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Firm Value, Cross-Listing Premium and the Sarbanes-Oxley Act

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Abstract

This paper presents empirical evidence on the effects of the Sarbanes-Oxley Act of 2002 on the value of firms and on the cross-listing choice of firms destined to three major markets in North America, Asia and Europe. We use dynamic panel data methods and treatment effects methods to find that Sarbanes-Oxley has had a negative impact on the value of firms worldwide. However, the effect of Sox on the cross-listing decision is positive in the US destination and negative in the Germany destination; and the Hong Kong destination seems to attract cross-listing of firms with lower valuations relative to the US and Germany destination. In terms of the cross-listing decision, the evidence is in favor of crowding in the market where the accounting standards are better, lending support to the signaling and bonding hypotheses of cross-listing choice.

Keywords: Cross-listing, Sarbanes-Oxley, dynamic panel data, treatment effects.

JEL Classification Codes: G0, G3.

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1. Introduction

The U.S. financial markets have been one of the best locations in the world to conduct business. However, dubious accounting procedures led by the Enron and WorldCom debacles have brought about significant governance changes in the U.S. markets in the early 21st century. The Sarbanes-Oxley Act (Sox) was passed by Congress in 2002 to raise the level of governance and transparency within the U.S. framework. After the imposition of Sox, the U.S. still ranks highly in terms of international exchanges. According to Table 1, the U.S. markets in 2006 ranked first and second in terms of total share trading value.¹ Since the imposition of the Sarbanes-Oxley Act tightening corporate accounting and governance requirements, some foreign companies may have shied away from the United States capital markets. Additionally, foreign companies currently listed in the United States could delist voluntarily if they believed the additional costs added on via Sox compliance outweigh the benefits of cross-listing.² Back in 1996, there was a spike in new ADRs (American Depositary Receipts)³ cross-listings and U.S. listings, coinciding with the peak of the booming Initial Public Offerings (IPO) market. In that year, the annual number of new Level II and Level III ADR cross-listings reached its peak, but by 2000, new ADR cross-listings significantly decreased. In addition, new Level II and III ADR cross-listings in 2004 and 2005 were at their lowest level since 1992. An adjustment period after the thriving and widely successful 90's would be expected, but a noticeable shift occurred in 2002. The number of ADR de-listings began to increase while the number of domestic de-listings began to level off and actually fell in 2005.⁴

In this paper, we are interested in the effects of the Sarbanes Oxley act on worldwide capital markets. In particular, whether or not Sox had an effect on the market

¹ However, from 2005 to 2006, the US was unable to raise as much investment capital as other markets, e.g. World Federation Exchange 2006 Annual Report

² A study reported in The Economist, 2005 found that the overall cost of Sarbanes-Oxley compliance in fiscal year 2004-05 was \$1.4 trillion.

³ The ADR program permits individuals in US markets to invest in non-US firms in US dollar-denominated receipts redeemable by specialized US financial institutions (Depositories) in the underlying shares.

⁴ See www.adr.com for information on new listings and de-listing ratios.

value of firms; whether or not Sox had an effect on cross-listings worldwide; and whether or not Sox had a contagion effect on firm value and a substitution versus contagion effect on cross-listings world-wide. Sox could eventually have had an impact on the market value of firms through the increased cost of compliance. Since the cost is incurred in the US market, a significant effect in other international markets would lead to a contagion effect on the value of firms. In addition, the impact of Sox on firm value could eventually decrease the number of listings in the U.S. thus leading to a substitution effect in which those foreign companies tended to cross-list in other international markets. The alternative would be a contagion effect on cross-listings in which Sox could have an adverse effect on cross-listings in foreign markets. On the other hand, the benefits of cross-listing, mainly from the perspective of signaling and corporate governance standards could outweigh the costs and a potential crowding in of listings could be possible in the country where standards are raised. In this latter case, we would expect that with higher financial reporting standards and more stringent corporate governance, firms willing to abide by those rules and regulations face additional costs to listing in the U.S. and thus would command a higher premium for cross-listing in the U.S.

Based on a WorldScope panel data set which includes 49,416 firm's valuations over a six year period of time, from 2000 to 2005, spanning 31 countries, we present empirical evidence on the effect of Sox on firm value, controlling for cross-listing in the US, Germany, and Hong Kong destinations; thus representing three major geographic destinations: North America, Asia and Europe. We use simple univariate methods, dynamic panel methods and treatment effects methods and find that Sarbanes-Oxley (Sox) has had a consistent negative impact on the market value of firms in this period. The evidence from differences in means is that, in Hong Kong, the cross-listing premium is consistently negative in 2000-2005, in Germany it becomes negative after 2001 and in the US after 2004. The dynamic panels show that Honk Kong commands a significant discount on the value of a firm cross-listing there, relative to firms that do not cross-list there. However, we do not identify a cross-listing premium in the US or Germany destination in this sample. The evidence from treatment effects confirms that Sarbanes-Oxley impacted negatively on the value of firms. However, the effect of Sox on the cross-listing decision is positive in the US

destination and negative on the Germany destination; and the Hong Kong destination seems to attract cross-listing of firms with lower valuations relative to the US and Germany destination. In terms of the cross-listing decision, the evidence is in favor of crowding-in the market where the accounting standards are better, lending support to the signaling and corporate governance hypotheses for cross-listing choice. There seems to be widespread contagion of Sox on the value of firms worldwide, controlling for several other factors. However, even though the effect of Sox on the US destination is positive, we cannot identify a positive cross-listing premium in the US, whereas we find negative premiums in Hong Kong and Germany.

The rest of the paper is organized as follows. In the next section, we review the Sarbanes-Oxley Act, compare the costs and institutional arrangements of cross-listing in the U.S., Hong Kong, and Germany and review the literature. Section 4 describes the data while section 5 presents the main empirical results. The last section offers concluding remarks.

2. International Listings and the Sarbanes-Oxley Act of 2002.

Firms' tend cross-list abroad for four common reasons.⁵ Market segmentation allows investors to escape cross-border barriers to investment. Liquidity effects reduce costs in then sense that the greater liquidity the lower the spreads. The information or signaling hypothesis is based on the premise that cross-listing signals market participants about the financial health of the firm. Finally, the corporate governance hypothesis or "bonding" assumes that firms, whom domestically have poor governance standards, often list their securities on countries with more rigorous governance procedures.⁶

⁵ Karolyi (1998, 2005) conducted a thorough review of the cross-listing literature, and Bianconi and Tan (2008) describe those reasons in detail.

⁶ For the information hypothesis, see Cantale (1996), Fuerst (1998), Moel (1999), Baker, Nofsinger and Weaver (2002), Lang, Lins and Miller (2003) and Bailey, Karolyi and Salva (2005). For the corporate governance hypothesis, see Coffee (1999, 2002) and Stulz (1999), Doidge, Karolyi and Stulz (2004) and Doidge (2004).

2.1 The Sarbanes-Oxley Act of 2002

The Sarbanes-Oxley Act (Sox) was passed in July 2002 with the main goal of protecting investor interests. The Act first established the Public Company Accounting Oversight Board (PCAOB), which works together with the SEC to oversee auditors of public companies. The PCAOB operates under the same jurisdiction as the SEC and has the authority to discipline violators of the Act and impose penalties. It sets out guidelines separating board members from public accounting firms, and defines auditing, quality control, independence standards and rules, and disciplinary actions and procedures.⁷

In terms of compliance, Sox applies to firms that⁸: i. Have securities registered under section 12 of the Exchange Act; ii. Are required to file reports under section 15d of the Exchange Act; iii. File or have filed a registration statement that has not yet become effective under the Securities Act of 1933 and that they have not been removed. Because Sox does not distinguish between U.S. and non-U.S. firms, and does not exempt non-U.S. firms from its effects, the provisions that apply to U.S. firms also apply to non-U.S. firms unless they are specifically excluded by a related provision of the Exchange Act or the Securities Act.

The Sox allows the SEC to determine where and how to apply its provisions to non-U.S. firms. Certain provisions in the Securities Act and Exchange Act do mandate different treatment for different levels of ADR firms. As shown in Table 2, Level I ADRs

⁷ Section two of the act states the functions of auditors and clarifies their independence from their clients. Subsection 201 details which functions cannot be performed by public accounting firms together with an audit in order to prevent conflicts of interest in firm accounting. Other sections outline audit partner rotations, accounting firm reporting procedures, and executive officer independence. Section three defines corporate responsibility. It creates public company audit committees consisting of board members who cannot receive remittance outside of service on the board; declares that executive officers must accompany their financial statements with a protestation certifying accuracy with failure to include this document must be knowing and intentional to ensure liability; gives federal courts the authority to penalize executives who attempt to change financial statements by granting any favors to investors. Section four explains disclosure and internal audit procedures. It prohibits loans to executives and presents a timeline for disclosure of executive/owner transactions. The remainder of the Act outlines SEC responsibilities including minimum standards for practicing attorneys, essentials for conducting studies, an increase in monetary resources for implementation of the Act, authority to freeze payments, extension of whistleblower protections, and enhancement of white-collar fraud penalties. See USGAO, 2006.

⁸ As defined in section 3 of the Securities Exchange Act of 1934 (Exchange Act).

are required to comply with criminal and whistleblower provisions of Sox; Level IV ADRs are required to comply with criminal provisions of Sox only. Both Level II and Level III ADRs must comply fully with all provisions of Sox. As mandated by Congress, the SEC planned on treating foreign firms in the same manner as it treats domestic firms. During the implementation, however, the SEC realized that in some instances it was impossible for some foreign firms to comply with both the laws of their home country and the terms of Sox. Over time, the SEC has had to provide non-U.S. firms certain accommodations to take into account foreign laws and regulations. For example, the SEC now allows non-management employees to serve as audit committee members. It also lets shareholders select or ratify the selection of auditors, and permits foreign government representation and controlling shareholder nonvoting representation on audit committees. Cross-listed companies availing themselves of those accommodations must disclose their reliance on the accommodations and their assessment of how such reliance might materially affect the ability of their audit committee to act independently. In terms of maintaining the attractiveness and competitiveness of U.S. stock exchanges to foreign companies, most do not believe that the SEC has gone far enough in accommodating non-U.S. firms under Sox. Table 3 summarizes the effective dates of implementing certain sections of Sox for Level II and Level III ADRs, and Table 3 lists the provisions as well as effective compliance dates of Sox.⁹

The implementation of Sox has produced mixed results. Berger et al. (2005) found a variety of positive effects. Others such as Asthana et al. (2004) and Zhang (2005) found some negative effects. Berger et al. (2005) compared returns to cross-listed foreign companies to returns to US issuers. This lets them evaluate cross sectional variation in reaction based on home-country characteristics, but they cannot assess overall investor reaction to Sox, because of a lack of a control group of companies to which Sox does not apply. Litvak (2007) found that both q and market-to-book ratios of level II and III ADRs declined significantly during 2002 relative to level I and IV ADRs and relative to non cross-listed companies. Doidge, Karolyi, and Stulz (2007) studied the determinants and consequences of cross-listings on the New York and London stock exchanges from 1990 to

⁹ Current accommodations provided by the SEC to Level II and Level III ADRs are highlighted in the shaded cells of Table 3.

2005.¹⁰ They found that there was a significant premium for U.S. exchange listings every year, the premium has not fallen significantly in recent years, it persists even when allowing for unobservable firm characteristics, there is a permanent premium in event time, and these benefits have not been seriously eroded by Sox. Engel, Hayes, and Wang (2007) studied firm's decision to go private as an effect of Sox finding that the quarterly frequency of going-private transactions has increased after the passage of Sox, and abnormal returns surrounding both the passage of Sox and the going-private announcement are significantly related to proxies for the costs and benefits of Sox and the net benefits of being a public firm. Zhang (2007) argued that US firms experienced a statistically significant negative cumulative abnormal return around key Sox events.

2.2. Costs to International Listing in the US, Hong Kong and Germany

In this session, we describe the main costs to cross-listing in the three destination markets. In the US, American Depositary Receipts (ADRs) is the primary way for foreign firms to cross-list. It is a negotiable certificate that represents a foreign company's public traded equity. Depositary Receipts are made when brokers purchase a company's shares on the respective domestic home stock market followed by delivering it to the depositary's local custodian bank, such as Goldman Sachs, Union Bank of California, State Street, etc. Those banks hold the foreign shares denominated in a foreign currency and issue the US shares denominated in US dollars. There are four levels of ADRs in the US. Each level represents a different degree of disclosure requirement and costs. Table 2 details the basic differences among the four and how Sox compliance affects them. Level 1 ADRs are traded exclusively as over-the-counter Pink Sheet issues. It does not have to abide by the Generally Accepted Accounting Principles (GAAP) reconciliation. However, level 1 ADRs have limited liquidity. Level 4 ADRs are private placements and also do not have to abide by GAAP reconciliation. Level 2 and 3 ADRs require full SEC disclosure with Form 20-F and are the most prestigious and costly type of listing. Level 2 and 3 ADRs have to abide with full Sox compliance. In order to list on the NYSE, the minimum and maximum Listing Fees applicable the first time an issuer lists a class of common shares are \$150,000 and \$250,000,

¹⁰ See also Bianconi and Tan (2008) for cross-sectional evidence of the US versus UK comparisons.

respectively, which amounts include the special charge of \$37,500. Table 4 details listing fees for listing on the two major US markets.

In Hong Kong, the stock market is operated by the SEHK (Stock Exchange of Hong Kong). The SEHK is a wholly owned subsidiary of the HK Exchange. Securities transactions on the SEHK are executed by the Automatic Order Matching and Execution System (AMS). The Growth Enterprise Market (GEM), launched by the SEHK, serves as a conduit where emerging enterprises, which do not fulfill the profitability or track record requirements of the existing market of the Stock Exchange of Hong Kong, can obtain a listing and increase capital. To cross-list in Hong Kong, firms can list either on the Main Board or with GEM. The disclosure requirements in Hong Kong are more flexible than in the US. Firms can abide by International Accounting Standards (IAS) or the Hong Kong Financial Reporting Standards¹¹. It is believed that IAS gives managers more discretion to do earning management than US GAAP. However, if a firm's primary listing is not in Hong Kong, then they are allowed to abide by IAS, Hong Kong Financial Reporting Standards, or US GAAP¹². The listing fee for both the Main Board and the GEM is detailed on Table 5.

In Germany, firms can cross-list on either the EU-regulated market or the Open market. A listing on the Regulated Market leads to the General Standard or its Prime Standard segment, while admission to trading on the Regulated Unofficial Market leads to the Open Market with its Entry Standard segment. Table 6 details listing fees and the transparency requirements of listing on either the regulated or unregulated market. The disclosure requirement for listing in Germany is compliance with IAS.¹³

Generally speaking, the listing requirements for cross-listing in Hong Kong and Germany are less stringent than in the US. Another factor to consider are the listing costs. Entry fees for the U.S. are nearly three times the cost for listing in Germany, and nearly four times that of Hong Kong. Once the initial fixed cost is incurred, then there are the additional external costs brought on by Sox. For a foreign firm to choose to cross-list in the US, the

¹¹ As detailed in Hong Kong listing rule 19.14 for overseas issuers.

¹² As detailed in Hong Kong listing rule 19.39 for overseas issuers.

¹³ As detailed in the Germany Corporate Governance Code 7.1.1.

benefit from cross-listing must exceed the costs, both fixed and external. Holmstrom and Kaplan (2003) state that shareholders of firms that were well governed prior to Sox are less likely to receive significant Sox-related benefits, and thus that the costs may exceed the benefits for those firms.¹⁴

3. Data

In the empirical analysis, the most important variable is q . By definition, q measures the valuation of firms, computed often as total value divided by total assets. In our analysis, following Doidge et al. (2004), we calculate the q as follows:

$$\text{Tobin } Q_t = \frac{\text{Total Liability}_t + \text{Market Capitalization}_t}{\text{Total Assets}_t} \quad (1)$$

where the denominator is the firm's book value of total assets and the numerator is the firm's book value of total liability plus its market capitalization. Market capitalization is computed as the firm's common shares outstanding multiplied by its current market price. All financial information used above is obtained at the fiscal year-end from 1999 to 2004.¹⁵

Besides the dummy variables for cross-listing, we also include several firm-level and country-level variables as controls. $\text{INDU_}Q$ is the median of q of the selected firms in a certain industry, defined by a 2-digit SIC code. Twenty and Hundred are dummy variables used to represent firm size based on asset amounts. A value of 1 was given if a firm has more than \$20 million in total assets and \$100 million respectively. The independent variable Sox is the time variable used to represent the occurrence of the Sarbanes-Oxley Act. It is given a value of 1 for all firms in years 2002 to 2005. GDPG is the GDP growth rate of the firm's source country differentiated by year, thus controlling for macroeconomic factors. Table 8 present the definition of variables.

¹⁴ See also Santos and Scheinkman (2001) for a model of competition among exchanges.

¹⁵ Due to data constraints, this measure does not use the market value of debt in the numerator and uses total assets instead of replacement cost in the denominator, see e.g. Doidge et al (2004).

The sample firms' financial information comes from the *WorldScope* database (July 2000 – July 2005). This database keeps the financial information of more than 25,000 public traded companies from over 60 countries around the world. It represents approximately 95% of global market capitalization.

We focus on the origin countries of firms that were cross-listed in the U.S., Hong Kong, and Germany. Firms that were domestically listed in the U.S., Hong Kong, and Germany were omitted. Firms from U.S., Hong Kong, or Germany that were cross-listed elsewhere were also omitted. Firms cross-listed on other exchanges not the U.S., Hong Kong, or German exchanges were also omitted. Firms from Canada, the Russian Federation, Bermuda, Cayman Islands, and other small islands were omitted. We concentrate on a sample of 31 countries in the world spread out over a six year period of time. Table 7 presents the 31 countries of origin of firms and their frequency distribution. In 2000, there were a total of 10,767 firms in the 31 countries, 13,239 in 2001, 14,983 in 2002, 16,167 in 2003, 17,053 in 2004, and 18,209 in 2005 and over a six year period amounting to 90,418 data points. In order to reduce variations in the financial data from inflationary pressures, we converted total assets into similar dollar terms using 2005 as the base year. The conversion of the numbers was done via GDP deflator indicators found from the IMF database. Then, we exclude observations from the finance, insurance, and real estate industries by eliminating firms that have two-digit SIC code from 60 to 67. This is because the valuation ratios of financial institutions are usually not comparable to those of non-financial firms. This leaves us with 8,835 in 2000, 11,501 in 2001, 12,401 in 2002, 13,369 in 2003, 14,282 in 2004, 15,383 in 2005, and a total of 75,771 data points over a six year period of time.

We first compiled the firms that were only listed on their domestic exchanges. Once limiting for this factor, our data left us with 6,654 firms in 2000, 7,439 in 2001, 8,395 in 2002, 9,738 in 2003, 10,778 in 2004, 11,881 in 2005, and resulting in 54,885 total firms. We obtained the firms cross-listed in the U.S. via the *CompuStat* World Database. The *CompuStat* database contains all financial information from foreign firms cross-listed in the U.S. since the 1950's as well as de-listing information. We did not limit ourselves to any specific ADR, all four level ADRs were considered because we believe that all four levels

of ADRs are prone to some aspects of Sox regulation. After finding the names of the cross-listed firms, we then matched names with the *WorldScope* Database in order to compile the financial information. If the firm's name or financial data was not available, then the firm was omitted. In order to stay consistent, any new listings from a different foreign country over the six year period of time was also omitted. There were 260 cross-listed firms in the U.S. with financial information available, 210 in 2001, 190 in 2002, 176 in 2003, 155 in 2004, and 144 in 2005 for a total of 1,139 data points over a six year period of time. Because we excluded firms that de-listed, we were thus able to eliminate the survivorship bias.

The firms cross-listed in Hong Kong and Germany were found via the Hang Seng index website for Hong Kong and the Dusseldorf and Frankfurt exchange websites in Germany. We included the Dusseldorf exchange as well because it is a private exchange that deals in private issues. Due to the fact that we also included private ADRs, we also felt it necessary to include the Dusseldorf exchange. Private listings cross-listed on the Hong Kong Exchange were also included. After finding the names, we again matched said names with the *WorldScope* database in order to compile the financial information necessary. There were 29 cross-listed firms in Hong Kong in 2000, 38 in 2001, 53 in 2002, 70 in 2003, 83 in 2004, 95 in 2005, amounting to a total of 368 data points over a six year period of time. In Germany, there were 130 cross-listed firms in 2000, 141 in 2001, 150 in 2002, 155 in 2003, 152 in 2004, 149 in 2005, compiling a total of 877 data points over a six year period of time.

Data for the country-level variable GDP growth was obtained from the IMF website, the IMF world development indicator report. To reduce the weight of outliers, we follow La Porta et al (2002) and censor q at the 2nd and 98th percentiles by setting extreme values to the 2nd and 98th percentile values, respectively. The final data set was compiled of 49,416 data points. Table 8 presents the variable definitions, Table 9 the summary statistics and the correlation matrix, where we note that the trend in cross-listings is negative in the US and Germany, but positive in Hong Kong.

4. Econometric Models and Empirical Results

Table 10 reports the average q for firms over the six year period of time by four categories: not cross-listed; cross-listed in the US; cross-listed in Hong Kong; and cross-listed in Germany. It also presents the number of firms in each category by year.

The columns (1) report the number of firms that are cross-listed neither in the US, Hong Kong, or Germany, and their mean q by each year. The mean q varies widely across years, from a minimum of 0.42 in South Korea to a maximum of 41.4 in Finland. The columns (2) show the number of firms and the mean q for firms that cross-listed in the US. There are a total of 1139 data points for US cross-listed firms over a six year period of time. The proportion of firms that are listed in the US varies widely across 30 countries, from 2 firms in Greece, to 53 firms from the Netherlands. It then shows the difference in q between the US cross-listed firms and the non cross-listed firms for each time period. The difference was positive for US cross-listed firms over the time periods between 2000 and 2003; however in 2004 and 2005 the mean difference in q was negative.

The columns (3) provides information about the number of firms and the mean q for firms cross-listed in Hong Kong, and also calculates the difference in q between the Hong Kong cross-listed firms and the non cross-listed firms for each time period. Here we have a total of 368 cross-listed firms in Hong Kong over a six year period of time. In Hong Kong, mainly China dominates the cross-listings with 343 firms over a six year period of time, while Singapore was next with 15 firms over a six year period of time. It then presented the difference between the cross-listed Hong Kong firms and the non cross-listed firms. Hong Kong cross-listed firms showed a negative difference in q between non cross-listed firms for all six years. The columns (4) provide information about the number of firms, and the mean q for firms cross-listed in Germany. Also, it calculates the difference in q between the cross-listed firms in Germany and the non cross-listed firms for each time period. There are a total of 877 cross-listed firms in Germany over a six year period of time. In Germany, there were 2 and 3 firms from Venezuela and China respectively with a maximum of 71 firms cross-listed from the UK. It then shows the difference in q between

the cross-listed firms in Germany and non cross-listed firms for each time period where a discount emerges after 2002.

The evidence from Table 10 is that in Hong Kong the premium is negative, in Germany it becomes negative after 2001 and in the US after 2004.

4.1 Dynamic Panel Regressions

Our empirical models are used to predict the effects of Sox on the US and other global capital markets. We used an unbalanced dynamic panel where firms are counted only in one country of origin with a sample size becomes of the size 48,307. We also separate based upon cross-listing destination. We capture Sox's effect on overall firm value, on cross-listing, on US cross-listing, and potentially whether the increased corporate governance in the US could possibly have also affected other global exchange markets thus creating a contagion effect in Hong Kong and Germany destinations. We test those hypotheses using the Arellano and Bond (1991) dynamic panel methodology. The general model is given by

$$q_{it} = \beta_0 + \beta_1 q_{it-1} + \beta_2 cross_{it} + \beta_3 Sox_{it} + \beta_4 cross_{it} \times Sox_{it} + \boldsymbol{\beta}' \mathbf{X}_{it} + a_t + \varepsilon_{it} \quad (2)$$

where i indexes the company and t indexes the year. \mathbf{X}_{it} is a vector of controls which includes the industry q , growth of gdp , firm size, country, industry, sector and time trend effects. The main hypotheses refer to the signs and magnitudes of β_3 and β_2 . Following Bianconi and Tan (2008), the variable INDU_Q is used to control for the growth opportunity in a certain industry. Each of them should have a positive coefficient. If the high valuation of a cross-listed firms is simply because they have better investment opportunities, controlling for growth opportunity in the regression should make the cross-listing premium disappear. The variable GDPG is used to control for country macroeconomic factors. The coefficient to this variable is ambiguous as country's growth opportunities are different among developed and developing countries. Size refers to the variables Twenty and Hundred, used to control for firm size and thus try to capture growth opportunity of the firm. Specification (2) refers to overall firm value its effect on valuation, we also condition on cross-listing destination.

We use the Arellano and Bond (1991) dynamic panel estimation since we have a small number of years and a large number of firms. The method is based on GMM with first differences, and fixed effects are appropriately taken into account. The results for specifications (2) are shown in Tables 11 and 12.

Table 11 presents the results for the general case. First, Sarbanes-Oxley (Sox) has a negative effect on firm value throughout the alternative specifications (1)-(8). The order of magnitude of the effect is between -8% to -27% on the value of the firm, from $q=1$. The persistence of the value of the firm is moderate and about 25% for all specifications (1)-(8). Second, the cross-listing effect on the value of the firm is not generally significant, nor is the interaction between Sarbanes-Oxley and cross-listing. The cross-listing effect is negative and marginally significant, but the result is not robust to alternative controls. In columns (9)-(11), we separate cross-listing by destination and uses alternative specifications depending on controls.¹⁶ The results regarding Sarbanes-Oxley remain unchanged. The effects of cross-listing show that the Asian market of Hong-Kong destination commanded a discount of about 20%, whereas the US and Germany destinations did not have any significant cross-listing effect. The persistence of the value of the firm is moderate and about 25% for specifications (9)-(11) as well.

Table 12-14 presents results conditional on cross-listing in one of the three destinations: US, Hong-Kong and Germany; thus capturing North America, Asia and Europe destinations. Table 12, columns (1)-(6) present the US destination case. The sample excludes all firms cross-listed in Hong-Kong and Germany. The results are very close to the general case in Table 11. Sarbanes-Oxley (Sox) has a negative effect on firm value throughout the alternative specifications (1)-(6) with order of magnitude between -8% to -27% on the value of the firm, from $q=1$. The persistence of the value of the firm is moderate and about 25% for all specifications (1)-(6). The cross-listing effect for the US destination on the value of the firm is negative but not statistically significant. Table 13, columns (1)-(6) present the Hong Kong destination case. The sample excludes all firms cross-listed in the United States and Germany. Sarbanes-Oxley (Sox) has a negative effect on firm value

¹⁶ We dropped the interaction term in the remaining specifications because it was not significant and did not alter the main effects.

throughout the alternative specifications (1)-(6) with order of magnitude between -8% to -27% on the value of the firm, from $q=1$. The persistence of the value of the firm is moderate and about 25% for all specifications (1)-(6). The cross-listing effect for the Hong Kong destination shows a statistically significant discount of about -20% to -26% on the value of the firm. Finally, table 14, columns (1)-(6) present the Germany destination case. The sample excludes all firms cross-listed in the United States and Hong-Kong. Sarbanes-Oxley (Sox) has a negative effect on firm value throughout the alternative specifications (1)-(6) with order of magnitude between -8% to -27% on the value of the firm, from $q=1$. The persistence of the value of the firm is moderate and about 25% for all specifications (1)-(6). The cross-listing effect for the Germany destination is positive but not statistically significant for any specification in this case.

The evidence from Tables 11-14 is that Sarbanes-Oxley has had a consistent negative impact on the market value of firms in this sample. Controlling for Sox makes identification of the cross-listing effect on firm's value difficult. The significant result is that Honk Kong commands a significant discount on the value of a firm cross-listing there, relative to firms that do not cross-list there. However, we do not identify a premium in the US or Germany in this sample.

4.2 Treatment Effects

It is possible that firms with higher market valuation self-select into cross-listing. Firms with higher market value may gain more benefits from cross-listing than the costs borne onto them through the added disclosure requirements. We apply treatment effect methods to avoid potential biases. In particular, we can think of Sox and other characteristics as a treatment for the firm's cross-listing decision. Each firm has a valuation outcome with and without this treatment. We use two methods for treatment effects, the consistent two-step estimator and the propensity score method.¹⁷ In both cases, the models consist of the following two equations:

$$cross_{it} = \beta_0 + \beta_3 Sox_{it} + \boldsymbol{\beta}' \mathbf{X}_{it} + u_{it} \quad (3a)$$

¹⁷ See e.g. Greene (1997) and Wooldridge (2002).

$$q_{it} = \beta_0 + \beta_1 cross_{it} + \beta_2 Sox_{it} + \psi' Z_{it} + \varepsilon_{it} \quad (3b)$$

where (3a) is the decision on the unobserved latent variable and (3b) is the valuation equation; X and Z are controls. In the two-step case, the valuation equation includes λ which measures the extent to which unobserved factors that make cross-listing more likely to occur are associated with valuations. In the propensity score method, we estimate the decision equation using the panel and use the predicted propensity to cross-list as an instrument for cross-listing in the valuation equation. Tables 15-18 present the results for the general case and by destination.

Table 15 is the large sample. Columns (1)-(2) give the two-step method and (3)-(4) the propensity score method. In the two-step method, the decision equation, column (1) shows a significant positive effect of Sarbanes-Oxley on cross-listing. The coefficient on λ is negative and statistically significant indicating that unobserved factors lead to cross-listings when valuations are low. Column (2) shows the valuation equation and while Sarbanes-Oxley has the usual negative effect, cross-listing commands a statistically significant premium on valuations. In column (3), the significant positive effect of Sarbanes-Oxley on cross-listing is noted and in the IV regression the effect on valuation is negative as expected. However, the cross-listing premium is negative and not statistically significant in this case.

Tables 16-18 present results conditional on cross-listing in one of the three destinations: US; Hong-Kong; and Germany; thus capturing North America, Asia and Europe destinations. Table 16, columns (1)-(4) present the US destination case. The sample excludes all firms cross-listed in Hong-Kong and Germany. The results are qualitatively close to the general case in Table 15. In the two-step method, the decision equation, column (1) shows a significant positive effect of Sarbanes-Oxley on cross-listing. The coefficient on λ is positive and marginally significant indicating that unobserved factors lead to cross-listings when valuations are high in the US destination case. Column (2) shows the valuation equation with the usual negative effect of Sarbanes-Oxley and a statistically insignificant negative effect of cross-listing on valuations. In column (3), the significant positive effect of Sarbanes-Oxley on cross-listing is noted and in the IV regression the

effect on valuation is negative as expected. The cross-listing premium is negative and not statistically significant in this case as well. Table 17, columns (1)-(4) present the Hong Kong destination case. The sample excludes all firms cross-listed in the US and Germany. In the two-step method, the decision equation, column (1), shows a significant negative effect of Sarbanes-Oxley on cross-listing in the Hong Kong destination. The coefficient on λ is negative and significant indicating that unobserved factors lead to cross-listings when valuations are low in the Hong Kong destination case. Column (2) shows the valuation equation with the usual negative effect of Sarbanes-Oxley and a statistically insignificant positive effect of cross-listing on valuations. In column (3), there is a significant positive effect of Sarbanes-Oxley on cross-listing. In the IV regression, the effect of Sarbanes-Oxley on valuation is negative and significant and the cross-listing discount is also significant. Finally, Table 18, columns (1)-(4) present the Germany destination case. The sample excludes all firms cross-listed in the US and Hong Kong. In the two-step method, the decision equation, column (1), shows a marginally significant negative effect of Sarbanes-Oxley on cross-listing in the Germany destination. The coefficient on λ is positive and significant indicating that unobserved factors lead to cross-listings when valuations are high in the Germany destination case. Column (2) shows the valuation equation with the usual negative effect of Sarbanes-Oxley and a statistically significant negative effect of cross-listing on valuations. In column (3), there is a marginally significant negative effect of Sarbanes-Oxley on cross-listing. In the IV regression, column (4), the effect of Sarbanes-Oxley on valuation is negative and significant and a cross-listing discount which is also significant.

The evidence from treatment effects confirms that Sarbanes-Oxley impacted negatively on the value of firms. The effect on the cross-listing decision shows a positive effect on the US destination and a negative effect on the Germany destination; the effect on the Hong Kong destination is not robust across the two methods, hence inconclusive. However, the Hong Kong destination seems to attract cross-listing of firms with lower valuations relative to the US and Germany destination.

5. Summary and Conclusions

The implementation of the Sarbanes-Oxley Act in 2002 has added on additional costs to doing business in the US. We would be lead to believe that better corporate governance should lead to better and safer investment opportunities.

The main contribution of this paper is to provide evidence on the Sarbanes-Oxley Act and how it has affected firm value and cross-listing decisions worldwide using dynamic panel data methods and treatment effects methods. We presented empirical models using a sample of 31 countries where firms cross-listed in a major North-American, Asian and European market for the period 2000-2005. First, we find that Sarbanes-Oxley (Sox) has had a consistent negative impact on the market value of firms in this period. However, controlling for Sox makes identification of the cross-listing effect on firm's value difficult. The evidence from differences in means is that in Hong Kong the cross-listing premium is consistently negative in 2000-2005, in Germany it becomes negative after 2001 and in the US after 2004. The dynamic panels show that Honk Kong commands a significant discount on the value of a firm cross-listing there, relative to firms that do not cross-list there. However, we do not identify a cross-listing premium in the US or Germany destination in this sample. The evidence from treatment effects confirms that Sarbanes-Oxley impacted negatively on the value of firms. However, the effect of Sox on the cross-listing decision is positive in the US destination and negative in the Germany destination; and the Hong Kong destination seems to attract cross-listing of firms with lower valuations relative to the US and Germany destination. In terms of the cross-listing decision, the evidence is in favor of crowding in the market where the accounting standards are better, lending support to the signaling and bonding hypothesis of cross-listing choice.

This study also has some advantages and limitations. The small time and large cross-sectional dimensions make the Arellano-Bond dynamic panel methodology appropriate. On the other hand, we only included country and industry-level effects, but not firm level characteristics. A fruitful avenue for future research would be to expand the number of firms and origin and destination markets to better understand the cross-listing

decision of firms and the impact of regulatory frameworks on firm value and cross-listing premium.

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Table 1: Top 10 exchanges by total share trading value

Exchange	USD Bn 2006	USD Bn 2005	% change in USD	% change in local currency
1. NYSE	21,790	17,858	22.0	22.0
2. NASDAQ	11,807	10,087	17.1	17.1
3. London Stock Exchange	7,572	5,678	33.4	30.5
4. Tokio Stock Exchange	5,823	4,482	29.9	36.4
5. Euronext	3,853	2,906	32.6	29.2
6. Deutche Burse	2,737	1,915	42.9	40.0
7. BME Spanish Exchange	1,934	1,566	23.5	21.0
8. Borsa Italiana	1,592	1,294	23.0	20.5
9. SWX Swiss Exchange	1,396	974	43.5	43.2
10. Korea Exchange	1,342	1,211	10.9	3.2

Source: World Federation Exchange 2006 Annual Report

Table 2: ADR reporting and regulatory requirements

	Level I	Level II	Level III	Level IV; Rule 144a
Trading	OTC bulletin board / Pink Sheet	NYSE, NASDAQ or AMEX	NYSE, NASDAQ or AMEX with new capital raising	Private Placement, PORTAL
SEC Registration	Form F-6	Form F-6	Form F-6 and F-1	None
Financial Reports	Exemption under Rule 12g3-2(b)	Form 20-F	Form 20-F	Exemption under Rule 12g3-2(b)
US GAAP	No	Partial Reconciliation	Full Reconciliation	No
Sox Compliance	Compliance with criminal and whistleblower provisions of Sox	Full compliance	Full Compliance	Compliance with criminal provisions of Sox

Source: Small and Zhu (2008).

Table 3: Effective Dates of Sox compliance regulation

Section of Sox	Brief	Effective of Compliance Dates
201	Nonaudit services	Service contracted on or after May 6, 2003
202	Audit committee administration of the auditor engagement	Service contracted on or after May 6, 2003
203	Audit partner rotation	Service contracted on or after May 6, 2003
204	Auditor reports to the auditor committee	March 31, 2003
206	Auditor "cooling off" periods	March 31, 2003
301	Audit committee responsibilities and independent director requirement	July 31, 2005
302	CEO/CFO Certification	Certification due on or after August 14, 2003
303	Improper influence on audits	June 26, 2003
304	Compensation forfeit	July 30, 2003
306	Insider trades	March 31, 2003
307	Attorney responsibilities	Accommodations provided to foreign attorney
401	Off-balance sheet transactions disclosures	Fiscal year ending on or after June 15, 2003
401	Contractual obligations	Fiscal year ending on or after December 15, 2003
402	Loan prohibition	July 30, 2002
403	Section 16 forms	Securities registered by a private issuer are exempt from section 16
404	Internal controls	Extended to the fiscal year ending on or after July 15, 2006
406	Code of ethics	Fiscal year ending on or after June 15, 2003
407	Financial expert on audit committee	Fiscal year ending on or after June 15, 2003
806 and 1107	Whistleblower provisions	July 30, 2002
906	CEO/CFO certification	Certification due on or after August 14, 2003

Note: Shaded cells indicate accommodations provided by SEC.

Source: Small and Zhu (2008).

Table 4: US Costs to Listing

NASDAQ Pricing Schedule

NASDAQ Global Select Market Entry Fees

Shares	Entry Fees
Up to 30 million	\$100,000
30+ to 50 million	\$125,000
Over 50 million	\$150,000

NASDAQ Global Select Market Annual Fees*

Total Shares Outstanding	Annual Fees	Annual Fees for ADRs
Up to 10 million	\$30,000	\$21,225
10+ to 25 million	\$35,000	\$26,500
25+ to 50 million	\$37,500	\$29,820
50+ to 75 million	\$45,000	\$30,000
75+ to 100 million	\$65,500	\$30,000
100+ to 150 million	\$85,000	\$30,000
Over 150 million	\$95,000	\$30,000

Source: NASDAQ

NYSE Pricing Schedule

Number of Securities Issued	Fee Per Share
Up to and including 75 million	\$0.0048
Over 75 million up to and including 300 million	\$0.00375
Over 300 million	\$0.0019

Source: NYSE

Table 5: Hong Kong Costs to Listing

Main Board

Monetary Value of Equity Securities to be Listed (HK\$ million)		Initial Listing Fee (HK\$)
Not exceeding:	100	150,000
	200	175,000
	300	200,000
	400	225,000
	500	250,000
	750	300,000
	1,000	350,000
	1,500	400,000
	2,000	450,000
	2,500	500,000
	3,000	550,000
	4,000	600,000
	5,000	600,000
Over	5,000	650,000

Growth Enterprise Market (GEM)

Monetary Value of Equity Securities to be Listed (HK\$ million)		Initial Listing Fee (HK\$)
Not exceeding:	100	100,000
	1,000	150,000
Over	1,000	200,000

Source: Hong Kong Stock Exchange

Table 6: Germany's transparency requirements and fees to cross-listing

Three distinct levels of transparency: Early standard as first step to capital market

Prime standard	Quarterly reports; Financial calendar; Analyst conference; English language	Annual report and interim report in accordance with IFRS/IAS; Publications of director's dealings(1); Ad-hoc disclosures; Reporting thresholds(1); Charge of control.(2)
General standard	Transparency standards defined by EU law	
Entry standard	Annual report and interim report in accordance with national standards; Important company news; Corporate profile and financial calendar; Minimum legal requirements	Adherence to insider rules(1); Market abuse(3); Rules on public offerings(1) EU unofficial market

(1) Securities Trade Act

(2) Securities Acquisition and Takeover Act

(3) Investor Protection Act

Fees:

	General Standard	Prime Standard	Entry Standard
Admission fee	Listed securities € 3,000	Listed securities € 3,000	Inclusion € 7504 - € 1,500
	Admission to trading € 2,500	Admission to trading € 2,500	
Annual fee	€ 7,500	€ 10,000	€ 5,000

Source: Germany Stock Exchange

Table 7: Countries of Origin in the Sample

Country	Freq.	Percent	Cum.
ARGENTINA	260	0.53	0.53
AUSTRALIA	3,956	8.01	8.53
BELGIUM	518	1.05	9.58
BRAZIL	185	0.37	9.95
CHILE	671	1.36	11.31
CHINA	3,218	6.51	17.82
DENMARK	708	1.43	19.26
FINLAND	668	1.35	20.61
FRANCE	3,645	7.38	27.98
GREECE	1,230	2.49	30.47
HUNGARY	138	0.28	30.75
INDIA	1,236	2.5	33.25
IRELAND	268	0.54	33.8
ISRAEL	393	0.8	34.59
ITALY	828	1.68	36.27
JAPAN	10,047	20.33	56.6
KOREA (SOUTH)	3,090	6.25	62.85
LUXEMBOURG	64	0.13	62.98
MEXICO	541	1.09	64.08
NETHERLANDS	873	1.77	65.84
NEW ZEALAND	390	0.79	66.63
PHILIPPINES	457	0.92	67.56
PORTUGAL	286	0.58	68.14
SINGAPORE	1,864	3.77	71.91
SOUTH AFRICA	1,526	3.09	75
SPAIN	457	0.92	75.92
SWEDEN	1,363	2.76	78.68
SWITZERLAND	481	0.97	79.65
TAIWAN	2,700	5.46	85.12
UNITED KINGDOM	7,285	14.74	99.86
VENEZUELA	70	0.14	100

Table 8: Variables Definition

Q(Tobin's)	The sum of firm's book value of total liability and its market capitalization divided by the firm's book value of total assets.
Cross	Takes the value of 1 if cross-listed in either the US, HK, or Germany and 0 otherwise
HK	Takes the value of 1 if cross-listed in HK and 0 otherwise
US	Takes the value of 1 if cross-listed in US and 0 otherwise
Germany	Takes the value of 1 if cross-listed in Germany and 0 otherwise
Sox	Takes the value of 1 if firm listed or is still listed after imposition of Sox (2002).
GDPG	GDP growth rate of the source country corresponding to year
INDU_Q	Median of q of the selected firms in a certain industry. The industry is defined according to 2-digit SIC code.
TWENTY	Takes a value of 1 if firm's assets denominated in 2005 US dollars exceeds \$20 million
HUNDRED	Takes a value of 1 if firm's assets denominated in 2005 US dollars exceeds \$100 million

Table 9: Summary statistics and Correlation Matrix

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Q</i>	49416	1.797876	2.648082	.2276778	42.46558
<i>Cross</i>	49416	.0451878	.2077179	0	1
<i>HK</i>	49416	.007447	.0859748	0	1
<i>GERMANY</i>	49416	.0177473	.1320329	0	1
<i>TWENTY</i>	49416	.845637	.3613	0	1
<i>HUNDRED</i>	49416	.5787194	.4937694	0	1
<i>Sox</i>	49416	.7679092	.4221709	0	1
<i>INDU_Q</i>	49416	1.191583	.1973073	.858	2.11
<i>GDPG</i>	49416	3.142421	2.458475	-10.9	17.3
<i>US</i>	49416	.0199935	.1399792	0	1

Table 9: Correlation matrix

	<i>q</i>	<i>cross</i>	<i>hk</i>	<i>germany</i>	<i>us</i>	<i>twenty</i>	<i>hundred</i>	<i>sox</i>	<i>indu_q</i>	<i>gdp</i>	<i>year</i>
<i>q</i>	1.0000										
<i>cross</i>	0.0129	1.0000									
<i>hk</i>	-0.0179	0.3982	1.0000								
<i>germany</i>	0.0076	0.6179	-0.0116	1.0000							
<i>us</i>	0.0230	0.6566	-0.0124	-0.0192	1.0000						
<i>twenty</i>	-0.1817	0.0746	0.0253	0.0413	0.0562	1.0000					
<i>hundred</i>	-0.1512	0.1343	0.0410	0.0790	0.0996	0.5008	1.0000				
<i>sox</i>	-0.0555	0.0504	0.0315	-0.0245	0.0785	-0.0802	-0.0959	1.0000			
<i>indu_q</i>	0.1640	0.0314	-0.0156	0.0187	0.0386	-0.2549	-0.2194	0.0755	1.000		
<i>gdp</i>	0.0268	0.0140	0.1837	-0.0729	-0.0232	0.0299	-0.0096	0.0827	-0.0632	1.000	
<i>year</i>	-0.0291	-0.0617	0.0138	-0.0252	-0.0763	-0.0585	-0.0750	0.7781	0.0685	0.1516	1.000

Table 10: Univariate Analysis of Firm Value

	Not Cross-Listed (1)		Cross-Listed in US (2)			Cross-listed in HK (3)			Cross-listed Germany (4)			Total
	Number	Mean q	Number	Mean q	Diff	Number	Mean q	Diff	Number	Mean q	Diff	
2000	5241	2.24	264	3.91	1.67	29	.77	-1.47	130	3.17	.93	5664
2001	5878	1.87	210	2.45	.58	38	1.18	-.69	141	2.49	.62	6267
2002	7428	1.56	190	1.91	.35	53	1.03	-.53	150	1.52	-.04	7821
2003	8367	1.47	176	1.85	.38	70	1.13	-.34	155	1.30	-.17	8768
2004	9469	1.87	155	1.78	-.09	83	1.49	-.38	152	1.66	-.21	9859
2005	10650	1.84	144	1.71	-.13	95	1.41	-.43	149	1.73	-.11	11038
Average <i>q</i>		1.80		2.26	.46		1.16	-.63		1.97	.17	
Total	47033		1139			368			877			49417

Table 11
General Model

	Dependent Variable: q							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sox	-0.103*** (0.031)	--	-0.102*** (0.031)	-0.101*** (0.032)	-0.083** (0.035)	-0.085** (0.036)	-0.269*** (0.061)	-0.272*** (0.061)
Cross-List	--	-0.170* (0.099)	-0.152 (0.098)	-0.141 (0.288)	-0.149 (0.098)	-0.266 (0.289)	-0.051 (0.080)	-0.184 (0.289)
Sox × Cross-List	--	--	--	-0.011 (0.270)	--	0.117 (0.272)	--	0.133 (0.275)
Size	--	--	--	--	y	y	y	y
Industry q	--	--	--	--	y	y	y	y
GDP Growth	--	--	--	--	y	y	y	y
Country	--	--	--	--	--	--	y	y
Trend	--	--	--	--	--	--	y	y
Lagged q	0.240*** (0.026)	0.249*** (0.024)	0.240*** (0.026)	0.240*** (0.026)	0.246*** (0.025)	0.247*** (0.025)	0.266*** (0.027)	0.266*** (0.027)
Constant	1.245*** (0.064)	1.145*** (0.041)	1.249*** (0.064)	1.250*** (0.064)	1.392*** (0.292)	1.394*** (0.293)	-185.6*** (24.5)	-185.7*** (24.5)
χ^2	203.9***	107.9***	204.2***	207.4***	300.3***	304.7***	20E03***	20E03***
AR(2) error z	-0.823	-0.978	-0.824	-0.824	-0.969	-0.968	-0.932	-0.931
Obs	20,891	20,891	20,891	20,891	20,891	20,891	20,891	20,891

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged Industry q; Growth of GDP, lagged growth of GDP; Countries, time trend. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 11 continued
General Model

	Dependent Variable: q		
	(9)	(10)	(11)
Sox	-0.102*** (0.031)	-0.083** (0.035)	-0.268*** (0.061)
Cross-List US	-0.159 (0.103)	-0.156 (0.103)	-0.055 (0.082)
Cross-List HK	-0.221** (0.091)	-0.262*** (0.092)	-0.200* (0.103)
Cross-List Germ	0.043 (0.263)	0.088 (0.260)	0.265 (0.290)
Size	--	y	y
Industry q	--	y	y
GDP Growth	--	y	y
Country	--	--	y
Trend	--	--	y
Lagged q	0.240*** (0.026)	0.246*** (0.025)	0.265*** (0.027)
Constant	1.246*** (0.064)	1.384*** (0.293)	-185.1*** (24.5)
χ^2	208.0***	303.4***	20E03***
AR(2) error z	-0.827	-0.971	-0.934
Obs	20,891	20,891	20,891

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged Industry q; Growth of GDP, lagged growth of GDP; Countries, time trend.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 12
United States Destination

	Dependent Variable: q					
	(1)	(2)	(3)	(4)	(5)	(6)
Sox	-0.101** (0.032)	-0.099** (0.032)	-0.086** (0.036)	-0.084** (0.036)	-0.271*** (0.062)	-0.270*** (0.062)
Cross-List US	--	-0.163 (0.100)	--	-0.164 (0.100)	--	-0.083 (0.080)
Size	--	--	y	y	y	y
Industry q	--	--	y	y	y	y
GDP Growth	--	--	y	y	y	y
Country	--	--	--	--	y	y
Trend	--	--	--	--	y	y
Lagged q	0.241*** (0.026)	0.241*** (0.027)	0.247*** (0.026)	0.248*** (0.026)	0.269*** (0.028)	0.269*** (0.028)
Constant	1.244*** (0.066)	1.244*** (0.067)	1.418*** (0.296)	1.419*** (0.297)	-188.1*** (25.0)	-187.5*** (25.1)
χ^2	196.7***	196.9***	292.9***	293.5***	19E03***	20E03***
AR(2) error z	-1.033	-1.036	-1.174	-1.176	-1.144	-1.145
Obs	20,334	20,334	20,334	20,334	20,334	20,334

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged Industry q; Growth of GDP, lagged growth of GDP; Countries, time trend. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 13
Hong Kong Destination

	Dependent Variable: q					
	(1)	(2)	(3)	(4)	(5)	(6)
Sox	-0.096*** (0.033)	-0.096*** (0.032)	-0.081** (0.036)	-0.081** (0.037)	-0.268*** (0.064)	-0.268*** (0.064)
Cross-List HK	--	-0.200** (0.096)	--	-0.256*** (0.098)	--	-0.224** (0.106)
Size	--	--	y	y	y	y
Industry q	--	--	y	y	y	y
GDP Growth	--	--	y	y	y	y
Country	--	--	--	--	y	y
Trend	--	--	--	--	y	y
Lagged q	0.243*** (0.027)	0.243*** (0.027)	0.250*** (0.027)	0.250*** (0.027)	0.270*** (0.029)	0.270*** (0.029)
Constant	1.234*** (0.068)	1.235*** (0.068)	1.415*** (0.299)	1.415*** (0.299)	-188.7*** (25.7)	-188.7*** (25.8)
χ^2	191.0***	194.1***	282.5***	284.7***	20E03***	20E03***
AR(2) error z	-0.981	-0.980	-1.130	-1.130	-1.074	-1.073
Obs	20,175	20,175	20,175	20,175	20,175	20,175

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged Industry q; Growth of GDP, lagged growth of GDP; Countries, time trend. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 14
Germany Destination

	Dependent Variable: q					
	(1)	(2)	(3)	(4)	(5)	(6)
Sox	-0.098*** (0.032)	-0.098*** (0.032)	-0.080* (0.036)	-0.080** (0.036)	-0.271*** (0.063)	-0.270*** (0.063)
Cross-List Germ	--	0.062 (0.309)	--	0.125 (0.306)	--	0.192 (0.351)
Size	--	--	y	y	y	y
Industry q	--	--	y	y	y	y
GDP Growth	--	--	y	y	y	y
Country	--	--	--	--	y	y
Trend	--	--	--	--	y	y
Lagged q	0.242*** (0.026)	0.242*** (0.026)	0.249*** (0.026)	0.249*** (0.026)	0.268*** (0.028)	0.268*** (0.028)
Constant	1.238*** (0.066)	1.237*** (0.066)	1.384*** (0.298)	1.380*** (0.298)	-191.6*** (25.4)	-191.2*** (25.5)
χ^2	198.8***	198.8***	289.3***	289.3***	21E03***	21E03***
AR(2) error z	-0.793	-0.794	-0.945	-0.946	-0.882	-0.882
Obs	20,442	20,442	20,442	20,442	20,442	20,442

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged Industry q; Growth of GDP, lagged growth of GDP; Countries, time trend. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 15
General Model: Treatment Effects

	(1) Two-Step	(2)	(3) Panel	(4)
	Dependent Variable: <i>Cross</i>	Dependent Variable: <i>q</i>	Dependent Variable: <i>Cross</i>	Dependent Variable: <i>q</i>
	First Stage Probit	Second Stage	First Stage Probit	Second Stage IV
Sox	0.845*** (0.057)	-0.545*** (0.056)	0.152*** (0.021)	-0.126*** (0.049)
Cross-List	--	0.966** (0.380)	--	-0.126 (0.970)
Size	y	y	y	y
Industry q	y	y	y	y
GDP Growth	y	y	y	y
Trend	y	y	--	--
Constant	404.6*** (26.2)	-251.6*** (0.172)	-2.362*** (0.202)	0.755*** (0.172)
λ	-0.374** (0.176)	--	--	--
χ^2	--	2,775**	74.1***	107.9**
<i>F-test first stage</i>	--	--	--	64.8***
<i>R² first stage</i>	--	--	--	0.023
Obs	32,306	32,306	32,306	32,306

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged
Industry q; Growth of GDP, lagged growth of GDP
(Lagged Industry q and growth of GDP excluded in Two-step case).
* $p < .05$. ** $p < .01$. *** $p < .001$, robust.

Table 16
United States Destination: Treatment Effects

	(1) Two-Step Dependent Variable: <i>Cross</i>	(2) Dependent Variable: <i>q</i>	(3) Panel Dependent Variable: <i>Cross</i>	(4) Dependent Variable: <i>q</i>
	First Stage Probit	Second Stage	First Stage Probit	Second Stage IV
Sox	0.174*** (0.056)	-0.161*** (0.036)	0.841*** (0.097)	-0.128*** (0.045)
Cross-List	--	-0.766 (0.651)	--	-1.241 (0.913)
Size	y	y	y	y
Industry q	y	y	y	y
GDP Growth	y	y	y	y
Trend	--	y	--	--
Constant	--	0.989*** (0.103)	-4.462*** (0.367)	0.804*** (0.139)
λ	0.411* (0.248)	--	--	--
χ^2	--	14,348**	135.0***	1,269**
<i>F-test first stage</i>	--	--	--	82.2***
<i>R² first stage</i>	--	--	--	0.024
Obs	31,418	31,418	31,481	31,481

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged Industry q; Growth of GDP, lagged growth of GDP, Time trend. (Lagged Industry q and growth of GDP excluded in Two-step case).
* $p < .05$. ** $p < .01$. *** $p < .001$, robust.

Table 17
Treatment Effects: Hong Kong Destination

	(1) Two-Step Dependent Variable: <i>Cross</i>	(2) Dependent Variable: <i>q</i>	(3) Panel Dependent Variable: <i>Cross</i>	(4) Dependent Variable: <i>q</i>
	First Stage Probit	Second Stage	First Stage Probit	Second Stage IV
Sox	-2.253*** (0.050)	-0.114*** (0.044)	0.197*** (0.045)	-0.469*** (0.046)
Cross-List	--	0.225 (0.311)	--	-1.531*** (0.459)
Size	y	y	y	y
Industry q	--	y	y	y
GDP Growth	y	y	y	y
Trend	--	--	--	--
Constant	--	0.815*** (0.098)	73.5*** (30.4)	-210.8*** (25.0)
λ	-0.243** (0.106)	--	--	--
χ^2	--	7,975***	68.03***	1,226**
<i>F-test first stage</i>	--		--	71.1***
<i>R² first stage</i>	--		--	0.100
Obs	31,275	31,275	46,874(')	31,275

Notes: (') No lagged controls included.

Controls: Size =Twenty, Hundred; Industry q, lagged

Industry q; Growth of GDP, lagged growth of GDP

(Lagged Industry q and growth of GDP excluded in Two-step case).

* $p < .05$. ** $p < .01$. *** $p < .001$, robust.

Table 18
Treatment Effects: Germany Destination

	(1) Two-Step	(2)	(3) Panel	(4)
	Dependent Variable: <i>Cross</i>	Dependent Variable: <i>q</i>	Dependent Variable: <i>Cross</i>	Dependent Variable: <i>q</i>
	First Stage Probit	Second Stage	First Stage Probit	Second Stage IV
Sox	-0.087* (0.043)	-0.185*** (0.036)	-0.165* (0.084)	-0.519*** (0.059)
Cross-List	--	-1.537*** (0.566)	--	-9.843*** (2.901)
Size	y	y	y	y
Industry q	y	y	y	y
GDP Growth	y	y	y	y
Trend	--	--	y	y
Constant	--	1.097*** (0.107)	-109.3*** (41.3)	-253.9*** (29.4)
λ	0.697*** (0.229)	--	--	--
χ^2	--	15,423***	455.8***	887.5***
<i>F-test first stage</i>	--		--	14.3***
<i>R² first stage</i>	--		--	0.014
Obs	31,632	31,632	31,632	31,632

Notes: Controls: Size =Twenty, Hundred; Industry q, lagged Industry q; Growth of GDP, lagged growth of GDP (Lagged Industry q and growth of GDP excluded in Two-step case).
* $p < .05$. ** $p < .01$. *** $p < .001$, robust.