of ways. First, the results show that the worldwide adoption of IFRS has a significant impact on the cross-border capital market. Early studies have focused mostly on the effect of the adoption of IFRS on domestic capital market (Daske, Hail, Leuz, and Verdi, 2008), managers' financial reporting decision (Barth et al., 2008; Wang and Welker, 2011), and the efficacy of financial reporting (Chen et al., 2012; DeFond et al., 2011; Byard et al., 2011). However, the widespread adoption of IFRS, designed to be a single set of global accounting standards, would have a great impact on cross-border capital market. Yet, little has been examined yet about how IFRS influence cross-border capital market.[30] I find that the worldwide adoption of IFRS changes firms' decisions on cross-border IPOs.

Second, the results suggest that the worldwide adoption of IFRS might be one of the reasons why the global capital markets in the 2000s experience a downturn in cross-border equity issuance compared

[30] Tan, Wang, and Welker (2011) examine the difference in analysts forecast accuracy between local and foreign analysts. They find that the forecast accuracy of local analysts is unaffected by IFRS while that of foreign analysts is improved following IFRS adoption.

with a decade ago (Gagnon and Karolyi, 2010). My results show that, while some motivations for IPO firms to list abroad – to raise relatively large proceeds, to bond to credible disclosure practices of a foreign market, and to benefit from enhanced comparability with industry peers that use the same set of accounting standards – hold in the early 2000s, others have less impact following the worldwide adoption of IFRS.

Third, I find that comparability among industry peers that use the same set of accounting standards plays a critical role in firms' decision to list abroad. In the past decades, researchers have endeavored to investigate the determinants of firms' cross-listing decision (e.g., Pagano et al., 2002). To the best of my knowledge, however, this paper is the first to show that the expected level of comparability among industry peers plays a key role in firms' decision to list abroad.

Finally, I find that firms' reporting incentives to seriously apply IFRS affect their expected benefits from cross-border listings. The results show that the likelihood to list abroad of firms voluntarily adopting IFRS is significantly different from that of the matched domestic GAAP-reporting firms. However, the likelihood to list abroad of firms mandated to adopt IFRS is mostly indifferent from that of the firms in countries that do not mandate to use IFRS.

The rest of this paper is organized as follows. Section 3.2 reviews the prior literature and develops hypotheses. Section 3.3 details the study design and sample selection. Section 3.4 provides descriptive statistics and multivariate probit regression results of IPO firms' likelihood of listing abroad. Section 3.5 concludes.

3.2 Prior Studies and Hypotheses Development

In this section, I review the relevant literature and develop hypotheses for empirical tests. In particular, I focus on the three incentives for an IPO firm to list in a foreign country: (1) to raise larger proceeds than would be possible in a firm's home country, (2) to bond to credible disclosure practices in a foreign country, and (3) to increase comparability among industry peers.

3.2.1 IFRS AND IPO FIRMS' INCENTIVE TO RAISE LARGE PROCEEDS

A firm's adoption of IFRS is likely to increase foreign investors' investments in the firm that uses IFRS. Foreign investors tend to underweight domestic stock markets – a phenomenon which is often named as home bias – potentially because foreign investors have limited access to information about domestic firms compared with domestic investors (French and Poterba, 1991). Kang and Stulz (1997) show foreign investors' home bias decreases as firms become more visible to foreign investors, e.g., as firms export more, their share turnover increases, or they list ADRs. IFRS have been developed to be globally accepted accounting standards, which facilitate foreign investors' cross-border investment activities. IFRS-reporting domestic firms can increase their visibility to foreign investors thereby increasing foreign mutual funds' ownership (Covrig et al., 2007; DeFond et al., 2011).

As foreign investors increase their shareholdings in firms that use IFRS, IFRS-reporting IPO firms' motivation for listing abroad to raise a large amount of capital may decrease. When the market capitalization of the whole domestic equity market is small, an IPO firm may not be able to raise sufficient capital domestically and, thus, may choose to list in a foreign country that has a larger market capitalization than the firm's home country. Consistent with this argument, Caglio, Hanley, and Marietta-Westberg, (2011) show a positive association between proceeds amount and firms' likelihood to list abroad. As IFRS-reporting firms are more visible to foreign investors and have more shares held by foreign investors, IPO firms reporting in IFRS may have less need to list abroad to raise large proceeds than those reporting in domestic GAAP. Similarly, IPO firms in countries that mandate to adopt IFRS may have less need to list abroad to raise large proceeds following mandatory IFRS adoption.

The first hypothesis stated in null form, for both voluntary and mandatory IFRS adopters, is as follows:

> *Hypothesis* 1: The adoption of IFRS does not affect an IPO firm's likelihood to list abroad in order to raise large proceeds.

3.2.2 IFRS AND IPO FIRMS' INCENTIVE TO BOND

IPO firms are subject to a high level of the cost of capital when disclosure practices in their home country are of low quality. When disclosure practices of listed firms in a country are poor, investors perceive themselves to have less information than managers. This may lead investors to require a premium for IPO firms' equity issuance, thereby making an offer price discounted and increasing the cost

of equity capital (Stulz, 1999). IPO firms can decrease this heightened cost of capital if they can bond to credible disclosure practices in a foreign country with better disclosure practices than their home country. Doidge, Karolyi, and Stulz (2004) show that foreign firms cross-listed in the U.S., a country which is considered to maintain credible disclosure practices, have higher market-to-book ratios than their domestic counterparts. Similarly, Reese and Weisbach (2002) show that following cross-listings in the U.S., foreign firms are more likely to issue equity in their home country.

This positive association between IPO firms' bonding incentive and their likelihood to list abroad may change when IPO firms voluntarily use IFRS. IPO firms are likely to go public in their home country more when they voluntarily adopt IFRS than when they use domestic GAAP. IPO firms may commit to improve their disclosure quality by voluntarily adopting IFRS in their home country (Leuz and Verrechia, 2000), rather than bonding to disclosure practices of a foreign regime. Nevertheless, IPO firms are also likely to list abroad more when they voluntarily adopt IFRS than when they use domestic GAAP. Daske et al. (2011) show that the capital market benefits (i.e. a decrease in bid-ask spread or implied cost of capital) of voluntary IFRS adoption arise only for 'serious' adopters, i.e., for voluntary IFRS adopters whose reporting incentives are high. If firms' reporting incentives rely on institutional characteristics of countries where firms are listing, voluntarily IFRS-adopting IPO firms may choose to list abroad expecting greater capital market benefits in a foreign country that provides stronger reporting incentives and better disclosure practices.

The positive association between IPO firms' bonding incentive and their likelihood to list abroad may also change when their home country mandates to use IFRS. This is argument hinges on whether the mandatory IFRS adoption improves disclosure practices in their home country (Barth et al., 2008; Ahmed et al., 2010). If mandatory IFRS adoption improves disclosure practices in a country, then following mandatory IFRS adoption IPO firms may benefit less by listing abroad and by bonding to disclosure practices in a foreign country. On the contrary, if IFRS adoption does not improve disclosure practices of a domestic market, IPO firms' likelihood to list abroad to bond to credible disclosure practices in a foreign country may remain unchanged following the mandatory adoption of IFRS.

The second hypothesis stated in null form, for both voluntary and mandatory IFRS adopters, is as follows:

Hypothesis 2: The adoption of IFRS does not affect an IPO firm's likelihood to list abroad in order to bond themselves to credible disclosure practices in a foreign country.

3.2.3 IFRS AND IPO FIRMS' INCENTIVE TO ENHANCE COMPARABILITY

IPO firms are subject to a great amount of uncertainty, which eventually increases the cost of capital. Enhanced comparability among industry peers may help investors have less uncertainty about the value of the initial shares. Comparability is defined as the quality of information that enables users to identify similarities in and differences between two sets of economic phenomena (FASB, 2008). As comparability enhances, investors may better understand the commonalities and differences among industry peers and better extract useful information. As a result, IPO firms with enhanced comparability may mitigate investors' uncertainty about firm value, thereby decreasing the cost of capital in the form of a reduced level of IPO underpricing. Consistent with these arguments, the Chapter 2 of this dissertation shows that IPO underpricing decreases as the number of industry peers that use the same set of accounting standards increases.

An empirical question related to firms' decision to list abroad is whether the number of industry peers that use the same set of accounting standards – a proxy for the level of comparability – also affects firms' decision to list abroad. If enhanced comparability helps mitigate uncertainty and reduces the cost of capital, firms' optimal decision would be listing in a country that provides the maximum level of comparability, ceteris paribus. However, a listing-abroad is not cost-free; a survey reports that 30% of managers perceive a negative net benefit of a listing-abroad decision, where the major costs of listing abroad are those related to public relations and legal fees (Bancel and Mittoo, 2001). If incremental benefits from enhanced comparability in a foreign country do not outweigh the incremental costs of listing abroad, the level of comparability in their home country may not affect IPO firms' decision to list abroad.

Hypothesis 3: The number of industry peers that use the same set of accounting standards does not affect an IPO firm's likelihood to list abroad.

A natural extension of the Hypothesis 3 to the worldwide adoption of IFRS is (1) whether the effect of the number of industry peers is greater when they use IFRS than when they use domestic GAAP, and (2) how is the impact of the worldwide adoption of IFRS on the association between the number of industry peers and IPO firms' likelihood to list abroad. First, comparability interacts with other reporting

qualities (e.g., value relevance and reliability) of accounting standards (FASB, 2008). While previous studies about reporting quality under IFRS versus that under domestic GAAP provide mixed results (Barth et al., 2008; Ahmed et al., 2010), whether comparability improves under IFRS may depend on the changes in reporting quality following IFRS adoption. If comparability along with overall reporting qualities improve (remain the same) following IFRS adoption, the association between the number of industry peers and IPO firms' likelihood to list abroad will be stronger (will not be different) for IFRS-reporting firms than for domestic GAAP-reporting firms.

> *Hypothesis* $4_{\text{Local IFRS industry peers}}$: The adoption of IFRS does not affect an IPO firm's likelihood to list abroad in order to avoid the low comparability with local industry peers that use the same set of accounting standards.

Second, comparability may increase in the number of comparable firms – industry peers that use the same set of accounting standards (Chapter 2; Brochet et al., 2012). One of the important results of the worldwide adoption of IFRS is the increase in the number of industry peers that use the same set of accounting standards throughout the world. If IFRS are applied uniformly across all countries around the world, foreign IFRS-reporting industry peers may provide the same level of comparability as domestic IFRS-reporting industry peers do. In this case, investors will have no difficulties in comparing domestic IFRS-reporting firms with foreign IFRS-reporting industry peers, and IPO firms will have no reason to list abroad in order to benefit from comparability with foreign industry peers. However, institutional characteristics of each country may affect cross-border comparability under IFRS (DeFond et al., 2011; Chapter 2). If improvements in comparability under IFRS can be only ensured when they are accompanied with efficient institutional characteristics (Ball, 2006), then comparability among IFRS-reporting industry peers will be meaningful only when these industry peers are within a country with efficient institutional characteristics. In this case, IFRS-reporting IPO firms may have stronger incentive to list abroad as the number of foreign industry peers that also use IFRS increases.

> *Hypothesis* $4_{\text{Foreign IFRS industry peers}}$: The adoption of IFRS does not affect an IPO firm's likelihood to list abroad in order to increase comparability with foreign industry peers that use the same set of accounting standards.

3.3 Sample Selection and Study Design

3.3.1 SAMPLE SELECTION

Panel A of Table 3.1 presents sample selection procedure. A sample of all IPOs worldwide over a period 2000 and 2011 is used, which is available at the SDC database. IPO observations are excluded from the sample if (1) they are in investment offices, real estate investment trusts, or miscellaneous investing industries (SIC code = 6722, 6726, 6798, 6799), or their industry classifications are unavailable, (2) total proceeds are unavailable, or (3) data for the stock exchanges are unavailable. Consistent with previous studies, shares issued by the same firm within 75 days are considered to be from identical offerings. If a firm lists on multiple exchanges, I keep only one observation per firm. If some of the shares of an IPO are offered outside the IPO firm's home country (within its home country), the IPO is regarded as a global IPO (a domestic IPO). These procedures provide a sample of 11,799 IPO firm observations.

Each IPO firm's accounting data during the last fiscal year prior to the offer date is obtained from Worldscope database. Stock market index data are from Datastream. Country-level data such as market capitalization, GDP, and stock market turnover are from World Bank database. The difference between domestic GAAP and IFRS (*IFRSdiff*) is from Bae et al. (2008). A country's disclosure practice index, which is used to calculate the *Bonding* variable, is from Djankov et al. (2008). Mandatory IFRS adoption year for each country in the sample is hand-collected from various sources, such as the World Bank or the IASPlus website of Deloitte. The final sample consists of 6,977 IPO firms with available data (hereafter, "Full sample").

Panel B of Table 3.1 presents descriptive statistics of the variables used. *Global IPO*, which equals one if an IPO can be considered as a global IPO and zero otherwise, is the dependent variable of this study. The mean value of *Global IPO* means that 10.6% of the sample IPO firms list abroad, which is close to previously reported percentage of global IPOs (Caglio et al., 2011). *IFRS* equals one if an IPO firm reports in IFRS, according to Worldscope database and zero otherwise. *Bonding* equals one if an index of periodic disclosure requirements (e.g. annual reports) in an IPO firm's home country is lower than median; 0 otherwise. The index is from a survey of countries' disclosure requirements (Djankov et al., 2008). #*CompLocal* is the number of local comparable firms – industry peers that use the same set of accounting standards. #*CompForeign* is the number of foreign comparable firms. Since Datastream

database does not distinguish differences among different domestic GAAPs, [31] #*CompForeign* is, by construction, the number of foreign comparable firms that use IFRS.[32] *Asset* is total asset in U.S. million dollars scaled by the inflation rate against the U.S. CPI as of 2000. %*Foreign sale* is the percentage of foreign sales. *IFRSdiff* is the difference in accounting standards between IFRS and domestic GAAP of a country where an IPO firm is listed (Bae, Tan, and Welker, 2008) and 0 if the country mandates IFRS. This variable is scaled by the maximum difference, and ranges between 0 and 1. *MktRet* is the average daily market return (expressed in percentages) of an IPO firm's home country for the year prior to the offer date. *MktCap/GDP* (*Turnover/GDP*) is market capitalization (trading volume) to GDP of an IPO firm's home country.

A voluntary adopter sample consists of (1) IFRS-IPO firms that voluntarily use IFRS before their home country's mandatory adoption of IFRS, and (2) a sample of domestic GAAP-IPO firms, matched with voluntary IFRS-IPO firms by industry, home country, and year. Panel A of Table 3.2 presents the number of the sample IPOs classified by their home countries. Chinese IPO firms consist of the largest part of the voluntary IFRS-reporting sample (153 = 129+24), followed by the U.K. (32), German (27), and Hong Kong IPOs (13). [33] With respect to the number of global IPOs, Chinese firms list abroad most actively (86.3% = 277/321), followed by Israeli (4.0%) and Hong Kong IPOs (1.8%). In total, 26.0% (=321/(321+915)) of the voluntary adoption sample are global IPOs. In the meantime, 53.5% (= 153/(153+133)) of IFRS-reporting IPOs are global IPOs whereas 17.7% (= 168/(168+782)) of domestic GAAP-reporting IPOs are global IPOs.

Panel B of Table 3.2 shows that proceeds size relative to total market capitalization (*Proceeds/MktCap*) is much larger for global IPOs than for domestic IPOs (1.60 versus 0.76), which is

[31] I follow Table A1 of Daske et al (2011) in categorizing Datastream's codification of accounting standards into IFRS, U.S. GAAP, and other domestic GAAP.

[32] I do not distinguish U.S. GAAP from other domestic GAAPs nor do treat U.S. GAAP as international accounting standards that are accepted in countries out of the U.S. While some prior literature regards U.S. GAAP as an international accounting standards (Leuz and Verrecchia, 2000), it is debatable whether U.S. GAAP are a set of international accounting standards.

[33] This paper regards Chinese IPO firms listing in Hong Kong as global IPOs, since Hong Kong and China are quite different in terms of the major variables used in this study. The disclosure practices of Chinese listed firms are categorized as poor (*Bonding* = 1), whereas that of Hong Kong is credible (*Bonding* = 0). The number of local industry peers that use the same set of accounting standards for Chinese IPO firms is 84.0, but that for Hong Kong IPO firms is 30.0.

consistent with previous findings. However, when global IPOs and domestic GAAP IPOs are partitioned into IFRS-reporting and domestic GAAP-reporting IPOs, *Proceeds/MktCap* is particularly large for IFRS-reporting domestic IPOs (1.99). *Bonding* is higher for global IPOs than for domestic IPOs (0.90 versus 0.75). #*CompLocal* is larger for domestic GAAP IPOs than for global IPOs (106.3 versus 46.3), which is consistent with an argument that the level of comparability with local industry peers affects IPO firms' decision to list abroad. #*CompForeign* is larger for global IPOs than for domestic IPOs (279.2 versus 142.9), which is consistent with an argument that IFRS-reporting IPO firms list abroad when they can benefit from the comparability with foreign industry peers that also use IFRS.

Mandatory adoption sample consists of a test sample and a control sample. The test sample consists of IPO firms (1) that are domiciled in home countries that adopt IFRS in 2005 and (2) that did not voluntarily adopt IFRS before 2005 nor do voluntarily adopt domestic GAAP after 2005. They are from 25 countries in total. The control sample consists of IPO firms (1) that are domiciled in home countries that did not adopt IFRS up until 2011, and (2) that did not voluntarily adopt IFRS during the sample period. They are from 12 countries in total. Panel A of Table 3.3 presents the number of the sample IPOs classified by their home countries. U.K. IPOs (468) are the largest among the test sample (1,762), followed by Australian IPOs (302). Japanese IPOs (1,268) are the largest among the control sample, followed by U.S. IPOs (1,188). In total, 12.0% (=580/(580+6,034)) of the mandatory adoption sample are global IPOs. In the meantime, 6.1% (= 205/(205+3,134)) of pre-2005 IPOs are global IPOs whereas 11.1% (= 375/(375+2,990)) of post-2005 IPOs are global IPOs.

Panel B of Table 3.3 shows that proceeds size relative to total market capitalization (*Proceeds/MktCap*) is much larger for global IPOs in pre-2005 period (12.34 versus 1.17). However, the difference in *Proceeds/MktCap* between global IPOs and domestic IPOs is much smaller in the post-2005 period (4.11 versus 1.42). *Bonding* is higher for global IPOs than for domestic IPOs (0.81 versus 0.57). #*CompLocal* is larger for domestic IPOs than for global IPOs (167.2 versus 76.1). It is surprising to see the mean values of #*CompForeign* are much smaller in this mandatory adopter sample (61.9 and 66.1) than those in the voluntary adopter sample (279.2 and 142.9; see Panel B of Table 3.2). This is partly because firms voluntarily list use IFRS when they have a large number of foreign industry peers that use IFRS.

3.3.2 STUDY DESIGN

This paper models a probit regression that estimates the likelihood of an IPO firm to list in a foreign country (*Global IPO* = 1) instead of their home country (*Global IPO* = 0). That is, for the voluntary adoption sample, I use Equation (1) as a model. The major variables of interest include *IFRS*, which equals one if an IPO firm is domiciled in a country that mandates IFRS in the year the firm goes public and 0 otherwise.

$$Prob(Global\ IPO) = \Phi(\beta_0 + \beta_1 IFRS + \beta_2 \log(Proceeds/MktCap) + \beta_3 IFRS \times \log(Proceeds/MktCap) + \beta_4 Bonding + \beta_5 IFRS \times Bonding + \beta_6 log(\#CompLocal) + \beta_7 IFRS \times log(\#CompLocal) + \beta_8 IFRS \times log(\#CompForeign) + \boldsymbol{X'B}). \quad (1)$$

Proceeds/MktCap, Bonding, and #*CompLocal* are measures of the three motivations for IPO firms to list abroad. *Proceeds/MktCap* is proceeds size, scaled by the total stock market capitalization of the IPO firm's home country. *Bonding* equals 1 if an index of periodic disclosure requirements in an IPO firm's home country is lower than median; 0 otherwise. *#CompLocal*, which is a proxy for the level of comparability in a country, is the number of local comparable firms –industry peers that use the same set of accounting standards as an IPO firm. As more local industry peers use IFRS (domestic GAAP), comparability under IFRS (domestic GAAP) in the home country increases. Similarly, *#CompForeign* is the number of foreign comparable firms that use IFRS. ICB (Industry Classification Benchmark) codes are used to identify industries. $\Phi(\cdot)$ stands for the standard normal distribution function.

For the mandatory adoption sample, I use Equation (2) as a model. The major variables of interest include *Post*, which equals one if the offer date is after January 2005. Then I compare each coefficient estimated from the test sample with that from the control sample.

$$Prob(Global\ IPO) = \Phi(\beta_0 + \beta_1 Post + \beta_2 \log(Proceeds/MktCap) + \beta_3 Post \times \log(Proceeds/MktCap) + \beta_4 Bonding + \beta_5 Post \times Bonding + \beta_6 log(\#CompLocal) + \beta_7 Post \times log(\#CompLocal) + \beta_8 Post \times log(\#CompForeign) + \boldsymbol{X'B}). \quad (2)$$

3.4 RESULTS

3.4.1 PROBIT REGRESSION ANALYSIS: VALIDITY OF THE VARIABLES

Before examining the effect of the worldwide IFRS adoption on firms' decision to list abroad, I examine whether variables of interest – *Proceeds/MktCap*, *Bonding*, and #*CompLocal* – are valid proxies that explain firms' motivations to list abroad. Results using the full sample are presented at Table 3.4; IPO

firms' likelihood of listing abroad (*Global IPO*) is regressed on the three variables of interest and other control variables. Results are consistent with previous findings. Estimated coefficient on log(*Proceeds/MktCap*) is significantly positive; firms list abroad when they raise large proceeds relative to their home country's total market capitalization. Estimated coefficient on *Bonding* is significantly positive; firms list abroad when they can bond to credible disclosure practices in a foreign country. Also, results show that firms regard comparability with industry peers as an important factor in deciding whether to list abroad. Estimated coefficient on log(*#CompLocal*) is significantly negative; firms show lower likelihood to list abroad when they have a large number of industry peers in their home country.

3.4.2 PROBIT REGRESSION ANALYSIS: VOLUNTARY ADOPTION SAMPLE

One of the key issues for this study is to partition sample into voluntary adopters and mandatory adopters. For IPO firms that voluntarily adopt IFRS, it is required to control for firms' self-selection of accounting standards between IFRS and domestic GAAP. Mandatory adopter sample is relatively free from self-selection problem compared with voluntary adopter sample, since the use of IFRS by firms in mandatory adopter sample can be considered an exogenous treatment. Table 3.5 presents the estimates of probit regressions using the voluntary adoption sample, which consists of voluntary IFRS-reporting IPO firms and domestic GAAP-reporting IPO firms that are matched with IFRS-reporting IPO firms by year, industry, and home country.

Results show that the stand-alone *IFRS* does not explain much about firms' decision to list abroad; the coefficients on *IFRS* (-0.123 and 0.218) are insignificant. Nevertheless, when the variable *IFRS* is interacted with other variables that proxy for firms' motivations to list abroad, the interaction terms significantly explain firms' decision to list abroad.

Estimated coefficient on the interaction term between log(*Proceeds/MktCap*) and *IFRS* is significantly negative; firms voluntarily adopting IFRS have less incentive to list abroad to raise a large amount of capital. This result implies that firms can raise enough proceeds in their home country when they voluntarily report in IFRS, possibly because they can attract foreign investors in their home country (Covrig et al., 2007).

Estimated coefficient on *IFRS*×*Bonding* is significantly positive; firms voluntarily adopting IFRS have stronger bonding incentive to list in a foreign country with credible disclosure practices. This result is consistent with an argument that firms' incentive plays a key role in benefitting firms that voluntary adopt IFRS; firms gain from voluntary adoption only when they are in a country that provides a strong incentive to disclose credible financial statements (Daske et al., 2011).

Estimated coefficient on *IFRS*×log(*#CompLocal*) is significantly negative, incremental to the coefficient on log(*#CompLocal*). The negative coefficient on the stand-alone log(*#CompLocal*) shows that expected comparability with local industry peers reporting in domestic GAAP provides IPO firms with reduced incentive to list abroad. However, this impact of expected comparability with domestic GAAP-reporting local peers on IPO firms' listing-abroad likelihood (-0.285) is smaller in magnitude than the impact of expected comparability with IFRS-reporting local industry peers (-1.00 = -0.285 - 0.715). These results show that IPO firms expect greater comparability with voluntary IFRS-reporting local industry peers than with domestic GAAP-reporting local industry peers. In the meantime, estimated coefficient on *IFRS*×log(*#CompForeign*) is significantly positive; foreign industry peers that use IFRS provide IPO firms with incentive to list abroad.

3.4.3 PROBIT REGRESSION ANALYSIS: MANDATORY ADOPTION SAMPLE

Table 3.6 presents the estimates of probit regressions using the mandatory adoption sample, which consists of IPO firms that are mandated to use either IFRS (the test sample) or domestic GAAP (the control sample). Specifically, the test sample is made up with IPO firms that (1) are domiciled in countries that adopt IFRS in 2005, and (2) did not voluntarily adopt IFRS. The control sample is made up with IPO firms that (1) are domiciled in home countries that did not adopt IFRS up until 2011, and (2) did not voluntarily adopt IFRS during the sample period.[34] Variable *Post* equals one if the offer date is after January 2005. Results show that firms' overall likelihood to list abroad does not change around 2005; the stand-alone coefficients on *Post* (-1.100 and -0.191) are insignificant.

[34] The sum of the mandatory adoption sample (6,614) and the voluntary adoption sample (1,236; see Table 3.5) is not necessarily the same as the full sample (6,977; see Table 3.4 and Table 3.1). This is because some of the matched domestic GAAP-reporting IPO firms in voluntary adoption sample is also used for the control sample of the mandatory adoption sample.

Estimated coefficient on *Post*×log(*Proceeds/MktCap*) is significantly negative for the test sample (-0.256); following mandatory IFRS adoption, firms have less incentive to list abroad to raise a large amount of capital. However, the coefficient on the same variable for the control sample is also negative (-0.020), and the difference in the coefficient between test and control sample is insignificant (-0.237). This insignificant difference implies that when a decreasing trend around 2005 in the incentive to list abroad to raise large capital is considered, the incentive of mandatory IFRS-adoption firms indeed does not change meaningfully following the adoption. The results in estimated coefficient on *Post*×*Bonding* is similar; although the estimated coefficient using test sample is significantly negative (-0.558), a similar trend is observed using the control sample (-0.314), resulting in an insignificant difference between test and control sample (-0.244).

Estimated coefficient on *Post*×log(*#CompLocal*) for the test sample is insignificantly negative (-0.181). However, that for the control sample is positive (0.074), resulting in a significant difference between the test and control sample (-0.255); relative to the control sample, test sample IPO firms mandated to use IFRS more tend to list abroad following IFRS adoption as the number of local industry peers decreases. Estimated coefficient on *Post*×log(*#CompForeign*) is significantly positive (0.338); foreign industry peers provide IPO firms with incentive to list abroad following IFRS adoption.

3.5 Conclusion

IFRS have become widely used throughout the world since 2005, and still researchers provide mixed evidence of whether the adoption of IFRS provides net benefit for firms. Since IFRS have been developed as globally accepted accounting standards, the benefits of worldwide adoption of IFRS are most likely to be reaped by firms actively financing in global capital market. Global IPOs, which construct the sample in this paper, have drawn researchers' attention for the past few decades. However, little has been understood about how the worldwide adoption of IFRS affects global IPO activity.

This paper investigates three motives for IPO firms to list abroad, i.e., (1) to raise relatively large proceeds, (2) to bond to credible disclosure practices in a foreign country, and (3) to benefit from expected comparability with other industry peers, around IFRS adoption. Results show that IPO firms voluntarily adopting IFRS decrease proceeds size in listing abroad, that the likelihood of IPOs to list abroad to bond to credible disclosure practices increases, and that the likelihood of IPO firms to list

abroad decreases (increases) in the number of local (foreign) industry peers. However, the results for IPO firms that are mandated to adopt IFRS are mostly insignificant, except for the decrease (increase) in likelihood to list abroad in order to benefit from comparability with local (foreign) industry peers following mandatory IFRS adoption. Overall, these results show that while some explanations about IPO firms' listing abroad hold in the early 2000s, others are less conclusive following the worldwide adoption of IFRS.

TABLE 3.1
Descriptive Statistics of Full Sample

Panel A: Sample Selection

Description	# of obs.
IPO firms in 2000-2011 with non-missing identification data in SDC	11,799
(Firm-level data is unavailable in Datastream)	(1,896)
(Country-level data is unavailable in World Bank database and other sources)	(1,303)
(IPO firms that neither voluntarily adopt IFRS nor are domiciled in countries that adopt IFRS after 2005)	(1,636)
IPO firms in the final sample	6,977

Panel B: Descriptive Statistics

	Mean	Min.	Q1	Median	Q3	Max.
Global IPO	10.6%	0	0	0	0	1
IFRS	13.7%	0	0	0	0	1
Proceeds/MktCap	1.30bps	0.00bps	0.04bps	0.14bps	0.55bps	32.85bps
Bonding	59.4%	0	0	1	1	1
#CompLocal	152.2	0	25	78	186	1053
#CompForeign	39.7	0	0	0	0	586
log(Asset)	0.24	0.00	0.02	0.07	0.19	2.86
%Foreign Sale	9.5%	0	0	0	0	1
ROA	1.9%	-104.8%	1.4%	5.1%	9.4%	34.7%
log(Growth)	7.9%	-23.6%	0.0%	0.2%	4.8%	139.7%
Leverage	43.4%	2.0%	22.7%	41.1%	61.4%	121.0%
IFRSdiff	0.28	0	0.19	0.38	0.43	0.71
MktRet	5.0%	-16.4%	-0.2%	4.7%	9.8%	39.0%
MktCap/GDP	112.2%	21.3%	67.6%	104.0%	142.5%	368.6%
Turnover/GDP	123.8	6.7	56.9	109.3	164.1	365.4

The sample is constructed as follows. A sample of all IPOs worldwide over a period 2000 and 2011 is first downloaded from the SDC database. IPO firms with the SIC code 6722, 6726, 6798, or 6799 are excluded. IPOs offered within 75 days are considered to be the same issue. If a firm lists on multiple exchanges, I keep only one observation per firm, retaining 9,903 IPO firm observations. Firm-level data such as accounting standards, total asset, the percentage of foreign sales, ROA, leverage, growth, and the number of industry peers are from Datastream. Country-level data such as market capitalization, GDP, stock market turnover are from World Bank database. The difference between domestic GAAP and IFRS (*IFRSdiff*) is from Bae et al. (2008). A country's disclosure practice index, which is used to calculate the *Bonding* variable, is from Djankov et al. (2008).

Variable Definitions:

Global IPO = 1 if an IPO firm lists some of the shares outside of its home country; 0 otherwise.
IFRS = 1 if an IPO firm voluntarily adopts IFRS; 0 otherwise.
Proceeds/MktCap = An IPO firm's proceeds size, scaled by the total stock market capitalization of the IPO firm's home country. This variable is expressed in basis points (0.01%).
Bonding = 1 if an index of periodic disclosure requirements (e.g. annual reports) in an IPO firm's home country is lower than median; 0 otherwise. The index is from a survey of countries' disclosure requirements (Djankov et al., 2008).
#CompLocal = The number of domestic listed industry peers that use the same set of accounting standards as an IPO firm. ICB (Industry Classification Benchmark) codes are used to identify industries.

#CompForeign = The number of foreign listed industry peers that use the same set of accounting standards as an IPO firm. This variable equals 0 for IPO firms using domestic GAAP. ICB codes are used to identify industries.

Asset = Total asset (in U.S. million dollars) scaled by the inflation rate against the U.S. CPI as of 2000.

%Foreign sale = Percentage of foreign sales.

ROA = Return on asset.

Growth = Quarterly sales growth rate for the year prior to the offer year.

Leverage = Debt/total asset.

IFRSdiff = Difference in accounting standards between IFRS and domestic GAAP of the country where an IPO firm is listed (Bae, Tan, and Welker, 2008); 0 if a country mandates IFRS. This variable is scaled by the maximum difference, and ranges between 0 and 1.

MktRet = The average daily market return of an IPO firm's home country for the year prior to the offer date. This variable is expressed in percentages.

MktCap/GDP = Market Capitalization/GDP of an IPO firm's home country.

Turnover/GDP = Trading volume/GDP of an IPO firm's home country.

TABLE 3.2

Descriptive Statistics of Voluntary Adopter Sample

Panel A: The Number of IPOs by Home Countries

Country	IFRS adoption	Global IPO (*Global IPO* = 1) IFRS-IPO (*IFRS* = 1)	Global IPO (*Global IPO* = 1) Domestic GAAP-IPO (*IFRS* = 0)	Global IPO (*Global IPO* = 1) Total	Domestic IPO (*Global IPO* = 0) IFRS-IPOs (*IFRS* = 1)	Domestic IPO (*Global IPO* = 0) Domestic GAAP-IPO (*IFRS* = 0)	Domestic IPO (*Global IPO* = 0) Total
Brazil	2010	1	0	1	1	3	4
Canada	2011	0	0	0	1	1	2
China		129	148	277	24	490	514
Denmark	2005	0	0	0	1	1	2
France	2005	0	2	2	12	36	48
Germany	2005	0	2	2	27	31	58
Hong Kong	2005	5	1	6	8	26	34
India		1	0	1	0	2	2
Ireland	2005	2	2	4	0	0	0
Israel	2008	6	7	13	0	0	0
Italy	2005	0	0	0	11	6	17
Japan		0	1	1	2	46	48
Malaysia		1	0	1	1	15	16
Pakistan	2009	0	0	0	1	1	2
Poland	2005	0	0	0	1	1	2
Russia		0	1	1	2	1	3
Singapore		3	2	5	6	19	25
South Korea	2011	0	0	0	3	4	7
Switzerland		0	0	0	1	1	2
U.K.	2005	1	0	1	31	74	105
U.S.		4	2	6	0	24	24
Total		153	168	321	133	782	915

Panel B: Mean Values By IPO Type and Accounting Standards

	Global IPO (*Global IPO* = 1) IFRS-IPO (*IFRS* = 1)	Global IPO (*Global IPO* = 1) Domestic GAAP-IPO (*IFRS* = 0)	Global IPO (*Global IPO* = 1) Total	Domestic IPO (*Global IPO* = 0) IFRS-IPO (*IFRS*=1)	Domestic IPO (*Global IPO* = 0) Domestic GAAP-IPO (*IFRS* = 0)	Domestic IPO (*Global IPO* = 0) Total
Proceeds/MktCap	1.55	1.64	1.60	1.99	0.56	0.76
Bonding	0.87	0.93	0.90	0.54	0.78	0.75
#CompLocal	3.6	85.1	46.3	13.7	122.0	106.3
#CompForeign	279.2			142.9		

This table provides descriptive statistics for a sample, which consists of (1) IFRS-IPO firms that voluntarily use IFRS before their home country's mandatory adoption of IFRS, and (2) a matched sample of domestic GAAP-IPO firms, matched by industry, home country, and year.

Proceeds/MktCap is proceeds size relative to the total market capitalization of the domestic market, expressed in basis points (0.01%). *Bonding* is a proxy for IPO firms' incentive to report in a country with credible disclosure practices. This variable equals one if a country's level of disclosure requirements in periodic filings (e.g., annual reports), as developed by Djankov et al. (2008), is lower than the median across the countries in the sample; 0 otherwise. *#CompLocal* is the number of domestic listed industry peers that use the same set of accounting standards as an IPO firm. *#CompForeign* is the number of foreign listed industry peers that use the same set of accounting standards as an IPO firm. This variable equals 0 for IPO firms using domestic GAAP.

TABLE 3.3

Descriptive Statistics of Mandatory Adopter Sample

Panel A: The Number of IPOs by Home Countries

Country	Test/Control	Global IPO (*Global IPO* = 1)			Domestic IPO (*Global IPO* = 0)		
		Pre-2005 (*Post* = 0)	Post-2005 (*Post* = 1)	Total	Pre-2005 (*Post* = 0)	Post-2005 (*Post* = 1)	Total
Argentina	Control	2	6	8	1	2	3
Australia	Test	6	4	10	164	128	292
Austria	Test	3	5	8	0	5	5
Belgium	Test	0	2	2	3	9	12
China	Control	78	192	270	312	595	907
Czech	Test	0	3	3	0	1	1
Denmark	Test	0	0	0	7	9	16
Finland	Test	1	3	4	5	6	11
France	Test	6	0	6	104	32	136
Germany	Test	5	3	8	42	68	110
Greece	Test	8	4	12	24	8	32
Hong Kong	Test	16	10	26	212	17	229
Hungary	Test	0	0	0	0	1	1
India	Control	12	43	55	27	290	317
Indonesia	Control	1	3	4	43	61	104
Ireland	Test	9	4	13	0	1	1
Italy	Test	0	2	2	10	53	63
Japan	Control	1	2	3	727	538	1265
Luxembourg	Test	5	3	8	0	0	0
Malaysia	Control	0	3	3	157	123	280
Mexico	Control	2	4	6	4	7	11
Netherlands	Test	4	11	15	4	6	10
New Zealand	Test	2	3	5	8	2	10
Norway	Test	3	1	4	10	36	46
Philippines	Test	1	2	3	12	13	25
Poland	Test	1	1	2	3	76	79
Portugal	Test	1	1	2	4	2	6
Romania	Test	0	0	0	0	2	2
Russia	Control	2	8	10	1	4	5
Singapore	Control	4	7	11	151	98	249
South Africa	Test	3	1	4	1	6	7
Spain	Test	2	0	2	9	21	30
Sweden	Test	2	1	3	17	11	28
Switzerland	Control	4	1	5	3	1	4
Thailand	Control	1	2	3	68	73	141
U.K.	Test	13	8	21	359	88	447
U.S.	Control	7	32	39	642	507	1,149
Total		205	375	580	3,134	2,990	6,034

Panel B: Mean Values By IPO Type and Accounting Standards

	Global IPO (*Global IPO* = 1)			Domestic IPO (*Global IPO* = 0)		
	Pre-2005 (*Post* = 0)	Post-2005 (*Post* = 1)	Total	Pre-2005 (*Post* = 0)	Post-2005 (*Post* = 1)	Total
Proceeds/MktCap	12.34	4.11	7.02	1.17	1.42	1.29
Bonding	0.79	0.82	0.81	0.49	0.67	0.57
#CompLocal	49.7	90.4	76.1	176.2	157.4	167.2
#CompForeign		61.9			66.1	

This table provides descriptive statistics for the mandatory adopter sample, which consists of test sample and control sample. Test sample is made up with IPO firms (1) that are domiciled in home countries that adopt IFRS in 2005 and (2) that did not voluntarily adopt IFRS before 2005 and do not voluntarily adopt domestic GAAP after 2005. Control sample is made up with IPO firms (1) that are domiciled in home countries that did not adopt IFRS up until 2011, and (2) that did not voluntarily adopt IFRS during the sample period.

Proceeds/MktCap is proceeds size relative to the total market capitalization of the domestic market, expressed in basis points (0.01%). *Bonding* is a proxy for IPO firms' incentive to report in a country with credible disclosure practices. This variable equals one if a country's level of disclosure requirements in periodic filings (e.g., annual reports), as developed by Djankov et al. (2008), is lower than the median across the countries in the sample; 0 otherwise. *#CompLocal* is the number of domestic listed industry peers that use the same set of accounting standards as an IPO firm. *#CompForeign* is the number of foreign listed industry peers that use the same set of accounting standards as an IPO firm. This variable equals 0 for IPO firms using domestic GAAP.

TABLE 3.4

Full Sample: Probit Regression of the Likelihood of an IPO to List Abroad

	pred.	*coeff.*	χ^2*-stat.*	*coeff.*	χ^2*-stat.*
log(*Proceeds/MktCap*)	(+)			0.103**	(5.37)
Bonding	(+)			0.370***	(23.67)
log(*#CompLocal*)	(+)			-0.398***	(379.59)
Firm-level controls					
log(*Asset*)	(+)	0.442***	(80.16)	0.241***	(13.12)
%Foreign Sales	(+)	0.871***	(99.89)	0.636***	(46.24)
ROA	(?)	0.086	(0.28)	-0.109	(0.45)
log(*Growth*)	(?)	0.092	(0.87)	-0.002	(0.00)
Leverage	(-)	-0.545***	(26.87)	-0.438***	(15.21)
Country-level controls					
IFRSdiff	(+)	1.293***	(74.84)	1.403***	(71.09)
MktRet	(+)	1.008***	(15.18)	0.359	(1.70)
MktCap/GDP	(-)	-0.016	(0.11)	-0.079	(2.36)
Turnover/GDP	(-)	-0.002***	(16.16)	0.003***	(46.42)
Year fixed-effect		Yes		Yes	
Industry fixed-effect		Yes		Yes	
Pseudo R^2		19.0%		32.9%	
# Obs.		6,977		6,977	

This table presents the results of a probit-regression model that estimates IPO firms' likelihood of listing abroad (*Global IPO* = 1) against listing in their home country (*Global IPO* = 0). *Proceeds/MktCap* is proceeds size relative to the total market capitalization of the whole domestic market, expressed in basis points (0.01%). *Bonding* is a proxy for IPO firms' incentive to report in a country with credible disclosure practices. This variable equals one if a country's level of disclosure requirements in periodic filings (e.g., annual reports), as developed by Djankov et al. (2008), is lower than the median across the countries in the sample; 0 otherwise. *#CompLocal* is the number of domestic listed industry peers that use the same set of accounting standards as an IPO firm. See the endnotes of Table 3.1 for detailed definitions. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

TABLE 3.5

Voluntary Adoption Sample: Probit Regression Results for the Likelihood of Listing Abroad

	pred.	*coeff.*	χ^2*-stat.*	*coeff.*	χ^2*-stat.*
IFRS	(?)	-0.123	(0.36)	0.218	(0.11)
log(*Proceeds/MktCap*)	(+)	0.170	(1.02)	0.458**	(5.78)
IFRS×log(*Proceeds/MktCap*)	(?)			-0.520**	(6.43)
Bonding	(+)	1.568***	(16.77)	1.475***	(11.65)
IFRS×*Bonding*	(?)			0.565*	(2.81)
log(#*CompLocal*)	(-)	-0.575***	(64.44)	-0.285***	(8.93)
IFRS×log(#*CompLocal*)	(?)			-0.715***	(19.07)
IFRS×log(#*CompForeign*)	(?)			0.268**	(2.29)
Firm-level controls					
log(*Asset*)	(+)	0.117	(0.43)	0.269**	(5.24)
%Foreign Sales	(+)	1.026***	(17.79)	1.204***	(22.37)
ROA	(?)	2.053***	(11.42)	2.334***	(13.55)
log(*Growth*)	(?)	0.164	(0.41)	0.148	(0.31)
Leverage	(+)	0.040	(0.02)	0.063	(0.05)
Country-level controls					
IFRSdiff	(+)	-3.189***	(10.92)	-3.096***	(8.87)
MktRet	(+)	-0.007	(0.00)	-0.061	(0.01)
MktCap/GDP	(-)	-0.762***	(12.39)	-0.797***	(12.85)
Turnover/GDP	(-)	0.003	(1.02)	0.003	(1.46)
Year fixed-effect		Yes		Yes	
Industry fixed-effect		Yes		Yes	
Pseudo R^2		55.6%		57.7%	
# Obs.		1,236		1,236	

This table presents the results of a probit-regression model that estimates IPO firms' likelihood of listing abroad (*Global IPO* = 1) against listing in their home country (*Global IPO* = 0), using a sample of IPO firms that voluntarily use IFRS and their matched domestic GAAP-IPO firms. This sample consist of (1) IFRS-IPO firms that voluntarily use IFRS before their home country's mandatory adoption of IFRS, and (2) their matched domestic GAAP-IPO firms to the voluntary IFRS-IPO firms by industry, home country, and year.

Proceeds/MktCap is proceeds size relative to the total market capitalization of the whole domestic market, expressed in basis points (0.01%). *Bonding* is a proxy for IPO firms' incentive to report in a country with credible disclosure practices. This variable equals one if a country's level of disclosure requirements in periodic filings (e.g., annual reports), as developed by Djankov et al. (2008), is lower than the median across the countries in the sample; 0 otherwise. #*CompLocal* is the number of domestic listed industry peers that use the same set of accounting standards as an IPO firm. #*CompForeign* is the number of foreign listed industry peers that use the same set of accounting standards as an IPO firm. This variable equals 0 for IPO firms using domestic GAAP. See the endnotes of Table 3.1 for detailed definitions. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

TABLE 3.6

Mandatory Adoption Sample: Probit Regression Results for the Likelihood of Listing Abroad

		Test (a)		*Control* (b)		(a) - (b)	
	pred	*coeff.*	χ^2*-stat.*	*coeff.*	χ^2*-stat.*	*diff.*	χ^2*-stat.*
Post	(?)	-1.10	(1.19)	-0.19	(0.28)	-0.91	(0.72)
log(*Proceeds/MktCap*)	(+)	0.42***	(20.36)	0.16*	(2.94)	0.26*	(3.79)
Post×log(*Proceeds/MktCap*)	(?)	-0.26**	(5.18)	-0.02	(0.03)	-0.24	(2.29)
Bonding	(+)	0.46**	(5.50)	0.55***	(8.24)	-0.09	(0.11)
Post×*Bonding*	(?)	-0.56**	(4.53)	-0.31*	(3.27)	-0.24	(0.60)
log(#*CompLocal*)	(-)	-0.32***	(16.09)	-0.48***	(68.24)	0.07	(1.31)
Post×log(#*CompLocal*)	(?)	-0.18	(2.51)	0.07	(1.32)	-0.26*	(3.77)
Post×log(#*CompForeign*)	(?)	0.34*	(3.52)			0.34*	(3.52)
Firm-level controls							
log(*Asset*)	(+)	0.01	(0.00)	0.29***	(9.43)	-0.28*	(3.06)
%Foreign Sales	(+)	0.69***	(20.01)	0.96***	(41.72)	-0.27	(1.57)
ROA	(?)	-0.52**	(5.74)	-0.21	(0.52)	-0.317	(0.77)
log(*Growth*)	(?)	-0.20	(0.92)	0.19	(1.65)	-0.39	(2.32)
Leverage	(+)	0.12	(0.30)	-0.57***	(13.84)	0.68***	(6.84)
Country-level controls							
IFRSdiff	(+)	-0.46	(1.27)	1.73***	(17.57)	-2.20***	(14.23)
MktRet	(+)	-0.67	(0.54)	0.48	(1.77)	-1.14	(1.36)
MktCap/GDP	(-)	0.22**	(6.27)	-0.56***	(19.15)	0.78***	(25.28)
Turnover/GDP	(-)	0.00	(0.12)	0.01***	(52.06)	-0.01***	(19.68)
Year fixed-effect		Yes		Yes		Yes	
Industry fixed-effect		Yes		Yes		Yes	
Pseudo R^2		35.0%		29.3%		30.9%	
# Obs.		1,762		4,852		6,614	

This table presents the results of a probit-regression model that estimates firms' likelihood listing abroad (*Global IPO* = 1) against listing in their home country (*Global IPO* = 0), using a sample of IPO firms that are mandated to use either IFRS or domestic GAAP. This sample consists of a test sample and a control sample. The test sample is made up with IPO firms that (1) are domiciled in countries that adopt IFRS in 2005, and (2) did not voluntarily adopt IFRS. The control sample is made up with IPO firms that (1) are domiciled in home countries that did not adopt IFRS up until 2011, and (2) did not voluntarily adopt IFRS during the sample period.

Proceeds/MktCap is proceeds size relative to the total market capitalization of the domestic market, expressed in basis points (0.01%). *Bonding* is a proxy for IPO firms' incentive to report in a country with credible disclosure practices. This variable equals one if a country's level of disclosure requirements in periodic filings (e.g., annual reports), as developed by Djankov et al. (2008), is lower than the median across the countries in the sample; 0 otherwise. #*CompLocal* is the number of domestic listed industry peers that use the same set of accounting standards as an IPO firm. #*CompForeign* is the number of foreign listed industry peers that use the same set of accounting standards as an IPO firm. This variable equals 0 for IPO firms using domestic GAAP. See the endnotes of Table 3.1 for detailed definitions. Significance levels at the 10%, 5%, and 1%, two-tailed, are indicated by *, **, and ***, respectively.

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