

International Cross-Listing and Shareholders' Wealth

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This study evaluates the relationship between international cross-listings and shareholders' wealth across different host markets and across time. For a sample of cross-listings by European companies in the US, in the UK, and within Europe, the findings show that US and UK cross-listings, on average, result in positive cumulative abnormal returns around the announcement of cross-listing. No such evidence exists for the rest of European cross-listings. In addition, the Sarbanes-Oxley Act (SOX) of 2002 affects negatively the wealth benefits of US cross-listings, while wealth creation around UK cross-listings is primarily concentrated in Alternative Investment Market listings rather than Main Market listings. There is no evidence that the introduction of the Euro affects the wealth effects of cross-listings within the Eurozone. Finally, this study provides evidence on the relative importance of alternative theories on the wealth effects of cross-listing, including market segmentation, legal bonding, liquidity, investor recognition, proximity preference, market timing and business strategy theories, after considering the effect of the introduction of the Euro and the adoption of SOX. The results show that significance of the alternative theories varies across host markets and over time. (JEL: G15, G14, G32)

Keywords: Cross-listing, shareholders' wealth, Euro, AIM, the Sarbanes-Oxley Act

I. Introduction

A considerable body of academic literature provides evidence that

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shareholders' wealth increases around cross-listings [Alexander, Eun and Janakiraman (1987), Foerster and Karolyi (1999), Miller (1999), Hertz, Lowengrub and Melvin (2000)]. Prior literature attributes such gains to seven main theories: market segmentation [Foerster and Karolyi (1999), Errunza and Miller (2000)], liquidity [Foerster and Karolyi (1998)], investor recognition [Merton (1987)], legal bonding [Stulz (1999), Coffee (1999, 2002)], market timing [Sarkissian and Shill (2011)], proximity preference [Sarkissian and Schill (2004, 2009)], and business strategy theories [Bancel and Mittoo (2001)].

Despite considerable literature on the topic, there is a debate regarding the validity and the relative importance of cross-listing theories across different host markets and over time, mainly due to the following reasons: First, many argue that recent major capital market developments, such as the introduction of a single currency, Euro, in the European Union, the Sarbanes-Oxley Act (SOX) in the US, and the introduction of the Alternative Investments Market (AIM) of the London Stock Exchange, have induced firms to review the benefits and the costs of international cross-listings.¹ Failure to consider significant capital market developments might introduce spurious relations about the sources of the wealth effects of cross-listing. Second, despite the existence of many different cross-listing theories, there is no conclusive evidence about their relative importance. Prior studies typically recommend and test one valuation theory at a time. Finally, most prior studies ignore cross-listings on UK and European stock exchanges even though the number of cross-listings on these exchanges is larger than on US stock exchanges.² Along this line, US, UK and European stock exchanges differ in their level of economic development in terms of capital market size, liquidity and level of investor protection. Accordingly, the motivations for, and the net benefits of cross-listings across these markets are likely to diverse [Karolyi (2006)].

This study re-examines the wealth effects of cross-listing in the US, UK and European markets, conditional on recent capital market

1. For instance, some evidence from the press include: "Delisting European companies should think twice before delisting from the US stock markets", *Financial Times*, [April 25, 2005]; "Why cross-listing shares doesn't create value", *McKinsey Quarterly*, [November, 2008].

2. For instance, in December 2010, there were 831 foreign companies listed on European stock exchanges, such as London, Euronext and Deutsche Borse, as opposed to 816 foreign companies listed on US stock exchanges, such as NYSE and Nasdaq (source: World Federation of Exchanges statistics).

developments. The findings build on and expand prior cross-listing literature in several ways: First, they provide insights into the changing nature of the net benefits of cross-listings. In particular, the results confirm the importance of SOX as a significant determinant of both the average wealth effects of US cross-listings and of their cross-sectional variation.

Second, the study provides evidence on the explanatory power of alternative cross-listing theories. Similarly, Roosenboom and Van Dijk (2009) test the power of market segmentation, liquidity, and bonding theories for the wealth effects of cross-listing across different host markets. This study adds to Roosenboom and Van Dijk (2009) in two important ways: First, this study considers additional theories on the sources of cross-listing gains including proximity preference, market timing and business strategy theories. Second, it considers the impact of important capital market developments on the wealth effects of cross-listing. Omitting some of cross-listing theories and/or failing to recognise that capital market developments affect the wealth effects of cross-listing, likely introduces spurious relationships and affects the validity of the results.

Finally, unlike most prior literature that investigates the wealth effects of cross-listings in the US [e.g. Miller (1999), Foerster and Karolyi (1999)], the findings of this study enhance understanding of the wealth effects of cross-listings across different host markets.

The remainder of the study is organized as follows. Section II develops the hypotheses. Section III discusses the research design. Section IV presents the empirical results. Finally, section V concludes the study.

II. Hypotheses development

This section develops testable hypotheses on the sources of shareholders' wealth creation around cross-listing. In particular, it discusses the following theories: market segmentation, legal bonding, liquidity, investor recognition, proximity preference, market timing, and business strategy.

A. Market segmentation

A cross-listing in a foreign market makes a company's stock accessible

to investors who would otherwise find it less advantageous to hold the stocks due to international investment barriers. Thus, cross-listings may increase shareholders base. In that case, cross-listings reduces the company's cost of capital due to greater risk sharing, leading to higher market value [Foerster and Karolyi (1999), Errunza and Miller (2000)]. Accordingly, the market segmentation theory predicts that the wealth benefits of cross-listing depend on the degree of segmentation between the host market and home markets.

H1a. The higher the degree of market segmentation between the host market and the home market is, the higher the wealth benefits of cross-listing.

Arguably, recent developments in Europe have increased the level of market integration particularly among European countries. For instance, the introduction of a single European currency in 1999 has eliminated currency risk and encouraged cross-border equity trading within the Eurozone, making in this respect the European markets more integrated [Baele (2005)]. In contrast, the UK, a European country that opted not to join the European Monetary Union, and the US are significantly less integrated with European financial markets [Hardouvelis, Malliaropoulos and Priestley (2006), Fraser and Oyefeso (2005)].

H1b. The introduction of the Euro has reduced the wealth benefits of cross-listing within the Eurozone.

B. Legal bonding

A cross-listing on an exchange with stricter disclosure standards and better investor protection is a mechanism that "bonds" the companies to respect minority shareholders' rights [Coffee (1999), Stulz (1999)]. Consistent with the bonding theory, Doidge (2004) provides evidence that the voting premiums of cross-listed companies with dual shares are 43% lower than those of non-cross-listed companies. In contrast, Siegal (2005) argues that in the US Securities and Exchange Commission does not enforce effectively the law against cross-listed companies.

The quality of disclosure standards and the level of legal investor protection vary across international capital markets. Coffee (2002) suggests that US cross-listings are subject to increased enforcement by

the US Securities and Exchange Commission, a more demanding litigation environment, and reconciliation of financial statements in accord with US GAAP. On the contrary, UK and particularly European cross-listings must comply with less strict legal and disclosure requirements compared to those of the US cross-listings [e.g., see Coffee (1999), Baker, Nofsinger and Weaver (2002)]. In this respect, Roosenboom and van Dijk (2009) find that the level of investor protection is a significant determinant of the wealth benefits for both US and UK cross-listings, but not for European cross-listings.

H2a. The higher the level of investor protection in the host market relative to the home market is, the higher the wealth benefits of cross-listing.

It is well established in the literature that the level of investor protection in the US increased after the adoption of the SOX Act of 2002, which imposed even stricter disclosure and listing requirements for both US and non-US publicly traded firms. As a result, one would expect improvements in legal bonding benefits of cross-listings after SOX. However, SOX also implies onerous compliance costs that are recognised by investors [Zhang (2007)]. Consistent with the view that the overall effect of SOX on cross-listed firms is negative, Litvak (2007) reports significant negative market reaction to events leading to the passage of SOX. Similarly, Piotroski and Srinivasan (2008) find that SOX affects negatively shareholders' wealth, but only for small companies. In contrast to these findings, Doidge, Karolyi and Stulz (2009) suggest that the decrease in the number of new US cross-listings after SOX is driven by the change in characteristics of companies listing abroad rather than SOX compliance costs. Thus, the following hypothesis is to be tested.

H2b. The adoption of SOX has increased the wealth benefits of European cross-listings in the US.

C. Liquidity

Stock liquidity is one of the main motivations to cross-list [Bancel and Mittoo (2001)]. A cross-listing in a more liquid market enhances stock liquidity, which in turn decreases the cost of capital and increases stock market valuation [Amihud and Mendelson (1986)]. Consistent with the

liquidity theory, Foerster and Karolyi (1998) and Ejara and Ghosh (2004) find that companies that cross-list in US, experience an increase in liquidity and a decrease in bid-ask spreads. Similarly, King and Segal (2004) associate an enduring valuation effect of cross-listings with the changes in stock liquidity after cross-listing. In contrast, Roosenboom and van Dijk (2009) find no relationship between market-level liquidity and the market reaction to foreign listings.

The level of liquidity in international capital markets vary widely. Spreads in the US equity market, for instance, are significantly lower than spreads in the UK equity market [Huang and Stoll (2001)] or other European equity markets [Venkataraman (2001)]. Hence, the liquidity theory predicts that the wealth benefits of cross-listing vary across different host markets, depending on the improvement in liquidity after cross-listing.

H3. The higher the level of market liquidity in the host market relative to the home market is, the higher the wealth benefits of cross-listing.

D. Investor recognition

Merton (1987) argues that a stock's market valuation is positively related to investor awareness about the company. Cross-listing potentially improves a company's visibility abroad via increased financial analyst coverage and media attention [Baker, Nofsinger and Weaver (2002)]. Prior empirical evidence suggests that US cross-listings attract financial analysts' attention as indicated by higher coverage and accuracy [Lang, Lins and Miller (2003)]. Baker, Nofsinger and Weaver (2002) provide similar evidence, albeit weaker, for cross-listings in the UK. Therefore, the investor recognition theory predicts that the wealth benefits of cross-listing depend on the improvement in the intensity of analyst coverage after cross-listing.

H4. The higher the level of investor recognition in the host market relative to the home market is, the higher the wealth benefits of cross-listing.

E. Proximity preference

Prior literature demonstrates that investors tend to be reluctant to hold

stocks of companies that they are not familiar with [Kang and Stulz (1997)]. If familiarity is important to investors, then companies may choose to list in more proximate markets. Sarkissian and Schill (2004) provide evidence that geographic, cultural, economic and industrial proximities are important determinants of a corporate decision to cross-list. Based on this rationale, Sarkissian and Schill (2009) find that a higher level of the host market investor familiarity with the home market's products and geographical proximity largely explain a permanent decrease in the cost of capital after cross-listing.

Geographic proximity between the host and home markets is a distinctive characteristic of US, UK and European cross-listings by European companies. While continental European markets are geographically concentrated, with less than 200 km between the capitals of some European countries, the US market is more than 6,000 km away from European markets. Hence, the proximity preference theory predicts that the wealth benefits of cross-listing vary across host markets, depending on the geographic distance between the host and home markets.

H5. The higher the proximity between the host market and the home market is, the higher the wealth benefits of cross-listing.

F. Market timing

Sarkissian and Shill (2011) provide evidence that cross-listing activity takes place in waves that coincide with the relative economic performance of the host country. In other words, managers may time a company's cross-listing on a foreign exchange to take advantage of higher equity valuations in the host market. Higher equity valuations may arise during certain periods of time where equities are likely overvalued. One such period was the dot-com bubble in the late 1990s [Ljungqvist and Wilhelm (2003), Ofek and Richardson (2003)].

H6. Cross-listings during the dot-com bubble in the late 1990s are associated with higher wealth benefits of cross-listing.

G. Business strategy

King and Mittoo (2007) suggest that a cross-listing decision is associated with a company's strategy to compete in the market. In that

TABLE 1. Potential determinants of the effects of cross-listings on shareholders' wealth

Potential determinants	Expected impact on the stock price
<i>Market segmentation</i>	
Market correlations	negative
Euro	negative
<i>Legal bonding</i>	
Accounting standards improvement	positive
Investor protection improvement	positive
SOX	positive
<i>Liquidity</i>	
Market liquidity improvement	positive
<i>Investor recognition</i>	
Analyst coverage improvement	positive
<i>Proximity preference</i>	
Geographic distance	negative
<i>Market timing</i>	
Dot-com bubble	positive
<i>Business strategy</i>	
Industry	variation
Sales growth	positive
Capital raised	positive

respect, survey evidence by Bancel and Mittoo (2001) reveal that industry-specific factors are among the main motivations to cross-list. For instance, a failure to follow cross-listed industry peers may put a company at a competitive disadvantage [Pagano et al., (2001), Pagano, Roell and Zechner (2002), Mittoo (2003)]. In this vein, Mittoo (2003) finds significant industry variation in the effects on shareholders' wealth of US listings for Canadian companies.

H7a. The wealth benefits of cross-listing vary across industries.

Other company characteristics are likely to affect the wealth of shareholders around cross-listing including growth opportunities and need for external financing. Doidge, Karolyi and Stulz (2004), for instance, find a significant positive association between valuation

premium of cross-listed companies and growth opportunities. Growth opportunities should be particularly pronounced if cross-listing companies raise new equity capital. In this respect, Charitou and Louca (2009) provide ex post evidence that operating performance of capital-raising cross-listed companies is better than operating performance of both matched non-cross-listed firms and the cross-listed companies during the pre-cross-listing period.

H7b. The greater the growth opportunity is, the higher the wealth benefits of cross-listing.

H7c. Companies that raise new equity capital experience higher wealth benefits of cross-listing.

Table 1 summarizes the potential determinants of the effects of cross-listing on shareholders' wealth discussed in this section and their expected impact on the stock price of a cross-listing company.

III. Research design

A. The dataset

The sample consists of US, UK and European cross-listings by European companies during the period 1982 – 2007. In particular, cross-listings on US stock exchanges (ADRs) are identified from databases of depositary institutions such as Bank of New York and Citibank. These data are then verified and complemented with information from the main US stock exchanges, NYSE, NASDAQ, and AMEX. Concerning UK and European cross-listings, data are collected from a variety of sources such as (i) the web-sites of the major UK and European stock exchanges, including London Stock Exchange (Main Market and AIM), Euronext (Paris, Amsterdam, Brussels, and Lisbon), Frankfurt stock exchange, Irish stock exchange, Swiss stock exchange, Borsa Italiana, and Luxembourg stock exchange, and (ii) the Factiva news database. Finally, the sample is cross checked using the cross-listing dataset from Sarkissian and Schill (2004).

On this sample, cross-listing announcements are gathered from

TABLE 2. The sample distribution

Home country:	Host country														% of Sample						
	Austria	Belgium	Bulgaria	Denmark	Finland	France	Germany	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal		Spain	Sweden	Switzerland	UK	USA	Total
Austria	0	0	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0	1	0	5	2.0
Belgium	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	1	1	10	3.9
Czech Rep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.4
Denmark	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	3	5	2.0
Finland	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	3	5	2.0
France	0	5	0	0	0	1	1	0	1	0	0	0	0	0	1	1	2	2	11	25	9.8
Germany	3	0	1	0	0	4	0	0	3	0	1	0	0	0	3	1	0	6	15	37	14.6
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	1.2
Hungary	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	1	0	4	1.6
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	3	18	7.1
Italy	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	4	7	2.8
Luxembourg	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0.8
Netherlands	0	3	0	0	0	2	4	0	0	0	0	0	0	0	0	0	3	2	7	21	8.3
Norway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	6	10	3.9
Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.4
Russia	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8	2	12	4.7

(Continued)

TABLE 2. (Continued)

Home country:	Host country																	% of Sample			
	Austria	Belgium	Bulgaria	Denmark	Finland	France	Germany	Ireland	Italy	Luxembourg	Netherlands	Norway	Poland	Portugal	Spain	Sweden	Switzerland		UK	USA	Total
Spain	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	2	6	2.4
Sweden	0	1	0	3	1	1	1	0	0	0	1	1	0	0	0	0	3	1	3	16	6.3
Switzerland	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	3	8	14	5.5
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.4
UK	0	1	0	0	0	6	3	4	0	0	3	0	0	0	0	0	1	0	33	51	20.1
Period of Time:																					
1982-1989	0	3	0	1	1	7	7	0	0	0	1	1	0	0	0	3	3	7	13	47	18.5
1990-1999	3	7	0	2	1	5	9	2	5	3	6	0	0	0	4	1	4	17	45	114	44.9
2000-2007	1	0	1	0	0	7	2	2	1	1	1	0	3	2	0	0	2	24	46	93	36.6
Total	4	10	1	3	2	19	18	4	6	4	8	1	3	2	4	4	9	48	104	254	100

Note: This table reports the sample distribution by home and host country and by period of time. Home country is the country of domicile of the cross-listing company. Host country is the cross-listing destination country. The sample consists of 254 cross-listing announcement events during the period 1982-2007.

Factiva news database.³ Then, in accord with prior literature, the following restrictions are imposed: First, the study eliminates companies without return data in Datastream during the 21-day period around the announcement date. Further, the study excludes preference share listings and direct IPOs in a foreign country. Finally, to make the sample more comparable between US and European cross-listings, the study eliminates off-exchange listings such as OTC and Portal. The final sample consists of 254 cross-listing announcements by 210 companies that took place on three US exchanges (AMEX, NASDAQ, and NYSE), two markets of the UK's London Stock Exchange (Main Market and AIM) and seventeen other European exchanges.⁴

Table 2 presents detailed distribution of the sample by host and home country. The European host market listings consist of 102 events (or 40.2% of the sample), the UK host market listings consist of 48 events (or 18.9% of the sample), and the US host market listings consist of 104 events (or 40.9% of the sample). This distribution confirms the importance of non-US markets as a destination for foreign listings. Concerning the home country of cross-listings, the major contributors are the UK (51 companies or 20.1% of the sample), Germany (37 companies or 14.6% of the sample), and France (25 companies or 9.8% of the sample). Finally, 47 cross-listings or 18.5% of the sample take place in the 1980s, 114 (44.9%) in the 1990s and 93 (36.6%) in the 2000s, ensuring in this respect enough variation to investigate the impact of capital market developments on the wealth effects of cross-listing.

B. Variables measurement

This section describes the measurement of three sets of variables used in the analysis: (i) the effects of cross-listing on shareholders' wealth, as the dependent variable, (ii) measures of cross-listing theories, as the key explanatory variables, and (iii) other variables, as control variables. Table 3 provides detailed definitions and data sources for the explanatory and the control variables.

3. Note that the availability of the announcement date in the earlier years of the 1980s is limited. For instance, in Factiva news database one of the main sources of announcement information, the Reuters Financial Services, is available only from 1987.

4. The number of companies is less than the number of cross-listing events because some companies have more than one foreign listing.

TABLE 3. Variable definitions and sources

Proxy variable	Definition	Data source
Market segmentation		
Market correlations	Correlation coefficient between the home and host market returns is calculated using monthly return of Datastream Total Market indices over 3 years before the cross-listing event	Total Market indices return data are from Datastream
Legal bonding		
Accounting standards improvement	An improvement in accounting standards is a non-negative difference between the host market's accounting standards and the highest accounting standards the company had been exposed to before the cross-listing, i.e. maximum of the home market's accounting standards index and the other foreign markets' accounting standards indices where the stock had been listed *	Accounting standards index is from La Porta et al (1998)
Investor protection improvement	Investor protection is quantified as the product of the anti-director rights index and the rule-of-law index. An improvement in investor protection is a non-negative difference between the host market's investor protection and the investor protection the company had been exposed to before the cross-listing, i.e. maximum of the home market's investor protection index and the other foreign markets' investor protection indices where the stock had been listed *	Anti-director-rights index is from Djankov et al (2007); the Rule-of-law index is from Kaufmann et al (2005)

(Continued)

TABLE 3. (Continued)

Proxy variable	Definition	Data source
Liquidity		
Market liquidity improvement	Market liquidity is measured by the market turnover ratio calculated as the value of all trades of the DS Total Market index over the total market capitalization of the index for the year preceding the cross-listing. An improvement in market liquidity is a non-negative log-difference between the host market's liquidity and the market liquidity the stock had been exposed to before the cross-listing, i.e. maximum of the home market's liquidity and the other foreign markets' liquidity where the stock had been listed *	Market capitalization and turnover by value for Total Market indices data are from Datastream
Investor recognition		
Analyst coverage improvement	Analyst coverage is quantified as the number of 1-year EPS analyst estimates per company for each country-year preceding cross-listing. An improvement in analyst coverage is a non-negative log-difference between the host market's analyst coverage intensity and the analyst coverage intensity that the stock had been exposed to prior to the cross-listing, i.e. maximum of the home market's analyst coverage intensity and the other foreign host markets' analyst coverage intensity where the stock had been cross-listed *	Data on 1-year EPS analyst forecasts are from I/B/E/S database
Proximity preference		
Geographic distance	Natural log of the distance in km between the capital cities of host and home markets	Sarkissian and Schill (2004)

(Continued)

TABLE 3. (Continued)

Proxy variable	Definition	Data source
Market timing		
Dot-com bubble	Dummy variable that equals one if the cross-listing takes place during the period of time from January 1999 to March 2000 and zero otherwise	Dataset
Business strategy		
Industry	Industry dummy variables based on the FTSE/DJ Industry Classification. Basic Materials, Consumer Goods, or Industrials are further combined into industry group 'Manufacturing'; Oil & Gas and Utilities are further combined into industry group 'Natural resources'	FTSE/DJ Industry Classification is from Datastream
Sales growth	Company total sales (revenue) 3-year growth rate for the preceding year	Company total sales data are from DataStream
Capital raised	Dummy variable that equals one if the cross-listing involves issue of new equity and zero otherwise	BNY and Citibank ADRs databases; Thomson One Banker Equity Deals database
Control variables		
Company size	Natural log of the company's market capitalization (market value of common equity) in GB pounds prior to the cross-listing	Datastream

(Continued)

TABLE 3. (Continued)

Proxy variable	Definition	Data source
Control variables		
First foreign listing	Dummy variable that equals one if the listing is the first foreign listing by the company and zero otherwise	Dataset
US listings: prior OTC listing	Dummy variable that equals one if the listing takes place in the US and the company has had US OTC trading prior to the cross-listing and zero otherwise	Dataset

Note: * improvement in the variable X from cross-listing in n-th foreign host market is calculated as follows:
 $\Delta X_n = \max [(X_n - \max (X_{home}, X_1, \dots, X_{n-1})) \cdot 0]$

The effects of cross-listing on shareholders' wealth

The study measures wealth effects of cross-listing using cumulative abnormal returns (CARs) around the announcement of a cross-listing. Abnormal returns are calculated as market-adjusted returns using (i) the corresponding Datastream Total Market index local currency returns for developed countries and Poland, and (ii) the S&P/IFC market index local currency returns for the rest of the emerging countries in the sample. The CARs are the sum of abnormal stock returns over the 21-day period (−10, 10) around the announcement.⁵

Panel A of table 4 reports cumulative abnormal returns by host market. On average, an announcement of cross-listing by European companies results in a positive market reaction of 1.8% (significant at 1% level). The effects of cross-listing on shareholders' wealth, however, vary across different host markets. Within Europe the results show insignificant market reaction to a cross-listing announcement. In contrast, UK cross-listings exhibit a positive market reaction of 2.7% (significant at 5% level), whereas US cross-listings experience a positive market reaction of 3.3% (significant at 1% level). Overall, these findings are consistent with Roosenboom and van Dijk (2009).

Panel B of table 4 reports cumulative abnormal returns by host market, before and after important capital market developments. The results show no effect on shareholders' wealth of cross-listings within Europe, neither before nor after the introduction of the Euro. Regarding UK cross-listings, on average Main Market cross-listing announcements do not seem to generate positive cumulative abnormal returns whereas AIM cross-listing announcements result in positive market reaction (significant at the 10% level). This finding suggests that the market views cross-listings on AIM as more favorable than on the Main market. In this regard, Jenkinson and Ramadorai (2007) document significant positive long-term excess stock returns of UK companies that switch their listing from the Main Market of the LSE to AIM. Finally, the results indicate that US cross-listings before the adoption of SOX yield positive abnormal returns of 3.4% (significant at the 1% level), but insignificant abnormal returns after the adoption of SOX. This finding, consistent with Zhang (2007), Zingales (2007) and Litvak (2007)

5. As a robustness test cumulative abnormal return are also estimated for alternative event windows, such as (−5,5) days, (−3,3) days, and (−1,1) days, around the announcement of a cross-listing. The results for these alternative event windows are qualitatively similar.

TABLE 4. The wealth effects of cross-listing

	All host markets			Host Europe			Host UK			Host US		
	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median	N
A. CARs by host market												
All home markets	0.018*** (2.63)	0.008 (0.66)	254	-0.002 (-0.28)	-0.002 (1.16)	102	0.027*** (2.11)	0.014*** (8.14)	48	0.033*** (2.49)	0.014 (2.00)	104
B. CARs before and after important capital markets developments												
before Euro				-0.004 (-0.45)	-0.001 (0.72)	91						
Eurozone				0.011 (0.60)	-0.005 (2.09)	11						
Main Market							0.014 (1.15)	0.012** (4.12)	39			
AIM							0.084* (2.08)	0.070*** (28.1)	9			
before SOX										0.034** (2.67)	0.023** (4.22)	83
after SOX										0.029 (0.69)	-0.008** (5.15)	21

Note: The table reports descriptive statistics of the wealth effects of cross-listing. The sample consists of 254 cross-listing announcement events during the period 1982-2007. Panel A reports the wealth effects by host market, while Panel B reports the wealth effects by host market, before and after the important capital market developments. Abnormal returns are market-adjusted returns with Datastream Total Market index returns in local currency used as a proxy for market returns. Cumulative abnormal returns are the sum of abnormal returns over the 21-day (-10, 10) event window. 'N' indicates the number of observations, t-statistics for means and Chi-sq statistics from Kruskal-Wallis test for medians are reported in parenthesis below the coefficient. ***, ** indicates significance at 1%, 5% and *** indicates significance at 10%.

suggests that the costs of US cross-listing outweigh the benefits after the adoption of SOX.

In summary, descriptive statistics analysis is consistent with the view that the wealth effects of cross-listing vary across host markets and over time.

Determinants of the wealth effects of cross-listing

Consistent with Roosenboom and van Dijk (2009), the study explores the strength of the market segmentation theory using estimated correlations between the host and home market returns. If cross-listings from more segmented markets are more beneficial, as the market segmentation theory predicts, then a negative relationship of this variable with cumulative abnormal returns is expected.

In order to investigate the empirical validity of the legal bonding theory, the study calculates an improvement in accounting standards as a non-negative difference of the accounting standards index from La Porta et al., (1998) between the host country and the highest accounting standards the company had been exposed to before the cross-listing.⁶ Using a similar procedure, the study computes an improvement in investor protection using as a proxy for investor protection the product of the anti-director rights index from Djankov et al., (2008) and the rule-of-law index from Kaufmann, Kraay and Mastruzzi (2005).⁷ The legal bonding theory predicts a positive relationship between an improvement in either accounting standards or investor protection and cumulative abnormal returns.

Concerning the liquidity theory, an improvement of market-level liquidity is defined as a non-negative log-difference between the host market's turnover ratio and turnover ratio of other markets were the stock had been listed. The liquidity theory predicts a positive

6. An improvement in the variable X from cross-listing in n-th foreign host market is calculated as follows: $\Delta X_n = \max [(X_n - \max (X_{home}, X_1, \dots, X_{n-1})), 0]$. This calculation takes into account that companies may choose to cross-list in more than one market. In this case a consequent cross-listing improves the company's environment only relative to the environment the company has been exposed to before the cross-listing, including the home market environment and the environment of the host market where the company had been listed previously.

7. Durnev and Kim (2005) argue that the legal index is a superior measure of the level of investor protection compared to the anti-director rights index, as it reflects both de jure, which by itself is not sufficient, and de facto aspects of investor protection.

relationship of this variable with cumulative abnormal returns.

The study evaluates investor recognition theory using an improvement in the intensity of country-level analyst coverage, similar to Pagano et al., (2001), defined as a non-negative difference between the average number of analysts per company between the host market and other markets where the stock had been listed. In accord with the investor recognition theory, a positive relationship of an improvement in analyst coverage with cumulative abnormal returns is expected.

Following Sarkissian and Schill (2004), the study evaluates empirically the proximity preference theory using the log of geographic distance, in kilometres, between the capital cities of the host and home markets. The proximity preference theory predicts a negative relationship of this variable with cumulative abnormal returns.

To evaluate the market timing theory the study uses a dot-com dummy variable, similar to Ljungqvist and Wilhelm (2003) and Ofek and Richardson (2003), to capture a period of “hot” market. Based on the market timing theory, a positive relationship of this variable with cumulative abnormal return is expected.

Finally, the study evaluates the business strategy theory using several firm-level characteristics: First, a company’s industry is defined based on FTSE/DJ industry firm-level classification obtained from Datastream. In order to reduce the number of industry-based sub-groups, companies from Basic materials, Consumer goods, or Industrial industry groups are categorized as ‘Manufacturing’, while Oil & Gas and Utilities are categorized as ‘Natural resources’. Second, a company’s growth opportunities are measured by the three-year sales growth preceding the cross-listing. Lastly, motivated by the findings of Foerster and Karolyi (1999), the study obtains data on capital raising activity on the foreign market following the cross-listing from BNY and Citibank ADRs databases and Thomson One Banker Equity Deals database. The business strategy theory predicts a variation of the wealth effects of cross-listing across different firm-level characteristics.

Table 5 reports summary statistics for all the measures of cross-listing theories. As expected, the average correlation between the host and home market returns is the highest for cross-listings within Europe (0.66), indicating that European markets are more integrated.

In contrast to the view that cross-listing companies bond to a better legal environment, the evidence demonstrates that less than 47% (42%) of cross-listings result in an improvement in legal environment, proxied by accounting standards index (investor protection index). The results,

however, vary across host markets. The UK host market stands out in terms of the improvement in legal environment relative to the European and US host markets: most UK cross-listings result in an improvement in legal environment (68.8% and 97.2% exhibit improvements in accounting standards and investor protection, respectively).

On average, companies cross-list their stocks in more liquid markets compared to their home market as indicated by the mean and median improvement in the market liquidity variable (0.72 and 0.30 respectively) and the percentage of positive observations (65.2%). Mostly, the improvements in liquidity concentrate in UK and US cross-listings (81.8% and 80.0%, respectively) rather than in European cross-listings (38.4%).

About half of the cross-listings (49.8%) take place in markets with greater investor recognition as indicated by an improvement in analyst coverage. As expected, UK and US cross-listings result in greater investor recognition relative to European cross-listings (54.5%, 53.5%, and 43.2% for UK, US, and European cross-listings, respectively).

Not surprisingly, relative to the European and UK cross-listings, the US cross-listings exhibit the largest geographic distance between the capitals of the host and home markets (632 km, 707 km, and 6,286 km for European, UK and US cross-listings, respectively).

Companies time cross-listings in periods of higher valuations: 8% of the sample companies cross-list during the dot-com bubble. The timing of cross-listing is more relevant for US cross-listings than for European and UK cross-listings (12%, vs. 8%, and 0%, respectively).

Concerning the company characteristics, on average, cross-listing companies experience significant growth before the cross-listing (68%), particularly before European cross-listings (97%). Consistent with the view that cross-listings improve access to capital, 22% of cross-listings raise new equity capital (30% of US cross-listings). In terms of industrial affiliation, companies from a wide range of industries choose to cross-list. The most represented industries in the sample are manufacturing (40%) and financial companies (20%).

Overall, descriptive statistics provide initial evidence that different theories may explain the wealth effects of cross-listing across different host markets.

Control variables

In accord with prior literature the study includes several control

TABLE 5. Descriptive statistics

Variable	All host market						
	N	Mean	Median	Min	Max	St Dev	>0, %
Market correlations	243	0.63	0.67	-0.05	0.94	0.18	
Accounting standards improvement	229	3.51	0.0	0.0	27.00	5.10	46.7
Investor protection improvement	229	3.51	0.0	0.0	27.00	5.10	41.5
Market liquidity improvement	201	0.72	0.3	0.0	4.43	1.04	65.2
Analyst coverage improvement	231	0.33	0.0	0.0	2.60	0.50	49.8
Geographic distance	240	7.33	7.1	5.1	9.02	1.31	
Geographic distance, km	240	3,048	1,209	170	8,261	2,829	
Dot-com bubble	254	0.08	0.0	0.0	1.00	0.27	
Sales growth	211	0.68	0.27	-11.9	19.94	2.11	
Capital raised	254	0.22	0.0	0.0	1.0	0.41	
Industry: Financials	254	0.20	0.0	0.0	1.0	0.40	
Industry: Healthcare	254	0.11	0.0	0.0	1.0	0.31	
Industry: Manufacturing	254	0.40	0.0	0.0	1.0	0.49	
Industry: Nat. resources	254	0.09	0.0	0.0	1.0	0.28	
Industry: Services	254	0.09	0.0	0.0	1.0	0.28	
Industry: Technology	254	0.12	0.0	0.0	1.0	0.32	
Company size	254	7.07	7.44	1.32	11.35	2.07	
Company size, million GBP	254	5,484	1,702	3.75	85,366	10,630	
First foreign listing	254	0.53	1.0	0.0	1.0	0.50	
US listings: prior OTC	254	0.11	0.0	0.0	1.0	0.32	

(Continued)

TABLE 5. (Continued)

Variable	Europe			UK			US		
	N	Mean	Median >0, %	N	Mean	Median >0, %	N	Mean	Median >0, %
Market correlations	94	0.66	0.69	48	0.61	0.63	101	0.61	0.65
Accounting standards improvement	91	1.81	0.0	36	9.19	6.50	102	3.01	0.0
Investor protection improvement	101	0.58	0.0	48	4.02	2.52	104	0.41	0.00
Market liquidity improvement	73	0.34	0.0	33	1.50	1.07	95	0.74	0.46
Analyst coverage improvement	88	0.34	0.0	44	0.39	0.23	99	0.29	0.04
Geographic distance	98	6.24	6.14	40	6.41	6.14	102	8.74	8.73
Geographic distance, km	98	632	433	40	707	463	102	6,286	6,198
Dot-com bubble	102	0.08	0.0	48	0.0	0.0	104	0.12	0.0
Sales growth	84	0.97	0.27	37	0.15	0.29	90	0.62	0.31
Capital raised	102	0.12	0.0	48	0.25	0.0	104	0.30	0.0
Industry: Financials	102	0.25	0.0	48	0.17	0.0	104	0.16	0.0
Industry: Healthcare	102	0.06	0.0	48	0.08	0.0	104	0.17	0.0
Industry: Manufacturing	102	0.42	0.0	48	0.48	0.0	104	0.35	0.0
Industry: Nat. resources	102	0.08	0.0	48	0.10	0.0	104	0.09	0.0
Industry: Services	102	0.07	0.0	48	0.15	0.0	104	0.08	0.0
Industry: Technology	102	0.13	0.0	48	0.02	0.0	104	0.15	0.0
Company size	102	7.01	7.32	48	6.01	6.38	104	7.63	7.80
Company size, million GBP	102	3,893	1,515	48	3,079	589	104	8,154	2,448
First foreign listing	102	0.46	0.0	48	0.69	1.00	104	0.52	1.0
US listings: prior OTC	102	0.0	0.0	48	0.0	0.0	104	0.28	0.0

Note: The table reports descriptive statistics for the explanatory and control variables by host market. The sample consists of 254 cross-listing announcement events during the period 1982-2007. The variables are defined in table 3.

variables. Particularly, (i) company size, defined as the company's market capitalization, (ii) first foreign listing, defined as a dummy variable that equals one for the first foreign listing, and zero otherwise,⁸ and (iii) prior OTC listing, defined as a dummy variable that equals one for US listing that had an OTC listing before, and zero otherwise.⁹

Table 5 reports that the market capitalization of the cross-listing companies ranges from 3.75 million GBP to 85.4 billion GBP. Larger companies demonstrate a preference to cross-list in the US while smaller companies cross-list in the UK; the average company size is 8.15 billion GBP for US cross-listings and 3.08 billion GBP for UK cross-listings. Furthermore, 53% of the sample cross-listing events represent a first foreign listing. The percentage of first foreign listings is the highest for UK cross-listings (69%). Lastly, 28% of the US cross-listings have had an OTC trading in the US before the US stock exchange listing.

IV. Empirical results

This section discusses the results from multivariate regression analysis that evaluates empirically the relative explanatory power of alternative theories in explaining the wealth effects of cross-listing across host markets, conditional on important capital market developments. Particularly, the study estimates variants of the following regression model:

$$CAR_i = \alpha + \sum_{n=EU,UK,US} \beta_n Host_{i,n} + \sum_j \gamma_j CL_{i,j} + \sum_k \delta_k Control_{i,k} + \varepsilon_i \quad (1)$$

where CAR_i is the cumulative abnormal return of stock i for the 21-day (-10, 10) event window around the announcement of cross-listing,

8. Sarkissian and Shill (2009) report a significant difference in the wealth effects of a first foreign listing and a subsequent foreign listing.

9. OTC listing is easier and faster way to gain entry to the US capital market compared to a US exchange listing. Without SEC registration or additional disclosure, OTC listing makes the stock accessible to US investors. Foreign stocks with US OTC listing may choose to upgrade to a US stock exchange listing to improve stock liquidity, visibility to investors, prestige, the level of investor protection and, ultimately, the stock's market valuation. Accordingly, an upgrade from a US OTC to a US stock exchange listing should result in a positive market reaction, however, to a lesser degree than a US listing without prior OTC.

$Host_{i,n}$ is a host market dummy variable that equals one for each destination market of stock i , and zero otherwise; $CL_{i,j}$ is the cross-listing theory proxy j of stock i ; $Control_{i,k}$ is the control variable k of stock i . All variables are defined in table 3.

The analysis starts with evaluation of each cross-listing theory separately. Table 6 report the results. Specification model (1) includes all host markets whereas models (2) and (3) include only US host market and non-US host markets, respectively.¹⁰ All regressions include the control variables (see section III, B, *Control variables*) but, for brevity, table 6 reports only the coefficients of each cross-listing theory proxy variable. Overall, the results show strong support for the business strategy theory of cross-listing. In particular, the benefits of cross-listing vary significantly across industries (Hypothesis 7a). Natural resources companies experience significant positive abnormal returns (significant at the 10% level) while financial companies exhibit significant negative market reaction (significant at the 10% level). These results are mainly driven by US cross-listings rather than non-US cross-listings. Also the results show lower abnormal returns for companies that belong to services industry (significant at the 5% level).

Regarding non-US cross-listings, the results provide empirical support for the legal bonding (Hypothesis 2a) and market liquidity (Hypothesis 3) theories. In particular, there is a positive relation between accounting standards improvement and market liquidity improvement and abnormal returns (significant at the 5% and 10% level, respectively).

Finally, the study examines whether SOX has affected the importance of the legal protection in explaining the wealth benefits of cross-listing. In particular, the regressions include interaction variables of the legal bonding variables with the SOX dummy (a dummy variable that equals one for the years after the adoption of SOX, and zero otherwise). Also the regression model includes the SOX dummy itself. A similar approach is used to evaluate the impact of the introduction of the Euro on the wealth benefits of cross-listing and on the relevance of market segmentation in explaining the sources of the wealth benefits of European cross-listings. Results show that abnormal returns for US cross-listings are lower after SOX (significant at the 1% level). At the same time, SOX increases the legal bonding benefits of cross-listing

10. The importance of cross-listing theories may vary across markets. However, this analysis focuses only on US and non-US markets to ensure enough regression power.

TABLE 6. The relation between cross-listing theories and shareholders' wealth: Independent analysis of each theory

Variable	(1) All host markets			(2) Host US			(3) Excluding Host US		
	estimate	Adj-R2	N	estimate	Adj-R2	N	estimate	Adj-R2	N
Market correlations	-0.02 (-0.65)	0.015	243	-0.08 (-1.32)	0.007	101	0.0002 (0.01)	0.038	142
Market correlations							-0.02 (-0.55)	0.033	142
Eurozone dummy							-0.06 (-1.04)		
Market correlations Eurozone							0.10 (1.25)		
Accounting standards improvement	0.001 (0.57)	0.013	229	-0.002 (-0.91)	-0.013	102	0.002* (1.96)	0.067	127
Accounting standards improvement SOX dummy				-0.003 (-1.23)	0.016	102			
Accounting standards improvement after SOX				-0.07*** (-2.75)					
Investor protection improvement	0.002 (0.78)	0.015	253	0.01 (1.28)	0.014	104	0.002 (0.92)	0.038	149

(Continued)

TABLE 6. (Continued)

Variable	(1) All host markets			(2) Host US			(3) Excluding Host US		
	estimate	Adj-R2	N	estimate	Adj-R2	N	estimate	Adj-R2	N
Investor protection improvement				-0.01 (-1.01)	0.099	104			
SOX dummy				-0.06*** (-2.61)					
Investor protection improvement after SOX				0.04*** (6.83)					
Market liquidity improvement	0.01 (1.18)	0.018	201	-0.001 (-0.05)	-0.004	95	0.02** (2.51)	0.089	106
Analyst coverage improvement	0.01 (0.85)	0.020	231	0.02 (1.11)	0.010	99	0.02 (1.25)	0.053	132
Geographic distance	-0.02 (-1.59)	0.018	240	0.01 (0.12)	-0.019	102	-0.01 (-1.30)	0.048	138
Dot-com bubble	0.04 (1.28)	0.027	254	0.03 (0.90)	0.0001	104	0.04 (0.80)	0.047	150
By industry									
Financials	-0.02* (-1.84)	0.024	254	-0.06*** (-2.73)	0.034	104	0.001 (0.05)	0.035	150
Healthcare	0.0002 (0.01)	0.016	254	-0.02 (-0.75)	-0.001	104	0.03 (1.47)	0.046	150

(Continued)

TABLE 6. (Continued)

Variable	(1) All host markets			(2) Host US			(3) Excluding Host US		
	estimate	Adj-R2	N	estimate	Adj-R2	N	estimate	Adj-R2	N
Manufacturing	0.01 (0.64)	0.018	254	0.03 (1.38)	0.009	104	-0.004 (-0.29)	0.035	150
Natural resources	0.03* (1.67)	0.024	254	0.06** (2.45)	0.023	104	0.01 (0.33)	0.035	150
Services	-0.01 (-0.48)	0.017	254	-0.06*** (-3.29)	0.016	104	0.02 (0.90)	0.038	150
Technology	-0.003 (-0.17)	0.017	254	0.03 (0.97)	0.004	104	-0.04 (-1.21)	0.053	150
Sales growth	0.004 (0.81)	0.028	211	0.02 (1.48)	0.036	90	0.002 (0.37)	0.039	121
Capital raised	0.01 (0.50)	0.018	254	-0.01 (-0.26)	-0.007	104	0.02 (1.08)	0.047	150

Note: The table reports coefficient estimates of the relation between cumulative abnormal returns and each of the cross-listing theories and control variables. The variables are defined in table 3. Cumulative abnormal returns are winsorized at 1%. Model (1) is estimated using all host markets, and thus includes Host US and Host UK dummy variables. Model (2) is estimated for the sub-sample of US cross-listings and includes no host dummy variables. Model (3) is estimated for the sub-sample of UK and European cross-listings (excluding US host market) and includes Host UK and AIM dummy variables. Additionally, several regressions include Eurozone and SOX dummy variables and interaction variables of these dummy variables with the relevant explanatory variables (also reported in the table). The table also reports the number of observations used (N) and Adjusted R2 (Adj-R2) for each regression. Newey-West T-statistics are reported in parentheses below the coefficient. '***' indicates significant at 1%, '**' indicates significant at 5% and '*' indicates significant at 10%.

(Hypothesis 2b) since investor protection improvement after SOX is positively related with abnormal returns (significant at the 5% level). In regards to the wealth effects of Euro, the analysis provides no evidence that its introduction has a significant impact on the relationship between market segmentation and abnormal returns (Hypothesis 1b). A potential explanation is that most of the European companies in the sample cross-list in the 1990s and 2000s when international investment barriers, particularly within Europe, become less important.

Overall, the empirical evidence in table 6 is consistent with the view that the benefits of cross-listing vary across host markets and time. This type of analysis, however, has primarily descriptive value because it does not account for potential interrelations between the cross-listing theories. To account for this, the study also employs regressions as in equation (1) that include proxy variables for all the theories.

Table 7 reports the results. Model (1) reports coefficient estimates of the pooled sample, without conditioning on the host market or capital market developments. As expected, and consistent with prior literature [Roosenboom and van Dijk (2009)], the explanatory power of the model is poor, having an Adjusted R^2 of only 3.1%. Results suggest that legal bonding increases the wealth benefits of cross-listing, consistent with the legal bonding theory (Hypothesis 2a). Particularly, an improvement in investor protection increases the wealth effects of cross-listing (significant at the 5% level). There is also a negative relation between the geographic distance and the effects of cross-listings on shareholders' wealth (significant at the 5% level), confirming in this respect the proximity preference theory (Hypothesis 5). Furthermore, there is evidence consistent with the market timing theory (Hypothesis 6) and the business strategy theory (Hypothesis 7a). Specifically, the results show that cross-listings during the dot-com bubble and cross-listings by companies from natural resources industry experience higher wealth benefits (both significant at the 10% level).

Assuming that the determinants of the effects of cross-listing on shareholders' wealth vary across host markets, pooling the cross-listings as in model (1) is likely to deteriorate the explanatory power of the regression model and may introduce spurious relations between the wealth effects and cross-listing theories. A more appropriate evaluation of the determinants of the wealth benefits of cross-listing should condition the regression estimates on host market. Models (2) and (3) report the coefficient estimates for US and non-US cross-listings, respectively. As expected, the explanatory power of the models, as

TABLE 7. The relation between cross-listing theories and shareholders' wealth and the impact of SOX and the Euro: Pooled analysis of all theories

Variable	(1) All host markets	(2) Host US	(3) excl. Host US	(4) Host US	(5) excl. Host US
Host US dummy	0.136** (2.56)				
US listing: after SOX				-0.09** (-2.14)	
Host UK dummy	0.021 (0.72)		-0.04 (-1.58)		-0.043 (-1.63)
AIM dummy			0.088* (1.84)		0.088* (1.81)
Eurozone listing dummy					0.101 (0.80)
Market correlations	0.006 (0.11)	-0.168** (-2.14)	0.183*** (3.63)	-0.074 (-0.80)	0.226*** (3.89)
Market correlations Eurozone					-0.153 (-0.92)
Accounting standards improvement	-0.001 (-0.52)	-0.002 (-0.50)	0.002 (1.12)	-0.006 (-1.32)	0.002 (1.08)
Accounting standards improvement after SOX				0.018** (2.04)	
Investor protection improvement	0.016** (2.26)	0.005 (0.28)	0.015** (2.28)	0.016 (0.88)	0.016** (2.19)

(Continued)

TABLE 7. (Continued)

Variable	(1) All host markets	(2) Host US	(3) excl. Host US	(4) Host US	(5) excl. Host US
Investor protection improvement after SOX					
Market liquidity improvement	-0.002 (-0.17)	-0.011 (-0.8)	-0.001 (-0.08)	-0.025 (-0.67)	-0.004 (-0.29)
Analyst coverage improvement	-0.016 (-0.84)	-0.002 (-0.07)	0.011 (0.43)	-0.035** (-2.22)	0.02 (0.68)
Geographic distance	-0.035** (-2.20)	-0.085 (-0.31)	-0.021 (-1.48)	-0.036 (-0.13)	-0.02 (-1.40)
Dot-com bubble	0.048* (1.74)	0.054 (1.47)	0.031 (0.62)	0.036 (0.95)	0.036 (0.67)
Industry: Financials	0.005 (0.17)	0.015 (0.38)	0.0 (0.00)	0.002 (0.04)	0.005 (0.22)
Industry: Healthcare	-0.003 (-0.09)	0.031 (1.00)	-0.039 (-1.25)	0.015 (0.50)	-0.035 (-1.17)
Industry: Manufacturing	0.022 (0.98)	0.064** (2.32)	0.006 (0.25)	0.049 (1.57)	0.006 (0.25)
Industry: Nat. resources	0.063* (1.84)	0.146*** (3.08)	0.011 (0.39)	0.133*** (2.68)	0.013 (0.49)
Industry: Technology	0.025 (0.62)	0.109** (2.53)	-0.029 (-0.81)	0.097** (2.07)	-0.032 (-0.89)
Sales growth	0.004 (0.83)	0.019* (1.83)		0.018* (1.88)	

(Continued)

TABLE 7. (Continued)

Variable	(1) All host	(2) Host	(3) excl.	(4) Host	(5) excl.
	markets	US	Host US	US	Host US
Capital raised	0.004 (0.13)	-0.023 (-0.72)	0.044 (1.12)	-0.024 (-0.74)	0.053 (1.27)
Company size	-0.006 (-1.39)	0.001 (0.13)	-0.005 (-0.84)	-0.002 (-0.22)	-0.005 (-0.91)
First listing	0.002 (0.10)	0.018 (0.77)	-0.021 (-1.30)	0.011 (0.47)	-0.02 (-1.24)
US listing: prior OTC	-0.027 (-1.19)	-0.044 (-1.64)		-0.045 (-1.60)	
Intercept	0.23* (1.98)	0.813 (0.34)	0.014 (0.12)	0.393 (0.17)	-0.021 (-0.19)
R2	0.152	0.310	0.335	0.368	0.344
Adj-R2	0.031	0.124	0.167	0.158	0.153
N	154	81	85	81	85

Note: The table reports coefficient estimates of the relation between cumulative abnormal returns and all the cross-listing theories and control variables. The variables are defined in table 3. Cumulative abnormal returns are winsorized at 1% level. Model (1) is estimated for the full sample, Models (2) and (4) are estimated for the sub-sample of US cross-listings and Models (3) and (5) are estimated for the sub-sample of UK and European cross-listings (excluding US host market). Models (4) and (5) additionally include Eurozone and SOX dummy variables and interaction variables of these dummy variables with the legal bonding and market segmentation variables, respectively. The table also reports R-squared (R2), Adjusted R2 (Adj-R2) and the number of observations used (N) for each regression. Newey-West T-statistics are reported in parentheses below the coefficient. ***, ***, * indicates significant at 1%, **, * indicates significant at 5% and * indicates significant at 10%.

indicated by the Adjusted R^2 , increases substantially to 12.4% and 16.7%, respectively.

The results in model (2) illustrate that the market segmentation is an important determinant of the wealth effects of US cross-listings (Hypothesis 1a). The more segmented the home market is from the US market, the greater the cumulative abnormal returns (significant at the 5% level). The results also show strong evidence consistent with the business strategy theory (Hypothesis 7a). Cross-listings from manufacturing, natural resources and technology industries exhibit higher cumulative abnormal returns (significant at the 5% level, significant at the 1% level and significant at the 1% level, respectively). Finally, there is also evidence that firms with higher growth in sales experience significant positive cumulative abnormal returns (significant at the 10% level), consistent with Hypothesis 7c.

The results in model (3) provide evidence that the market segmentation and the legal bonding theories are important determinants of cumulative abnormal returns for non-US cross-listings. In particular, non-US cross-listings appear to exhibit higher wealth benefits when the host and home markets are less segmented as indicated by a positive relation between the market return correlations and cumulative abnormal returns (significant at the 5% level), something that is inconsistent with the market segmentation theory (Hypothesis 1a). The evidence also shows that the larger the improvement in investor protection, the larger the wealth benefits of cross-listing are (significant at the 5% level). This finding is consistent with the legal bonding theory and provides support for Hypothesis 2a.

Finally, the study investigates the impact of the capital market developments on the wealth effects of cross-listing. Similar to the estimation procedure in table 6, the regressions additionally include dummy variables for SOX and Euro and interaction terms with legal bonding and market segmentation variables, respectively. Also, for non-US cross-listings the regressions include a dummy variable that equals one if the host market is the AIM, and zero otherwise. The last two columns of table 7 reports the results: model (4) reports the results for US cross-listings while model (5) reports the results for non-US cross-listings. As expected, despite the increase in the number of explanatory variables, the Adjusted R^2 for model (4) is 15.8%, which is significantly larger than the corresponding statistic of model (1) and model (2) of table 7. This confirms the importance of SOX as a determinant of the effects of US cross-listings on shareholders' wealth.

There is no such evidence, however, regarding the importance of the introduction of the Euro for European cross-listings in model (5).

The results show that after the adoption of SOX cross-listing companies experience significantly lower cumulative abnormal returns. Furthermore, legal bonding now emerges as an important determinant of cumulative abnormal returns (Hypothesis 2a). Similar to the previous findings, results also show evidence consistent with the business strategy theory (Hypothesis 7a). In contrast, the evidence is inconsistent with the market liquidity theory (Hypothesis 3). Finally, the relation between market segmentation and cumulative abnormal returns ceases to exist.

In regard to the impact of the Euro, the findings provide no evidence that its introduction has reduced the benefits of cross-listing (i.e. no support for Hypothesis 1b). Also, in contrast to the market segmentation theory and Hypothesis 1a, there is a positive relation between market returns correlations and cumulative abnormal returns for European cross-listings that holds only for the period before the introduction of the Euro. After the introduction of the Euro this relation is insignificant. Finally, the results show that companies that cross-list on AIM exhibit positive cumulative abnormal returns.

In summary, the results for US cross-listings are consistent with the business strategy theory. Furthermore, the legal bonding theory is an important determinant of cumulative abnormal returns, but only after the adoption of SOX. Finally, there is also a relation between announcement returns and market liquidity, albeit with an opposite sign. In regards to the non-US cross-listings, evidence supports the legal bonding theory. The findings provide no evidence that the introduction of the Euro has altered the wealth effects of European cross-listings. Lastly, in contrast to market segmentation theory, there is a positive relation between cumulative abnormal returns and market correlations.

Overall, these results support the conjecture that the effects of cross-listings on shareholders' wealth vary across host markets and are sensitive to capital market developments.

V. Conclusion

This study compares the shareholders' wealth effects of cross-listings by European companies in the US, in the UK and within Europe and

examines the determinants of the cross-sectional variation of these effects, conditional on recent capital market developments. First, the findings show that international cross-listings, on average, have a positive and significant impact on shareholders' wealth that varies significantly across destination markets, with the US and UK host markets providing the highest wealth benefits.

Second, this study investigates whether the wealth benefits of cross-listing are subject to the changes in the listing environment due to the introduction of a single European currency Euro, the introduction of an alternative market for small growth stocks, AIM, in the UK, and the adoption of SOX in the US. The findings show that SOX negatively affects the wealth benefits of US cross-listing while UK cross-listing gains are primarily concentrated in AIM listings rather than Main Market listings. Furthermore, the results provide no evidence that the introduction of the Euro has reduced the benefits of cross-listings within the Eurozone.

Finally, this study evaluates the relative importance of different determinants of the wealth effects of cross-listing, including market segmentation, legal bonding, liquidity, investor recognition, proximity preference, market timing and business strategy theories, after considering the effect of the introduction of the Euro and the adoption of SOX. Overall, results show that the significance of the alternative theories in explaining the wealth benefits of cross-listing varies across host markets and over time.

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