



Do Ownership Restrictions Affect Firm Value? Evidence from Mexico

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ABSTRACT

In Mexico, firms are permitted to issue different classes of equity shares that appeal to different investors. Share classes differentiate between investors based on investor origin (domestic vs. foreign) and voting rights. We hypothesize and find an association between firm value and share class. In addition, we find this relation has changed over time, coinciding with improvements in Mexico's corporate governance and financial reporting environment. The results suggest firm value is lower in firms that restrict ownership to Mexican nationals (closed firms) compared to those that issue stock to non-Mexican investors (open firms). We contribute to the understanding of how firms make decisions about financing, ownership, and control.

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1. Introduction

In this paper, we investigate the association between the class of equity share issued and firm value. We use Mexican firms to examine this association as it provides a setting where domestic firms can issue equity share classes that are restricted to domestic ownership, or issue share classes that are open to both domestic and international individuals and institutions. Additionally, share classes differ with regards to voting rights. Prior research suggests that when firms issue multiple share classes, share classes with ownership restrictions are priced lower than shares classes without ownership restrictions (e.g., Domowitz, Glen, and Madhavan 1997). However, foreign investors' concerns of expropriation by better-informed and legally advantaged domestic investors also reduces share price and thus firm value (e.g., Doidge, Karolyi, and Stulz 2004). Our study provides empirical evidence on which effect, restriction of ownership or risk of expropriation, has a greater impact on firm value. We also examine this relation over time, as capital market factors changed significantly during the period we analyze. More broadly, this paper contributes to the knowledge of how market participants and firms interact when firms seek equity financing.

There are several primary types of equity share classes issued by Mexican firms. A-shares are limited to ownership by Mexican nationals, but other aspects such as cash flow and voting rights are the same as B-shares, which can be owned by international investors. When a firm issues only one class of common equity that fits neither the A nor B designation, these are deemed ORD-shares. L-shares are similar to B-shares in that there are no ownership restrictions, but L-shares have limited voting rights. Ownership of B-shares and L-shares are open to international individuals, partnerships, and corporations. These shares trade on the Mexican stock market and are denominated in Mexican pesos, as are all equity shares traded in Mexico. CPO-shares are technically shares issued by a trust, and are comprised of a combination of other types of shares (i.e., one CPO-share could be comprised of two A-shares and three B-shares). The Trust retains the voting rights of the underlying shares. Regardless of the class of shares issued, all firms must follow Mexican GAAP and comply with the listing requirements of the *Comisión Nacional Bancaria y de Valores* (CNBV), which is Mexico's financial markets regulator.¹

Although firms are permitted to issue multiple classes of equity, almost all firms issue only one class of equity. The precise determinants of firms' share class choice are an open question in the literature because firm data is available only for the beginning the year the firm has issued shares and become public. Therefore, the data needed to analyze the determinants of share class choice is unavailable. However, it is likely that a company's choice of share class is not random, and depends on factors such as firm size, industry, and profitability. In our statistical tests, we control for the factors likely to have influenced the share class decision in order to isolate the specific association between share class and firm value.

Domowitz, Glen, and Madhavan (1997) argue that restricting ownership reduces the price of equity shares. Their fundamental argument is that restricting ownership reduces the demand for a stock because there are fewer potential investors. All else equal, a lower level of demand will result in a lower equilibrium price for the stock. An implication of their argument is that for companies issuing multiple classes of shares, A-shares will trade at a lower price than B-shares, and companies issuing B-shares will have a higher firm value. Their findings generally are consistent with this argument and support the model of Stulz and Wasserfallen (1995) that firms issue different share classes of equity to attract specific investor clienteles.

Conversely, a large body of literature in accounting and finance find evidence that investors have

¹ The CNBV is the Mexican National Banking and Securities Commission, which is comparable to the U.S. Securities and Exchange Commission. It is tasked with regulating and enforcing capital market and banking activity.

a bias toward investing in their domestic stock market instead of holding an internationally diversified portfolio (e.g., Ahearne, Grier, and Warnock 2004; Kang and Stulz 1997). This literature suggests that investors face additional exchange-rate risk and information risk when investing internationally compared to investing domestically, and these risks are exacerbated in countries with weak investor protection. Therefore, when valuing equity, international investors apply a higher discount rate than domestic investors. As a result, the estimated value of the stock is lower to international investors than domestic investors. This implies that expanding ownership to include international investors grows the investor base, but international investors place a lower value on the stock, which overall reduces the firm's stock price. In Mexico, this implies that A-shares will trade at a higher price than B-shares, and firm value will be lower in companies issuing B-shares.

Although the expected effect of equity share classes and firm value is relatively straightforward, Mexico's regulatory and financial reporting environment has changed substantially over the past 20 years. Specifically, in 1999, Mexican officials drafted a best practices corporate governance code. Initially, compliance with the governance code was voluntary, but in June of 2001, sections of the governance code became law.² In addition, financial reporting frequency increased to a quarterly reporting from annual reporting (Familiar Calderón 2003) and regulations required firms to file electronic financial reports with the the *Bolsa Mexicana de Valores* (hereafter the *Bolsa*), which is Mexico's primary stock exchange. Electronic reporting enables timely, low-cost access to financial reports for all investors (World Bank 2003).

In addition to changes in governance and market regulations, Mexico re-issued their generally accepted accounting principles in 2007. The goal of the revised standards was to converge Mexican GAAP toward IFRS, in preparation for complete adoption of IFRS for publicly traded companies in 2012 (PricewaterhouseCoopers 2013). Prior research shows that adoption of IFRS is associated with an increase financial reporting quality and comparability (i.e., Soderstrom & Sun 2007; Armstrong, Barth, Jagolinzer and Riedl 2010). Finally, partially due to pegging the Mexican Peso to the U.S. Dollar, since 2001 inflation in Mexico has remained stable, ranging between four and six percent (World Bank 2014) Mexico's Central Bank has engaged in foreign exchange interventions aimed at achieving a specific stock of international reserves and tempering foreign exchange volatility. These interventions have occurred since Mexico adopted a free-floating exchange rate regime in December 1994 (Cano, R., Gallardo, D., & Acosta, J., 2019). An extended period of macro-economic stability is a new phenomenon in Mexico, which experienced financial crises on a regular basis throughout the twentieth century. In sum, changes in the financial reporting environment and macro-economic policy have substantially reduced information risk and exchange-rate risk for international investors over the past 20 years.

We study the association between firm value and ownership structure by exploiting changes in Mexico's regulatory and financial reporting environment and examining firm value across firms that issue only one equity share class.³ We measure firm value using Tobin's Q, which is used extensively in accounting and finance literature (e.g., Doidge et al. 2004; Li, Wang, and Guo 2017). We compute Tobin's Q for all firms listed on the *Bolsa* that have the requisite financial and return data in *Economática* from 1998-2011.

We partition our sample into two time periods (early and late) based on changes in information risk and exchange-rate risk. The early time period includes 1998-2006 and includes changes to Mexico's

² In 2003, the *Comisión Nacional Bancaria y de Valores* (CNBV) issued the *Circular Única de Emisoras* (*Circular Única*, or CU). The CU updated the 1975 Security Market Law (*Ley del Mercado de Valores*), and required more complete compliance with the new governance code.

³ Our sample consists of firms that had only issue one class of equity as only four firms during our sample period issued multiple classes of equity and had all data necessary to run our analyses. Thus, because our research design, time period, and sample structure differ from that of Domowitz et al. (1997), our results are not directly comparable.

financial reporting and regulatory environment, and macro-economic stabilization. The late period covers 2007-2011, and is a period of relative stability in Mexico's regulatory and financial reporting environment.

We hypothesize that in the early period, high exchange-rate risk and information risk leads international investors to expect a higher cost of capital when valuing shares, and therefore firm value is *lower* in firms with B-shares (those with international and domestic investors) compared to firms with A-shares (those with only domestic investors). However, we argue that changes in the regulatory and financial reporting environment reduce exchange-rate and information risk, leading to higher valuations from international investors in the late period. Thus, we hypothesize that in the late period firm value is *higher* for firms with B-shares compared to firms with A-shares. In addition, since L-shares are similar to B-shares in that they have no ownership restrictions, but have limited voting rights, we predict that firm value is lower for firms with L-shares compared to B-shares in both time periods. The results of our tests support these hypotheses.

Next, we investigate differences between firms cross-listed in the United States, and those only listed in Mexico. Cross-listing in the United States subjects Mexican firms to increased disclosure and regulatory compliance, and therefore reduces information and expropriation risk (e.g., Coffee 2002; Doidge et al. 2004). B-shares and L-shares that are cross-listed are technically American Depositary Receipts (ADRs). A United States bank purchases equity shares, in pesos, on the *Bolsa*. The bank then sells certificates to investors (the certificates are the ADRs) which provide the investor the right to dividends from the underlying equity shares. ADRs trade on major stock exchanges in the United States, and investors can profit from the appreciation in value of the ADR as with any other stock. Mexican firms issuing ADRs are subject to stock exchange requirements in the United States. Therefore, we hypothesize that cross-listed firms have higher value than firms listed only on the *Bolsa*. The results for the early time period support this hypothesis. In the late time period, we find no association between cross-listing and firm value, suggesting improvements in the Mexican capital markets have decreased the benefit of cross listing.

This paper makes several contributions. First, our study contributes to the literature on investor clienteles. Our findings suggest that firms' choice of equity share class impacts not only which investors own shares in the firm, but how they value the firm. Therefore, firms should consider the likely investor response to the different share classes when deciding which class to issue. Thus, we build on Domowitz et al. (1997) in updating and expanding the analysis of share class and firm value in Mexico.

We also contribute to a large and growing literature on firm value in an international setting (e.g., Doidge et al. 2004; Dyck and Zingales 2005; Durnev and Kim 2005). Specifically, most prior literature focuses on how firm value changes for firms operating in different institutional environments (i.e., between firms in different countries). However, we exploit within-country (intra-country) differences in the institutional environment to examine the impact of share class on firm value and how it changes over time.

Finally, the results of this paper are useful for market participants and regulators in Mexico. The findings suggest the policy changes implemented in Mexico over the past twenty years have reduced the information risk and currency exchange risk for international investors, and thereby helped improve the Mexican capital markets.

This paper is organized as follows. In the next section, we provide a literature review and develop our hypotheses. In the third section, we review our research design and sample selection. In section four we discuss our empirical results. Then we provide additional analyses in a robustness test. Our final section provides our conclusion.

2. Literature review and hypothesis development

There are several institutional aspects about the Mexican economy and capital market pertinent to this paper. First, as discussed in the introduction, Mexican firms can issue multiple series (or classes) of equity shares. A-shares and B-shares are most common, but other share classes are gaining popularity. A-shares are limited to ownership by Mexican nationals while B-shares are open to ownership by institutions and foreign investors. A-shares and B-shares have the same voting rights and rights to cash flows (Valles 2012). L-shares are similar to B-shares in that they are open to all investors. However, L-shares have limited voting rights. In addition, large family ownership with effective control of a firm is common in Mexico (Machuga and Teitel 2007). Thus, minority shareholders, and particularly foreign owners, are in a disadvantaged legal position and face greater risk of expropriation from controlling owners.

Next, Mexico has a code law tradition, and the judicial system is not always expedient or transparent (Chong and Lopez-de-Silanes 2007). Prior research indicates that the legal protection of minority investors in Mexico is historically relatively weak (La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1997; Djankov, La Porta, Lopez-de-Silanes, and Shleifer 2008). However, strong protection of minority shareholders is important in attracting capital, particularly from foreign investors.

Third, there have been substantial changes to accounting standards in Mexico over the past twenty years. For example, there have been revisions to those standards regarding inflation adjustments. Specifically, in 1997, Mexican GAAP eliminated replacement cost adjustments and in 2007 Mexican GAAP eliminated the consumer price index adjustments in financial reporting.⁴ These revisions converged Mexican GAAP toward IAS 29, *Financial Reporting in Hyperinflationary Economies* and were made feasible by macroeconomic stability, and particularly the value of the Peso.⁵

Finally, financial reporting regulations have changed as well. In 1999, new regulations required a shift to quarterly reporting instead of annual reporting for public companies. In 2001, the CNBV updated the 1975 Security Market Law (*Ley del Mercado de Valores*) to require firms to use some portions of the new best practices corporate governance code. Compliance with the code had previously been recommended but not required. In 2003, the CNBV issued the *Circular Única de Emisoras* that mandated additional aspects of the governance code and included other best practices similar to the Sarbanes-Oxley Act of 2002 in the United States. Prior research examines the impact of the governance code on earnings quality. Specifically, Machuga and Teitel (2007) compare earnings quality before voluntary adoption of the code (1998-1999) to after voluntary adoption of the code (2001-2002). Using several earnings quality measures, they find that earnings quality improved following the adoption of the governance code.

We investigate how firm value varies across companies issuing different classes of equity shares across different two distinct regulatory and financial reporting time periods. First, we define the early time period as 1996-2006. During this period, Mexico was undergoing substantial changes in financial reporting regulations and accounting standards. On a macro-economic level, the country went through a period of relatively instability before becoming more stable by the end of this period. Second, we define the late period as 2007-2011. Following the changes in the regulatory and financial reporting environment during the early period, during the late period, there was stability in governance, macro-

⁴ Our data is from calendar years 1996-2011. From 2007 forward, firms have comparable financial statement information (i.e., financial statement data was not inflation-adjusted in this period). To account for inflation in the data preceding 2007, we inflation-adjust the financial data from 1996-2006 to 2007 price levels.

⁵ According to the World Bank (2014), in 1990, inflation was approximately 27%, and declined to approximately 7% by 1994. During the currency crisis of the mid-1990s, inflation reached 35%, before falling to about 6% in 2001. Since 2001, inflation has remained stable in the 4% to 6% range.

economic policy, and accounting standards.

The early time period can be characterized by low levels of investor protection (La Porta et al. 1997; Djankov et al. 2008), which increased the risk of expropriation. For example, Bhattacharya, Daouk, Jorgenson and Kehr (2001) find insider trading explains why the *Bolsa* is not a semi-strong form efficient stock market. Doidge et al. (2004) find in countries with lower levels of investor protection, the private benefits of control are greater, and firm value is lower. High levels of macro-economic instability created high exchange-rate risk for international investors. Financial reporting quality was lower, since corporate governance quality was lower and Mexican GAAP generally followed local traditions and standards. This increased information risk to international investors. These factors all contribute to international investors placing a lower valuation on Mexican firms issuing B-shares. This reduces the price of B-shares and the firm value of companies which issue B-shares. Thus, our first hypothesis, stated in the alternative form, is as follows:

H1: *In the early time period, firm value is **lower** for companies issuing B-shares than companies issuing A-shares.*

As noted above, there are differences in the financial reporting environment in the late compared to the early period. First, Mexico enjoyed macro-economic stability due in part to the sporadic interventions of Mexico's Central Bank in foreign exchange markets since Mexico started to free-float the Mexican Peso/USD Dollar exchange rate. Thus, exchange-rate risk for international investors was largely eliminated. Next, adoption of the governance code improved earnings quality (Machuga and Teitel 2007; Price, Roman, and Rountree 2011), and firm value is generally higher with higher quality earnings. Finally, Mexico re-issued its accounting standards in 2007 to converge towards IFRS. Accounting standards that are more comparable to international standards reduces information risk faced by investors. These factors all contribute to reducing the discount international investors had previously placed on B-shares. Thus, international investors will be willing to a higher price for B-shares in the late period. In turn, firm value is higher for firms issuing B-shares due to increased demand for B-shares as a result of the higher price for B-shares. Thus, our second hypothesis, stated in the alternative form, is:

H2: *In the late time period, firm value is **higher** for companies issuing B-shares than companies issuing A-shares.*

Next, both B-shares and L-shares are open to international ownership by individuals and institutions. However, L-shares carry limited voting rights. We expect the limited voting rights associated with L-shares are associated with lower firm value. Thus, our third hypothesis is:

H3: *In both time periods, firm value is **higher** for companies issuing B-shares than companies issuing L-shares.*

Finally, we investigate the association between firm value and cross listing. Coffee (2002) suggests that cross-listing bonds a firm to an increased level of disclosure, monitoring, and enforcement. Empirical evidence generally supports this hypothesis (e.g., Reese and Weisbach 2002; Doidge et al. 2004). Therefore, our fourth hypothesis is:

H4: *In both time periods, firm value is **higher** for cross-listed companies than companies listed only in Mexico.*

3. Research design and sample selection

Research Design

To test our hypotheses, we measure firm value using Tobin's Q, a commonly used measure in accounting and finance literature. Intuitively, Tobin's Q captures the market value of a firm's assets

compared to the replacement cost of a firm's assets. Since replacement cost is difficult to estimate, practitioners and academics use the book value of assets as a proxy for the replacement cost. For similar reasons, the book value of debt is used as a proxy for the market value of debt. Thus, Tobin's Q is computed as the market value of equity plus the book value of debt, divided by the book value of assets.

To provide a univariate test of our first two hypotheses, we compare the average Tobin's Q for companies issuing A-shares compared to companies issuing B-shares. A *lower* Tobin's Q for companies with B-shares during the early period supports our first hypothesis, while a *higher* Tobin's Q for companies with B-shares during the late period supports our second hypothesis. Next, we compare the Tobin's Q for B-shares and L-shares. Our third hypothesis predicts a higher Tobin's Q for B-shares in both time periods. Finally, we test the correlation of Tobin's Q and cross-listing to provide initial evidence on our fourth hypothesis.

In addition to our univariate tests, we conduct a more complete and robust statistical analysis using multiple regression to control for other factors found in prior literature to relate to firm value. Specifically, we implement the following regression equation:

$$\begin{aligned} \text{Tobin's } Q = & a + \beta_1 \text{B-Shares} + \beta_2 \text{ORD-Shares} + \beta_3 \text{L-Shares} + \beta_4 \text{Other-Shares} \\ & + \beta_5 \text{CrossList} + \beta_6 \text{Size} + \beta_7 \text{ROA} + \beta_8 \text{Loss} + \beta_n \text{Year} \\ & + \beta_n \text{Industry} + \varepsilon \end{aligned} \quad (1)$$

We include indicator variables for share classes B, ORD, L, and Other, leaving share class A as the omitted category. This allows us to interpret the coefficient on each indicator variable as the marginal impact of that share class compared to A-shares (i.e., the share class permitting only domestic investors). *CrossList* is an indicator variable equal to one if the firm is cross-listed in the United States and zero otherwise. Additionally, we include several control variables shown in prior literature to impact firm value. The first control variable is *Size*, measured as the natural log of total assets. This variable proxies for the firm's overall disclosure level (e.g., Lang and Lundholm 1996). Next, we control for firm profitability with *ROA*, measured as net income divided by end of period total assets. All else equal, we expect firms with greater profitability to have a higher value. Hayn (1995) finds that earnings of firms making losses are less informative. Therefore, we include an indicator variable, *Loss*, equal to one if net income is negative and zero otherwise. Finally, the regression model includes year and industry indicator variables.

To test our hypotheses, we partition our data into the early time period and the late time period. We run the regression separately for both time periods. The coefficient on β_1 provides evidence on our first two hypotheses. In the early period, a negative coefficient on β_1 would provide support for H1, while in the late period, a positive coefficient on β_1 provides empirical support for H2. In both time periods, we conduct an F-test to compare the coefficients for *B-shares* (β_1) and *L-shares* (β_3). H3 predicts that β_1 is greater than β_3 in both time periods. Finally, H4 predicts that β_5 is positive in both time periods.

Sample Selection

Our sample is comprised of publicly traded firms in Mexico from 1996-2011. The late time period ends in 2011, as by that time the significant changes to the capital market environment have occurred. The institutional factors affecting firm value have largely been stable since then. The financial data comes from *Economática*, a commercial data provider specializing in Latin American companies. After excluding financial institutions and retaining all the observations with the necessary financial data to conduct the regression analysis, our final sample consists of 3,756 firm-quarter observations. Since Mexican GAAP required an inflation adjustment until 2007, we inflation adjust pre-2007 financial data to 2007 price levels. Finally, we winsorize all continuous variables at the upper and lower 1% levels to reduce the impact of outliers.

4. Empirical results

We present a breakdown of observations in Table 1. Panel A shows that the number of observations per year increasing over time, but that the increase is fairly small and steady. The number of observations per share class is presented in Panel B for each time period. The percentage of observations in each share class is similar across the two time periods. For example, *A-shares* are 18.88% of the sample in the early time period and 17.55% of the sample in the late time period, while *B-shares* are 37.20% of the sample in the early time period and 37.53% of the sample in the late time period. Thus, the results of our study are unlikely due to a change in sample composition.

Table 1: Sample Description

Panel A: Observations per Year				
Year	Number		Percent	
Early Period (1996-2006)				
1996	171		4.55	
1997	201		5.35	
1998	225		5.99	
1999	225		5.00	
2000	218		5.80	
2001	199		5.30	
2002	173		4.61	
2003	181		4.82	
2004	225		5.99	
2005	220		5.86	
2006	282		7.51	
	2,320		61.77	
Late Period (2007-2011)				
2007	302		8.04	
2008	280		7.45	
2009	296		7.88	
2010	323		8.60	
2011	235		6.26	
	1,436		38.23	
Total	3,756		100	
Panel B: Observations by Share Class				
Class	Early Period (1996-2006)		Late Period (2007-2011)	
	Securities	Percent	Securities	Percent
<i>A-Shares</i>	438	18.88	252	17.55
<i>B-Shares</i>	863	37.20	539	37.53
<i>CPO-Shares</i>	147	6.34	112	7.80
<i>L-Shares</i>	48	2.07	38	2.65
<i>ORD-Shares</i>	367	24.74	367	25.56
<i>Miscellaneous-Shares</i>	250	10.78	128	8.91
Total	2,320	100.00	1,436	100.00

Summary statistics for the sample are presented in Table 2, Panel A. The mean *Tobin's Q* is 1.29. As expected, the average market value of assets is larger than the replacement cost of those assets. The average *ROA* is about 3%, firms report a loss (*Loss* = 1) about 17% of the time, and approximately 27% of firms are cross-listed (*Crosslist* = 1).

Table 2: Summary Statistics

Variable	Mean	Median	SD	Min	Max
<i>Tobin's Q</i>	1.29	0.89	1.53	0.26	12.31
<i>Size</i>	16.03	16.13	1.66	12.18	19.09
<i>ROA</i>	0.03	0.025	0.04	-0.10	0.16
<i>Loss</i>	0.17	0.00	0.37	0.00	1.00
<i>CrossList</i>	0.27	0.00	0.44	0.00	1.00

Tobin's Q is measured as the sum of the market value of common equity plus book value of debt, divided by book value of assets. *Size* is measured as the natural log of total assets. *ROA* is net income divided by total assets. *Loss* is an indicator variable equal to one for loss firm-quarters and zero otherwise. *CrossList* is an indicator variable equal to one if the firm is cross-listed and zero otherwise.

The reported statistics are based on 3,756 observations.

In Table 3 we present a correlation matrix for *Tobin's Q* and the control variables. The results show that *Tobin's Q* is positively correlated with *Size* and *ROA*, and negatively correlated with *Loss*. These results suggest it is appropriate to include these control variables in our regression analyses. The positive correlation between *Tobin's Q* and *Crosslist* provides initial univariate support for our fourth hypothesis.

Table 3: Correlation Matrix

	<i>Tobin's Q</i>	<i>Size</i>	<i>ROA</i>	<i>Loss</i>	<i>Crosslist</i>
(1) <i>Tobin's Q</i>	1.000				
(2) <i>Size</i>	0.109‡	1.000			
(3) <i>ROA</i>	0.055‡	0.131‡	1.000		
(4) <i>Loss</i>	-0.049‡	-0.202‡	-0.603‡	1.000	
(5) <i>CrossList</i>	0.169‡	0.428‡	-0.036*	-0.015	1.000

Correlation coefficients are listed in the table. ‡ and * indicate *p-values* of less than 0.01 and 0.05, respectively. *Tobin's Q* is measured as the sum of the market value of common equity plus book value of debt, divided by book value of assets. *CrossList* is an indicator variable equal to one if the firm is cross-listed and zero otherwise. *Size* is measured as the natural log of total assets. *ROA* is net income divided by total assets. *Loss* is an indicator variable equal to one for loss firm-quarters and zero otherwise.

The correlation coefficients are based on 3,756 observations.

In Table 4, we present the results of the univariate tests of our first three hypotheses. Specifically, we compare the *Tobin's Q* for firms with *A-shares* compared to *B-shares* separately for the early time period and the late time period. We also compare *Tobin's Q* for firms with *L-shares* compared to *B-shares* separately for the early time period and the late time period.

During the early time period, the mean *Tobin's Q* (i.e., firm value) for firms with only *A-shares* is 0.912. *Tobin's Q* in firms with only *B-shares* is 0.898, and *Tobin's Q* for firms with only *L-shares* is 0.811. The results of the t-tests indicate the differences in the means are not statistically significant. Although the mean of *Tobin's Q* for *A-shares* is greater than the mean for *B-shares* (H1), the results of the t-tests indicate that this difference is not statistically significantly different from zero. Thus, the results in Table 4 do not provide univariate support for H1. The mean of *Tobin's Q* for *B-shares* in the early time period is greater than the mean for *L-shares* (H3), but the results of the t-tests indicate that this difference is also not statistically significantly different from zero. Thus, the univariate evidence in Table 4 does not support H3 in the early time period.

During the late time period, the mean *Tobin's Q* (i.e., firm value) for firms with *A-shares* is 0.991, for firms with *B-shares* is 1.323, and for firms with *L-shares* is 0.977. The results of the t-tests indicate the mean is higher for firms with *B-shares* compared to firms with *A-shares*. This result is statistically significant and provides univariate support for H2. The mean of *Tobin's Q* is greater for firms with *B-shares* compared to firms with *L-shares*. This result is statistically significant and provides univariate support for H3 in the late time period.

Table 4: Univariate tests

Panel A: Early period comparison of Tobin's Q					
Share Class	Observations	Mean	SD	Min	Max
<i>A-Shares</i>	438	0.920	0.764	0.283	9.099
<i>B-Shares</i>	863	0.898	0.895	0.263	12.312
<i>L-Shares</i>	48	0.811	0.243	0.579	1.543
T-Test <i>A-Shares</i> = <i>B-Shares</i>	p=0.665				
T-Test <i>B-Shares</i> = <i>L-Shares</i>	p=0.502				

Panel B: Late period comparison of Tobin's Q					
Share Class	Observations	Mean	SD	Min	Max
<i>A-Shares</i>	252	0.991	0.363	0.510	2.414
<i>B-Shares</i>	539	1.323	0.969	0.368	10.041
<i>L-Shares</i>	38	0.977	0.446	0.539	1.774
T-Test <i>A-Shares</i> = <i>B-Shares</i>	p=0.000				
T-Test <i>B-Shares</i> = <i>L-Shares</i>	p=0.029				

Tobin's Q is measured as the sum of the market value of common equity plus book value of debt, divided by book value of assets.

For a more robust statistical test of our hypotheses, we conduct regression analysis and control for variables that could influence the results. Specifically, we implement the model in equation (1). We include indicator variables for firms issuing *B-Shares*, *L-Shares*, *ORD-Shares*, and *Other-Shares*, with *A-Shares* serving as the omitted category. Thus, the coefficients on each share class indicator variable represent the marginal effect relative to *A-shares*. The results are presented in Table 5.

Table 5: Regression Analysis of Firm Value and Share Class

Dep. Variable: Tobin's Q	(1)		(2)	
	Early time period		Late time period	
<i>B-Shares</i>	-0.367***	(0.000)	0.503***	(0.000)
<i>CPO-Shares</i>	0.773***	(0.000)	2.601***	(0.000)
<i>L-Shares</i>	-0.820***	(0.000)	-1.061***	(0.000)
<i>ORD-Shares</i>	-0.173**	(0.032)	0.497***	(0.000)
<i>Other-Shares</i>	-0.265**	(0.015)	0.994***	(0.000)
<i>CrossList</i>	0.860***	(0.000)	0.005	(0.955)
<i>Size</i>	-0.162***	(0.000)	0.075**	(0.020)
<i>ROA</i>	1.781**	(0.026)	1.687	(0.191)
<i>Loss</i>	-0.142	(0.108)	-0.215**	(0.046)
Year Indicators	Included		Included	
Industry Indicators	Included		Included	
Constant	2.697***	(0.000)	-0.739	(0.143)
Observations	2,320		1,436	
Adjusted R ²	0.232		0.370	
F-test	F=16.01	(0.000)	F=52.08	(0.000)
<i>B-Shares</i> = <i>L-Shares</i>				

P-values are reported in parentheses. *, **, *** indicate significance at 10%, 5% and 1% levels based on two-tailed tests. *Tobin's Q* is measured as the sum of the market value of common equity plus book value of debt, divided by book value of assets. *CrossList* is an indicator variable equal to one if the firm is cross-listed and zero otherwise. *Size* is measured as the natural log of total assets. *ROA* is net income divided by total assets. *Loss* is an indicator variable equal to one for loss firm-quarters and zero otherwise. For complete variable definitions see the Appendix.

Column (1) reports the results for the early period and column (2) reports the results for the later period. The coefficient on *B-Shares* provides evidence on the first two hypotheses. In the early time period, the coefficient (p-value) on *B-Shares* is -0.367 (0.000). This indicates that on average, firms issuing *B-Shares* have a Tobin's Q that is 0.367 lower than firms issuing *A-Shares* which supports our first hypothesis. In the late time period, the coefficient (p-value) on *B-Shares* is 0.503 (0.000). This indicates that on average, firms issuing *B-Shares* have a Tobin's Q that is 0.503 higher than firms issuing *A-Shares* which supports our second hypothesis. In addition to being statistically significant, these results are economically meaningful. Overall, the results in Table 5 supports H1 which suggest that in the early period, firm value was lower in firms with domestic and international investors relative to those with only domestic investors. The results in Table 5 also support H2 and suggests that in the later period, firm value was higher for firms issuing stock to domestic and international investors relative to those issuing stock to only domestic investors.

To provide evidence on H3, we conduct an F-test to determine whether the coefficients on *B-Shares* and *L-Shares* are statistically different from zero. Our prediction is that firms issuing *B-Shares* will have a higher value than firms issuing *L-Shares*. Our results support H3. Specifically, the coefficient on *B-shares* is positive and significant (coefficient = -0.367, p-value < 0.001) and the coefficient on *L-shares* is negative and significant (coefficient = -0.820, p-value < 0.001) in the early period. Additionally, the coefficient on *B-shares* is positive and significant (coefficient = 0.503, p-value < 0.001) and the coefficient on *L-shares* is negative and significant (coefficient = -1.061, p-value < 0.001) in the late period. Results of the F-tests indicate a p-value of < 0.001 in both time periods. This suggests that when ownership is open to international investors, firm value is higher when international investors have voting rights.

Finally, the coefficient on *CrossList* provides evidence on H4. In the early time period, the coefficient (p-value) on *CrossList* is 0.860 (0.000), indicating firms that cross-list have a significantly higher *Tobin's Q* than firms which only list on the *Bolsa*. However, in the late time period, the coefficient (p-value) on *CrossList* is 0.005 (0.955), indicating there is no increase in value for cross listed firms compared to domestically listed firms. These results provide mixed evidence in support of H4, and suggest that in the early period, cross-listing may have served as a way to subject the firm to stronger external monitoring than that available in Mexico. The absence of this result in the later period provides some evidence to indicate that the improvements in Mexico's financial reporting and regulatory environment improved enforcement and monitoring in Mexico.

Overall, our results generally support our hypotheses. The results of the first three hypotheses are economically and statistically significant. Not only is share class an important determinant of firm value, but the ownership restrictions and voting rights associated with different classes of shares are associated with investors valuations of the firm, even in the same regulatory and financial reporting environment. The results of H4 in the early period support our prediction that cross-listing was a method firms could use to increase value in the early time period. However, after improvements in the Mexican capital markets, we no longer observe benefits to cross-listing in the late period.

5. Robustness tests

We confirm the robustness of our findings using an alternative research design. Specifically, in Table 5 we report results from two separate regressions, one for the late time period and one for the early time period. An alternative approach is to conduct a single regression with an indicator variable for the late time period (*Late*) and an interaction term between the late period indicator and each share class and cross-listing variable. Using this approach, we find similar results both in terms of statistical and

economic significance. We report these results in Table 6. The statistical interpretation is less intuitive and more complex than the results in Table 5, and therefore we present it as a robustness test instead of as our primary specification.

Table 6: Regression Analysis of Firm Value and Share Class

Dep. Variable: Tobin's Q	(1)	
<i>B-Shares</i>	-0.281***	(0.000)
<i>CPO-Shares</i>	0.769***	(0.000)
<i>L-Shares</i>	-0.901***	(0.000)
<i>ORD-Shares</i>	-0.021	(0.808)
<i>Other-Shares</i>	-0.154*	(0.081)
<i>B-Shares*Late</i>	0.725***	(0.000)
<i>CPO-Shares*Late</i>	1.950***	(0.000)
<i>L-Shares*Late</i>	0.072	(0.703)
<i>ORD-Shares*Late</i>	0.330***	(0.000)
<i>Other-Shares*Late</i>	1.063***	(0.000)
<i>Late</i>	-1.781***	(0.000)
<i>CrossList</i>	0.817***	(0.000)
<i>Size</i>	-0.128***	(0.000)
<i>ROA</i>	1.672**	(0.039)
<i>Loss</i>	-0.114	(0.191)
<i>CrossList*Late</i>	-0.664***	(0.000)
<i>Size*Late</i>	0.127***	(0.000)
<i>ROA*Late</i>	1.429	(0.343)
<i>Loss*Late</i>	-0.278	(0.278)
Year Indicators	Included	
Industry Indicators	Included	
Constant	2.173	(0.000)
Observations	3,756	
Adjusted R ²	0.293	

P-values are reported in parentheses. *, **, *** indicate significance at 10%, 5% and 1% levels based on two-tailed tests. *Tobin's Q* is measured as the sum of the market value of common equity plus book value of debt, divided by book value of assets. *CrossList* is an indicator variable equal to one if the firm is cross-listed and zero otherwise. *Size* is measured as the natural log of total assets. *ROA* is net income divided by total assets. *Loss* is an indicator variable equal to one for loss firm-quarters and zero otherwise. For complete variable definitions see the Appendix.

In addition, we consider several alternative measures of our key variables to ensure that measurement choice is not driving our results. We repeat our analyses measuring firm size with revenue instead of assets, and calculating profitability (ROA) using income before interest and taxes instead of net income. In all instances, the results (untabulated) are quantitatively and qualitatively similar to those presented in the tables.

6. Conclusion

In this paper, we examine the association between firm value and equity share class. Mexico provides a powerful setting to investigate how ownership and voting restrictions associated with different share classes are associated with firm value. We exploit changes in Mexico's financial reporting and regulatory environment to examine how firm value differs across share classes for an early period (1996-2006) and the late period (2007-2011). The early period was a time of relatively weak monitoring and enforcement, with an improving economy and financial reporting environment. The late period has a

relatively stronger regulatory and financial reporting environment. Using Tobin's Q as a proxy for firm value, we hypothesize and find that in the early period, firm value is lower for firms issuing shares with voting rights to domestic and international investors (B-shares) than those issuing shares to purely domestic investors (A-shares). We also hypothesize and find that this relation reverses in the late period. This suggests that in the early period, international investors placed a valuation discount on Mexican firms, but not in the later period after improvements in the regulatory and reporting environment.

We also examine how valuation differs across firms that issue stock to international investors, but with voting right restrictions. We hypothesize and find that firm value is lower for companies issuing shares without voting rights (L-shares) compared to those with full voting rights (B-shares). This is true across both time periods, which suggests that even when regulatory and accounting changes have improved that capital market environment, ownership restrictions hurt firm value. In the late period, we find that firm value is lower for companies issuing only to domestic investors (A-shares) compared to those issuing voting shares to domestic and international investors (B-shares). In contrast, we find that in the early time period, private benefits of controls dominate and firm value is higher for companies issuing to only domestic investors (A-shares) as opposed to those issuing voting shares to domestic and international investors (B-shares).

Our paper makes several contributions. First, we contribute to the literature regarding investor segmentation. We build on Domowitz et al. (1997) by exploring how the association between firm value and share class has changed following changes to Mexico's financial reporting and regulatory environment. Next, we add to the literature examining firm value in an international setting (e.g., Doidge et al. 2004; Dyck and Zingales 2005; Durnev and Kim 2005). Specifically, many prior studies investigate how institutional differences impact different variables of interest across countries. However, we hold the institutional environment constant and are able to examine both share class and cross listing as important determinants of firm value in two distinct regulatory and financial reporting time periods.

Finally, the results of our study should be of interest to market participants and regulators in Mexico and other developing economies. Our results indicate that the policy changes implemented in Mexico over the past twenty years have reduced information risk and exchange-rate risk for international investors, and thereby improved capital markets in Mexico. Such improvements in other developing economies could have similar implications.

References

- Ahearne, A., Grier, W. & Warnock, F. (2004). Information costs and home bias: An analysis of US holdings of foreign equity. *Journal of International Economics*, 62, 313-336.
- Armstrong, C., Barth, M., Jagolinzer, A., & Riedl, E. (2010). Market reaction to the adoption of IFRS in Europe. *The Accounting Review*, 85 (1), 31-61.
- Bhattacharya, U., Daouk, H., Jorgenson, B., & Kehr, C. (2000). When an event is not an event: The curious case of an emerging market. *Journal of Financial Economics*, 55, 69-101.
- Cano, R., Gallardo, D., & Acosta, J. (2019) Mexico: free-floating exchange regime, in M Chamon, D Hofman, N Magud and A Werner (eds), *Foreign exchange intervention in inflation targeters in Latin America*, International Monetary Fund, Chapter 11.
- Chong, A. & Lopez-de-Silanes, F. (2007). Investor protection and corporate governance, firm-level evidence across Latin America. Stanford University Press/The World Bank / The Inter-American Development Bank.
- Coffee, J. (2002). Racing towards the top? The impact of cross-listings and stock market competition on international corporate governance. *Columbia Law Review*, 102, 1757-1831.

- Durnev, A., & Kim, H. (2005). To steal or not to steal: Firm attributes, legal environment, and valuation. *Journal of Finance*, 60, 1461-1493.
- Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The law and economics of self-dealing. *Journal of Financial Economics*, 88, 430-465.
- Doidge, C., Karolyi, G. A., & Stulz, R. M. (2004). Why are foreign firms listed in the U.S. worth more? *Journal of Financial Economics*, 71(2), 205-238.
- Domowitz, I., Glen, J. & Madhavan, A. (1997). Market segmentation and stock prices: Evidence from an emerging market. *Journal of Finance*, 52(3), 1059-1085.
- Dyck, A., & Zingales, L. (2004). Private benefits of control: An international comparison. *Journal of Finance*, 59, 537-600.
- Familiar Calderón, J. (2003). Gobierno corporativo en México: Evolución, avances y retos. Paper presented to the Inter-American Development Bank, second meeting of the regional forum on corporate governance and the financial sector. Washington, DC. November 14.
- Hayn, C. (1995). The information content of losses. *Journal of Accounting and Economics*, 20, 125-153.
- Kang, J., & Stulz, R. (1997). Why is there home bias? An analysis of foreign portfolio equity ownership in Japan. *Review of Financial Economics*, 46, 3-28.
- Lang, M., & Lundholm, R. (1996). Corporate disclosure policy and analyst behavior. *The Accounting Review*, 71(4), 467-492.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *Journal of Finance*, 52(3), 1131-1150.
- Li, J., Wang, B., & Guo, H. (2017). Private equity characteristics, earnings management & firm value. *International Review of Accounting, Banking and Finance*, 9(1), 39-58.
- Machuga, S. & Teitel, K. (2007). The effects of the Mexican corporate governance code on quality of earnings and its components. *Journal of International Accounting Research*, 6 (1), 37-55.
- Price, R., Román, F., & Rountree, B. (2011). The impact of governance reform on performance and transparency. *Journal of Financial Economics*, 99, 76-96.
- PricewaterhouseCoopers (2013). IFRS adoption by country. Last found at <http://www.pwc.com/us/en/issues/ifrs-reporting/publications/ifrs-status-country.jhtml>
- Reese, W. A. & Weisbach, M. S. (2002). Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. *Journal of Financial Economics*, 66(1), 65-104.
- Soderstrom, N., & Sun, K. (2007). IFRS adoption and accounting quality: A review. *European Accounting Review*, 16(4), 675-702.
- Stulz, R., & Wasserfallen, W. (1995). Foreign equity investment restrictions, capital flight, and shareholder wealth maximization: Theory and evidence. *Review of Financial Studies*, 8, 1019-1057.
- Valles, Y. (2012). Los cambios en la ley del mercado de valores, el valor informativo de los anuncios y el uso de la información privilegiada. *Estudios Económicos CNBV*, Vol. 1. 35-74.
- World Bank. (2003). Report on the observance of standards and codes: Corporate governance country assessment. Washington, DC.
- World Bank. (2014). *World development indicators*. Retrieved from <http://data.worldbank.org/indicator/FP.CPI.TOTL.ZG>

APPENDIX

Variable Definitions

<i>A-Shares</i>	An indicator variable for firms which issue common shares with ownership restricted to Mexican nationals.
<i>B-Shares</i>	An indicator variable for firms which issue common shares open to ownership by Mexican or foreign individuals or corporations.
<i>CPO-Shares</i>	An indicator variable for firms which issue an Ordinary Participation Certificate. This is issued by a trust, and consists of a mix of shares i.e., one CPO could consist of one A-share, two B-shares, and three L-shares.
<i>L-Shares</i>	An indicator variable for firms which issue common shares open to ownership by Mexican or foreign individuals or corporations, with limited voted rights.
<i>ORD-Shares</i>	Common shares without an explicit series; the ORD designation requires that firms issue only one type of shares.
<i>Miscellaneous-Shares</i>	Other types of issuances (C, D, or V), that are open to ownership by Mexican and foreign investors, with no voting rights.
<i>Other-Shares</i>	An indicator variable used in regression analysis for firms which issue <i>CPO-Shares</i> or <i>Miscellaneous-Shares</i> .
<i>Tobin's Q</i>	The market value of a firm's assets divided by the replacement cost of a firm's assets. Computed as: (market value of equity + book value of debt)/book value of assets
<i>CrossList</i>	An indicator variable equal to one if the firm is cross-listed and zero otherwise.
<i>Size</i>	The natural log of total assets, measured at the end of the period.
<i>ROA</i>	Net income divided by end of period total assets.
<i>Loss</i>	An indicator variable equal to one for loss firm-quarters and zero otherwise.