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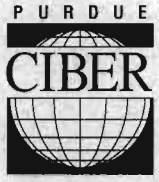

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A Survey of Evidence on Domestic and International Stock Exchange Listings with Implications for Markets and Managers

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Abstract

As new equity markets continue to emerge worldwide, the topic area of stock exchange listings has sparked interest among financial scholars and corporate managers alike. In this article, we review and synthesize empirical studies that examine both new and dual international and intranational listings of common stocks. The studies that we review have been conducted to provide managers and policy makers with information about the effects of listing on stock prices and to use listings as a venue to provide insights about market organization, market micro-structure, factors that determine stock prices and returns, and international capital market integration. In general, new listings are associated with an increase in stock value and no change in risk.

Key words: Stock exchange listings; Stock market liquidity; Stock market structure

JEL classification: F23, G10, G15, G38

1. Introduction

In this article, we review and synthesize empirical research findings regarding new and dual listings of common stocks on exchanges within and across national borders. The research that we review addresses such questions as the effect of exchange listing on stock price, risk, and volume of trading, managerial motives (typically identified by questionnaire surveys) for managers who elect to change the trading locale of their company's stock or who elect to have the stock simultaneously listed on more than one exchange (i.e., dually listed) either across national borders or within a single country, and the characteristics of firms whose managers choose a new listing or a dual listing for their company's stock. We also review a related set of literature that uses exchange listings as a setting to examine empirically certain general propositions about market microstructure, the relative integration or segmentation of international capital markets, and the way in which information is transmitted in capital markets.

Our motivation for undertaking this review is three-fold: First, emerging economies around the globe are characterized by emerging stock markets. In many, but not all, instances, these markets are evolving with the encouragement and support of government officials. With that government support inevitably comes governmental regulation and "guidance" involving such issues as the structure of the exchange, the degree of competition and foreign trading/ownership that will be permitted, and the degree of disclosure that will be required of listed firms. While domestic politics will undoubtedly play an important role in the specifics of that regulation and governmental guidance, the existing empirical evidence may also be of use to the interested parties. Second, corporate managers around the globe must make decisions about where and on how many exchanges to have their firm's stock listed. For these decision makers, the empirical evidence may play a greater role, and local politics a lesser role, as they make those decisions. Third, the topic area of domestic and international, new and dual listings has proven to be fertile ground for financial scholars. We use this as an opportunity to bring together the relevant literature for interested future scholars.

We first give a brief overview of the way in which alternative markets are organized for trading. Here, we give more attention to the way in which markets are organized in the United States (U.S.) than elsewhere. We do so for two reasons. First, most of the studies of new listings address that question in the setting of U.S. markets. Second, other exchanges throughout the world appear to be organized as either auction or dealer markets and the U.S. provides good examples of each.

We begin our survey of the empirical studies with a review of various studies of the effect of listing on stock prices. Our reason for doing so is the fundamental presumption that managers are concerned with the effect of their decisions on shareholders' wealth of which stock price is the primary indicator. Government officials may have other objectives in mind as well, but, presumably, are not adverse to the organization of a stock exchange that enhances the value of companies under their jurisdiction so long as doing so does not interfere unduly with achievement of their own objectives. Studies that examine the effect of listing on stock price seem to indicate that a change in listing status from "unlisted" to listed on an exchange is associated with a significant increase in stock price at the time of the announcement of the decision to list. The evidence on dual listings is mixed. The evidence indicates that dual listings within a single country are not associated with a stock price increase. However, some studies of international dual listings do indicate that dual listings are associated with increases in share value. As part of our review of studies of stock price effects of listings, we also consider studies of prices around stock delistings. The evidence on this point is that stock prices decline when news of an impending delisting reaches the market.

Two derivative strands of research flow from the studies of stock price. The first of these explores the source of the increase in value that accompanies listing. This strand is rooted in theories of market microstructure and generally comes to the conclusion that, to the extent that listing does enhance share value, the increase is due to the increase in liquidity, as measured by a reduction in bid-ask spread or an increase in volume that accompanies a new listing, and/or the increase in investor base that accompanies new listings. These results then tie neatly into the

results of various survey studies of managers' attitudes and perceptions in which managers cite increased liquidity and increased visibility as the primary motives for listing and/or dual listing their company's stock. The second strand of research focuses on whether listing and dual listings are associated with a change in the stock's risk where risk is measured either as volatility of return or "beta". The evidence on this question is not totally one-sided, but the preponderance of evidence suggests that international dual listings are associated with an increase in volatility, new listings and dual listings within the same country are not associated with any systematic change in volatility, and neither dual nor new listings are associated with any change in beta.

We then take brief forays to consider two "special" topics within the listing literature. The first of these is the well-documented negative returns that follow listings - - which has come to be known as the "post-listing puzzle" in stock returns. The second has to do with whether reporting and disclosure requirements affect managers' decisions about where to list their company's stock. On the first point, the existing studies indicate that newly-listed stocks have historically performed poorly shortly after listing and that this poor performance may last for up to three years following listing. Some recent evidence indicates, however, that this post-listing negative drift has attenuated during the 1980s. On the second point, the evidence indicates that when managers do choose to have their company's stock listed on exchanges in more the one country, they are more likely to choose a country into which they export products and one in which reporting and disclosure requirements are less onerous than their "own" country's. This latter finding appears to have especially important implications for regulatory authorities.

We finally turn to studies that use dual listings as a venue for examining questions about capital market segmentation/integration with a particular emphasis on those studies that address the question of international capital market segmentation/integration. These studies typically are cast up in the framework of a specific model of asset pricing and, of course, depend upon the specific countries examined. The preponderance of evidence here indicates that even the most fully developed countries can be typified as having capital markets that are "mildly" segmented. Of course, these studies have been conducted with historical data so the question always remains as to

whether recent developments have reduced or eliminated whatever barriers have historically led to capital market segmentation. Or, alternatively, has the imposition of new restrictions led to greater segmentation of international capital markets?

In the Appendix, we present in tabular form a brief summarization of the various studies, including the authors, the date of publication, characteristics of the sample and a brief description of the major results. In compiling the reference list for this survey we have attempted to be comprehensive. Undoubtedly, we will have omitted some useful contributions. These omissions are oversights, but we nevertheless apologize to the authors of those papers for our shortcomings. Within the survey, however, we do not give equal treatment to the various aspects of listings that have been studied. Decisions about which material to emphasize (and to which to give less emphasis) reflect our own interests and tastes. For those decisions we do not apologize, but we do recognize that our preferences may not be shared globally.

2. Market structure

Stock exchanges throughout the world are generally classified as either auction markets or dealer markets. In the United States the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX), and the so-called regional exchanges which include the Pacific Stock Exchange (PSE), the Boston Stock Exchange (BSE), the Philadelphia Stock Exchange (PHLX), and the Midwest Stock Exchange (MSE) are auction markets. These exchanges are among those often referred to as the "organized" exchanges and are characterized by a central meeting place at which the bids of buyers and sellers converge. Auction markets may or may not have specialists. In Asian markets, for example, participants trade directly with one another once a mutually acceptable price has been reached. A thorough discussion of the structure of these exchanges is provided in Rhee and Chang (1992). In other cases, such as in the U.S., a specialist is appointed to handle all trades in a particular stock. In a specialist market, all trades go through the specialist. To execute a trade in a specialist market, a customer places an order with a broker who then sends the trade to the floor of the exchange for execution. The specialist may either "cross" buy and sell

orders from customers or fill the orders by adjusting his inventory. The specialist is responsible for making an orderly market in the stocks to which he is assigned. Although the definition of an orderly market is somewhat imprecise, in general, the specialist is supposed to sell shares from her inventory in the face of excess demand and is supposed to absorb shares into her inventory in the face of excess supply of the stock to which she is assigned. In the U.S., specialists are monitored by the exchanges.

In a dealer market, the customer places an order with a broker and the broker is responsible for searching out the best price among dealers who make a market in that stock. Historically, in the U.S., that meant that a broker had to search among dealers to find the best price for his customer or the broker could fill the order from his own inventory if the broker happened to make a market in that stock. Perhaps for obvious reasons, the dealer market in the U.S. was referred to as the over-the-counter (OTC) market. Today, dealers in the U.S. are connected electronically by the Automatic Quotation system of the National Association of Stock Dealers (NASDAQ). The NASDAQ system was introduced in 1971. We shall refer to the dealer market in the U.S. as the OTC/NASDAQ market. It should be noted that dealer markets elsewhere in the world, the London Stock Exchange, for example, are not necessarily over-the-counter markets.

Indeed, stock markets throughout the world have certain idiosyncrasies associated with their method of operation, but each is organized as a variation of an auction market or a dealer market. As of 1994, the *Emerging Markets Fact Book* published by the International Finance Corporation identified 80 countries with stock exchanges. The *Directory of World Stock Exchanges* published by *The Economist Publications* and *The Guide to World Equity Markets* published by Euromoney Publications P.L.C. and G. T. Management P.L.C. provide descriptions of stock exchanges throughout the world and describe their method of operation. The information covered includes such information as the hours of operation, the listing requirements, the cost of listing, the functions of the governing body, limitations on share ownership by foreigners, the types of securities traded, the settlement procedure, number of shares traded and so forth. We do

not have the space here to review the mechanics of trading on each market, but refer the interested reader to these sources.

3. Stock listings and stock prices: OTC to NYSE/AMEX

The effect of stock listing on stock price has been of interest to scholars and practitioners for at least 60 years. The first widely recognized study of the effect of listing on stock price was authored by Maxwell Ule and was published in the *Journal of Business* in 1937. That was followed by studies authored by Anna Merjos in *Barron's* during the 1960s. The most recent study appears to be by Kadlec and McConnell (1994). Each of these studies has asked the question of whether the decision by corporate managers to change the trading locale of their company's stock from the OTC/NASDAQ market to the NYSE is accompanied by an increase in stock price. Between these have been studies of this question by Furst (1970), Van Horne (1970), Ying, Lewellen, Schlarbaum, and Lease (1977), McConnell and Sanger (1984), Grammatikos and Papaioannou (1986a, 1986b) and Sanger and McConnell (1986). Parallel studies of the price effect for stocks that switch from the OTC/NASDAQ market to the AMEX have been conducted by Merjos (1967), Fabozzi (1981) and Edelman and Baker (1990).

The primary methodology that has been employed in the studies of the price effect of moving from the OTC/NASDAQ market to the "organized" exchanges is "event" study analysis in which returns of listing stocks are calculated over various intervals surrounding the listing event.[1] These returns are compared with a benchmark to determine whether listing is associated with an increase in stock price. Over time, the data and the specifics of the event study analyses have become increasingly refined, but the general picture that emerges from the analyses has been reasonably consistent across the various studies. There appears to be little doubt that stock prices

[1] Furst (1970) uses a different methodology to analyze this question. He conducts cross sectional regressions in which the dependent variable is either the year-end price before or after listing and a 0,1 dummy variable is included as an independent variable to indicate whether the price came from the month before or after listing. Other independent variables include dividend yield, growth rate of earnings, leverage, and earnings volatility. He concludes that prices at the year-end after listing are not significantly different from prices at the year-end before listing.

rise significantly prior to listing and have a tendency to decline shortly after listing. The exception to this latter finding is the recent study by Kadlec and McConnell who report that stocks that listed on the NYSE during the 1980s did not experience post-listing negative returns. The various studies do differ on whether and to what extent they attribute the stock price increase prior to listing to the event of listing and whether they view the increase as being permanent or temporary. To some extent, the difference in interpretation is probably a function of the specifics of the empirical methodology employed. The earlier event studies used the listing date as the event date and tended to use monthly returns along with a simple market index as a benchmark. Because the news that the stock was about to list was available to market participants prior to the listing date - - in some cases long before the actual listing date - - these studies did not do an especially good job of isolating the effect of listing from other information that could have been affecting the stock price around the time of listing. Likewise, the use of monthly returns made precise identification of the listing effect difficult. Consider the study by Ule (1937) as an example.

Ule examined 29 stocks that moved from the OTC market to the NYSE or the AMEX (at that time the "Curb") over the period 1934 through 1937. He calculated stock returns over the six months prior to listing and over the six months after listing and compared those returns with representative stocks from the same industries. He concluded that stocks outperformed their industry index before listing, but declined relative to their indexes after listing. Because Ule used the listing date as opposed to the date on which news of the impending listing reached the market, his study could not determine whether the positive pre-listing performance occurred because firms tend to list after a period of good performance or because of the effect of listing itself. Similar uncertainties cloud the results of Goulet (1974), Merjos (1962, 1963a, 1967), and Van Horne (1970) and, although they examine different time periods and different samples, all reach conclusions similar to those of Ule.

In an effort to disentangle the listing effect from the a self-selection bias that results because firms may tend to list after a period of good performance, Ying et al. (1977) center their analysis on the month in which OTC firms apply for a new listing on either the NYSE or the AMEX. Their

sample covers the period 1966 through 1968 and includes 248 stocks. They focus on the month of application because the exchanges discourage companies that apply for a new listing from making their intentions public prior to the actual filing of a listing application. It turns out, though, that over 99% of those companies that formally apply for a listing are accepted by the exchanges.[2] This high rate of success stems from the practice by which companies undergo a thorough review prior to applying for a listing. According to Fabozzi (1981), the practice by which firms undergo an extensive preliminary review grew out of the displeasure of the Securities Exchange Commission (SEC) with companies that stated in their prospectuses of their public offerings an intention to seek listing after the offering, but failed to do so. Ying et al. also refine their performance benchmark by using an empirical implementation of the Sharpe-Lintner Capital Asset Pricing Model (CAPM). They report that listing stocks experience a positive and significant excess return of +7.54% during the application month and additional +5.00% in the following month. In 10% of the sample, the actual listing took place during the month of application and in 75% of the sample the listing took place in the following month. Ying et al. report a negative and significant excess return in each of the first two months following listing and, over the 12 months following listing, the stocks underperform the benchmark by almost 6.0%.

In further refinements of the event study analysis, Fabozzi (1981), Sanger and McConnell (1986), Grammatikos and Papaioannou (1986a, 1986b), and Edelman and Baker (1990) use either weekly or daily data along with the market model procedure to analyze various samples of stocks that listed on either the NYSE or the AMEX during the 1960s and 1970s. These studies focus on either the week or day of application, the week or day of listing, and the interval between these two dates. They also analyze a time period of up to one year prior to the listing and up to one year after listing. In general, they report that stocks on average outperform their market model benchmark by as much as 20% over the one year prior to listing; that stocks earn a statistically significant positive excess return at application, a statistically significant positive excess return at listing, and a positive

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[2] Sanger and McConnell (1986) provide this statistic.

and significant average excess return over the interval from application through listing. Finally, these studies also report a tendency for stocks to underperform their market model benchmark after listing.

The most recent study of stocks that move from the OTC/NASDAQ market to one of the organized exchanges is Kadlec and McConnell (1994). They use a market model procedure and weekly data to analyze a sample of 273 stocks that listed on the NYSE over the period 1980 through 1989. Over the one year prior to listing, stocks in their sample outperformed the benchmark by roughly +25%; during the application week, stocks earned an average excess return of +1.7%; over the interval from the application week through the listing week, stocks earned an average excess return of +5.8%; and during the listing week, stocks earned an average excess return of +1.1% - - all of which are statistically significant. What Kadlec and McConnell do not find is a drop off in excess returns following listing. That is, during the 1980s, stocks appeared to gain in value by a statistically and economically significant amount as a result of listing and they appear to retain that value increase after listing.[3]

4. The source of value in listing

Each of the studies of price and listing are aimed at determining whether listing on one of the specialist exchanges creates value for shareholders. Some of the authors interpret their findings in the negative because of the decline in value that has historically followed listing. A greater number of the authors interpret their findings to imply that listing is associated with an increase in value. That conclusion, in turn, has led to a search for the source of the value in listing. Three general hypotheses have been offered to explain the increase in value that accompanies listing: (1)

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[3] Baker and Edelman (1992) analyze prices for stocks that move from the AMEX to the NYSE. They report a statistically significant positive excess return of .5% on the date of the application and an insignificant excess return on the listing date. Boardman, Dark and Lease (1986) and Ferri, Moore and Schirm (1989) take novel approaches to the effect of listing on price. Boardman et al. analyze stock returns when companies announce that their *bonds* will be listed. They conclude that excess stock returns are not significantly different from zero when the company's bonds become listed. Ferri et al. analyze the effect of listing on warrant prices. They use cross-sectional regressions to compare the prices of a sample of NYSE and AMEX listed warrants with the prices of a sample of OTC/NASDAQ warrants. They conclude that listing does statistically significantly increase the value of warrants.

the signalling hypothesis, (2) the liquidity hypothesis, and (3) the investor recognition or increased investor base hypothesis. According to the signalling hypothesis, managers elect to list when they become convinced that their firm has "arrived". Investors respond to this signal of management's confidence by bidding up the price of the firm's stock. Fundamentally, of course, to justify the price increase, the decision to list must be a signal of higher or more stable future earnings. The liquidity hypothesis posits that the organized exchanges offer a lower cost of transacting than the OTC/NASDAQ market. The lower cost of transacting is then capitalized into the stock's price. The investor recognition hypothesis essentially argues that a broader base of investors reduces the firm's risk which shows up as a lower cost of capital and a consequent increase in stock price. Each of these hypotheses has its origins in "streetlore", but each also has been developed as a theoretical construct. The signalling literature is extensive and will not be reviewed here. Neither will the market microstructure literature from which the liquidity hypothesis flows. The formal model of the investor recognition hypothesis is perhaps less well known, but is attributable to Merton (1987) who presents an asset pricing model based on the assumption that investors invest only in the subset of securities of which they are "aware". The result is that investors are not fully diversified which introduces an additional risk premium (relative to the CAPM) for which investors demand compensation. Any action by managers that enhances investor recognition of their company's stock can lead to a reduction in this risk premium and a reduction in the company's cost of capital with a consequent increase in stock price.

Grammatikos and Papaioannou (1986a) directly analyze the question of whether the increase in value associated with a new listing can be attributed to a signal of management's confidence in the future of the firm. To do so they evaluate 88 stocks that listed on the NYSE between 1975 and 1981. They classify the firms according to the growth rates of their quarterly earnings for the three years prior to listing. Based upon their pre-listing growth rates, firms are classified as either high or low performers. The authors argue that a listing will be a more consequential signal for firms that have been doing poorly than those that have been doing well - - assuming that listing does have signalling content. Consistent with this argument, they find that

the announcement effect is more positive for poor performers than for good performers. They conclude that part of the stock price increase associated with new listings derives from a signal of management's confidence in the future prospects of the firm. What is missing from this study is an analysis of post listing earnings performance. Under the signalling hypothesis, it is information about future earnings prospects that managers are conveying to the market by their decision to list and a useful exploration of that issue would compare stock price reaction at listing to post listing earnings. Such a study would also control for any changes in liquidity and/or investor base that accompany the new listings.

Studies of listing and liquidity are of two types. The first asks whether dealer markets or specialist markets are inherently more liquid. They compare stocks traded in dealer markets with those traded in specialist markets or analyze measures of liquidity before and after listing to determine whether listing has enhanced liquidity. Studies in this category include Tinic and West (1974), Hamilton (1976, 1978), Kadlec and McConnell (1994), Christie and Huang (1994), Affleck-Graves, Hegde, and Miller (1994), and Chan, Christie, and Schultz (1995). The second type examine measures of liquidity for stocks that become listed and ask whether the increase in value that accompanies the listing is correlated with the change in liquidity from before to after listing. Studies in this category include Grammatikos and Papaioannou (1986b), Edelman and Baker (1990), and Kadlec and McConnell (1994).

The studies by Tinic and West and Hamilton were pioneering empirical studies of market microstructure before the topic area was even known as market microstructure. Tinic and West describe their study as "...a stem in the direction..." of comparing "...the relative merits of various possible methods of organizing trading." They compare the "price of marketability" on the Toronto Stock Exchange (TSE) with the price of marketability on the NYSE and the OTC/NASDAQ market. This comparison is interesting because the TSE is organized as a dealer market in which the dealer is responsible only for facilitating trades among customers in comparison with the NYSE in which the specialist is responsible for making a continuous market in the securities to which he is assigned. Tinic and West use a stock's average bid-ask spread as

their measure of the cost of marketability. The terms "market liquidity" or "cost of transacting" are used synonymously with the term the "cost of marketability". Tinic and West use multiple regression analysis and conclude that after controlling for other factors, the cost of marketability is lower on the NYSE and the OTC/NASDAQ (as of the early 1970s) than on the TSE. They attribute the difference to a lack of competition on the TSE.

Hamilton (1976) conducts a similar analysis with a sample of 191 NYSE-listed stocks and 209 OTC stocks during 1970. He concludes that the NYSE has a cost advantage over the OTC market which he attributes to economies of scale provided by the specialist system. Hamilton (1978) uses multiple regression analysis to compare bid-ask spreads in the over-the-counter market before and after the introduction of the NASDAQ system. The NASDAQ system connected dealers electronically. He uses 174 OTC stocks and concludes that NASDAQ reduced spreads by about 15%, but that even after the introduction of NASDAQ, the NYSE provided lower spreads than the OTC/NASDAQ market. Hamilton's results connect well with the results of Sanger and McConnell (1986) who conduct an event study of 153 OTC stocks that listed on the NYSE in the three years immediately before the introduction of the NASDAQ system and 164 stocks that listed in the six years following the introduction of the NASDAQ system. They report a statistically and economically significant stock price increase at the announcement of new listings both before and after the introduction of NASDAQ, but that the post-NASDAQ effect is significantly smaller than the pre-NASDAQ effect.

The differential in the "cost of marketability" between the OTC/NASDAQ and the organized exchanges has been documented most recently by Christie and Huang (1994). They expand the measure of liquidity to include actual transactions prices along with quoted spreads. This measure of liquidity recognizes that transactions often take place within the bid-ask spread. They conduct their analysis with data from the year 1990 and compare their measure of liquidity before and after listing for 10 stocks that moved from the OTC/NASDAQ market to the AMEX, 32 stocks to the NYSE, and 14 stocks that moved from the AMEX to the NYSE. They report that shares moving

from the OTC/NASDAQ system to the exchanges experience a reduction of 3 to 5 cents per share in the cost of transacting by switching trading locale.

Affleck-Graves, Hegde, and Miller (1994) examine how the relative magnitudes of the components of the bid-ask spread differ between the NASDAQ/NMS and the organized exchanges. Using data from March and April 1985, they match NYSE/AMEX traded stocks with stocks OTC traded stocks based on price per share, average dollar volume of trading, market capitalization, and standard deviation of daily returns. This process results in a matched sample of 339 firms in March and 399 in April. They decompose the bid-ask spread into adverse selection costs, inventory holding costs, and order processing costs. They determine that the adverse selection and order processing components of the bid-ask spread are larger for NASDAQ stocks. The differences in the inventory holding component of the bid-ask spread are greater for the NYSE/AMEX stocks. However, this difference is not statistically significant when measured as a fraction of stock price.

The studies by Grammatikos and Papaioannou (1986b), Edelman and Baker (1990), and Kadlec and McConnell (1994) investigate whether the gains in share price that have been documented around listing announcements are correlated with the documented gains in liquidity that also accompany listing announcements. Grammatikos and Papaioannou and Kadlec and McConnell analyze new listings on the NYSE and Edelman and Baker analyze new listings on the AMEX. Grammatikos and Papaioannou and Edelman and Baker report that stocks with high pre-listing spreads have higher announcement period excess returns than do stocks with lower bid-ask spreads. Kadlec and McConnell calculate the change in bid-ask spread from before to after listing for their sample of new listings during the 1980s. They report that announcement period returns are higher for stocks that experience a reduction in spread from before to after listing than for stocks that experience no decline in spread or that experience an increase in spread. These results tend to support the hypothesis that liquidity gains account for at least some of the stock price gains associated with listing on the organized exchanges.

Traditionally, "streetlore" has attributed the gain in price associated with new listings to the increase in "visibility" or the increase in "investor base" that is said to accompany a listing on the organized exchanges. The study by Kadlec and McConnell (1994) directly investigates this question. They couch their analysis in terms of Merton's "simple" model of asset pricing in which investors invest only in stocks of which they are aware. The result is that investors are not fully diversified with the consequence that stocks are priced so as to provide a return to cover this extra risk. If a new listing can increase investor awareness and, therefore, reduce the risk premium assessed by the market, listing can reduce the firm's cost of capital and increase its stock price.

To examine this question, Kadlec and McConnell regress listing announcement period returns against the change in the number of individual and institutional shareholders from before to after listing and against the change in bid-ask spread. They report that both are statistically significantly in explaining excess announcement period returns. They conclude that their analysis supports both the improved liquidity and increased investor base hypotheses as explanations of the gain in stock price that accompanies new listings on the NYSE.[4]

5. New listings and beta

In addition to the effect of new listings on stock price, the "beta" (or covariance) of returns has been of interest. Beta has been of interest because of its prominent role as the appropriate measure of a stock's risk in the Sharpe-Lintner CAPM. The motivations for the studies of beta are

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[4] Several studies examine the issue of liquidity by focusing on the intraday pattern of bid-ask spreads across markets. Brock and Kleidon (1992), McInish and Wood (1992), and Lee, Mucklow, and Ready (1993) examine the intraday width of bid-ask spreads of stocks traded in a specialist markets. All of these studies document that the bid-ask spreads of NYSE stocks follow a U-shaped pattern. Bid-ask spreads are widest immediately after the open and immediately preceding the close. Chan, Christie, and Schultz (1995) extend this strand of research by investigating the intraday pattern of the bid-ask spreads for stocks traded on a dealer market. They conduct their analysis using a sample of 17 stocks in 1991 and 18 stocks in 1992 that are traded on the NASDAQ. They report that, unlike NYSE stocks, the average intraday width of bid-ask spreads for NASDAQ stocks remains relatively stable during the trading day. In fact, they document that the bid-ask spread of NASDAQ stocks narrows immediately preceding the close. They attribute this difference in bid-ask spreads preceding the close to differences in regulatory constraints on inventory control between the markets. Overall, they conclude that structural differences between dealer markets and organized exchanges materially affect the pattern of bid-ask spreads. Consequently, tests for the importance of information asymmetries in determining intraday spreads should consider these institutional factors.

twofold. First, betas have been studied as a matter of scientific curiosity. Second, they have been analyzed as a possible explanation of the increase in stock price that accompanies new listings. The argument is that, if the CAPM is correct, beta measures a firm's risk which determines its cost of capital. If listing reduces beta, then the consequent reduction in the stock's required return could explain the stock price increase at the time of listing. Given the recent empirical studies that cast doubt on the importance of beta in explaining stock returns, the relevance of studies of the association between listing and beta is less clear-cut.[5] Nevertheless, for completeness, these studies deserve representation - - after all, the CAPM might make a comeback.

Studies focused on whether listing changes beta have been conducted by Reints and Vandenberg (1975), Fabozzi and Hershkoff (1979), Bhandari, Grammatikos, Makhija and Papaioannou (1989), Dhaliwal (1983), and Clarkson and Thompson (1990). Studies by Ying et al. (1977), Sanger and McConnell (1986), and Kadlec and McConnell (1994) examine changes in beta as an intermediate step in their analysis of excess stock returns. Each of these studies estimates betas before and after listing for samples of stocks that list on either the NYSE or the AMEX. They then compare the betas before and after listing. Each of the studies concludes that average long term betas are not changed as a result of listing and cannot, therefore, explain the increase in price that accompanies a new listing. However, Bhandari et al. and Clarkson and Thompson report a seasoning effect in betas such that betas are higher immediately after listing than several months after listing. They attribute this decline in beta to an increase in market information about the newly listed stocks.

6. Dual listings

Dual listings refer to the situation in which a corporation has its stock listed on more than one exchange. Dual listings may occur within a country (intranational dual listings), but more frequently dual listings occur across national borders (international dual listings). An example of

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[5] See, for example, Fama and French (1992).

the former is a firm that elects to have its stock listed on both the NYSE and the Pacific Stock Exchange, both of which are in the U.S. An example of the latter is a company that elects to have its stock listed on both the London Stock Exchange (LSE) and the Tokyo Stock Exchange (TSE). Studies of international dual listings have been a popular setting for testing whether and to what extent international capital markets can or should be viewed as integrated. Other studies of international dual listings have been content to document the price effects of international dual listings without specifically linking those effects to the question of whether the markets under consideration are integrated. Studies along these lines have been conducted by Howe and Kelm (1987), Alexander, Eun and Janakiramanan (1988), Lee (1991, 1992), Jayaraman, Shastri, and Tandon (1993), and Foerster and Karolyi (1993, 1996). Studies that directly link international dual listings to the question of whether international capital markets are integrated include Jorion and Schwartz (1986), Mittoo (1992a), and Varela and Lee (1993). Finally, dual international listings have been used as a setting to test certain hypotheses about the way in which information is transmitted in markets. In particular, Barclay, Litzenberger and Warner (1990), Makhija and Nachtmann (1990), Howe, Madura, and Tucker (1993) and Jayaraman, Shastri, and Tandon (1993) exploit dual listings as a venue to determine whether and to what extent stock return volatilities are due to informed as opposed to noise trading. In this section we review studies of intranational dual listings and international dual listings that do not directly focus on the question of capital market integration. We postpone our review of that topic until Section 11.

6.1. Intranational dual listings

Studies by Garbade and Silber (1979), Khan, Baker, Kennedy and Perry (1993), and Baker, Khan and Edelman (1994) analyze intranational dual listings. Garbade and Silber use data from 1973 through 1975 and focus on the price interactions of five dually traded stocks to determine the degree of integration between the NYSE and the PSE or the Midwest Stock Exchange. Their results indicate that the regional exchanges are not perfectly integrated with the NYSE, i.e., the trading prices are not identical across markets. Although the regional exchanges

contain some relevant information to NYSE traders, the regional exchanges mostly "echo" the prices of the NYSE. Khan et al. examine the impact of dual domestic listings on stock prices. Using a sample of 137 NYSE and AMEX firms that dually list on either the PSE or MSE between 1984 and 1988, they find that stock prices decrease insignificantly prior to the listing date, but decrease significantly by 2.6% during the 15 days subsequent to the listing date. They conclude that the "fragmentation effect" from listing a stock in several markets outweighs the benefit of competition between specialists. In particular, the negative post-listing returns may be due to the specialist increasing the spread to compensate for a decrease in volume. Baker et al. extend this study by examining a similar, but somewhat smaller sample. They partition the sample into low and high liquidity stocks based on both a liquidity ratio and the average daily trading volume prior to the date of listing. The results indicate that the negative post-listing returns are largely attributable to the low liquidity stocks. They interpret these negative post listing returns to mean that fragmentation has a more negative effect for low liquidity stocks.

6.2. *International dual listings*

International dual listings are of two types. The most straightforward is the case in which management of a company elects to apply for and have its stock directly listed on an exchange of another country. The other is indirect and makes use of an American Depository Receipt (ADR). ADRs represent ownership in the shares of a company registered and traded on an exchange in another country. The owner of the ADR is entitled to the cash dividends paid on the shares and is protected against dilution in case of stock splits and stock dividends, but does not actually own the shares. As with the early studies of new listings on the NYSE and the AMEX, studies of international dual listings have conducted event studies centered on the listing date rather than an announcement date. As a result, in these studies, as with the earlier studies of new listings on the organized exchanges in the U.S., the price effect of the a new international dual listing tends to be imprecise. (Or, as suggested by Foerster and Karolyi (1993) it could be that the announcement date is the same as the listing date.) Such is the case with Howe and Kelm (1987), Alexander, Eun

and Janakiramanan (1988), Lee (1991, 1992), Jayaraman, Shastri, and Tandon (1993) and Foerster and Karolyi (1993, 1996). To the extent that the results of these various studies, which examine different countries and different time periods can be generalized, dual international listings do not have a negative effect on stock. Two of the studies report a positive stock price effect on the day of listing and the others show no effect around the time of listing.

Howe and Kelm analyze successive international dual listings over the period 1962 through 1985. Successive dual listings are sequential dual listings in multiple countries by the same stock. They examine 165 listings by 112 firms and separate the sample according to first, second, and third international dual listing by the same firm. Their sample includes U.S. stocks that list on the Basel Stock Exchange, the Frankfurt Stock Exchange, the Paris Stock Exchange, and the Tokyo Stock Exchange. They do not find significant excess returns around any of their samples.

Alexander et al. conduct an event study with 13 Canadian, 10 Japanese, seven Australian, two South American, one Danish, and one British firm that list on the NYSE, the AMEX or the OTC/NASDAQ over the period 1969 through 1982. They analyze monthly returns. They report significant positive excess returns over the 24 months prior to dual listing, no significant returns during the month of dual listing, and significant negative excess returns over the 36 months following dual listing.

Lee (1991, 1992) extends the work of Howe and Kelm (1987). He first analyzes 141 AMEX and NYSE stocks that dually list on the LSE (119 stocks) and the TSE (22 stocks) over the period 1962 through 1986. He then analyzes 18 U.K. stocks that dually list on the Tokyo Stock Exchange and 14 Japanese stocks that dually list on the LSE. He finds that excess returns around the listing event are not significantly different from zero.

Contrary to the findings of these studies, Foerster and Karolyi (1993) and Jayaraman et al. (1993) do report a positive and statistically significant excess return on the listing date. Foerster and Karolyi conduct their analysis with 53 Canadian stocks that listed on the NYSE between 1981 and 1990 and Jayaraman et al. conduct their study with 95 ADRs that listed on the NYSE and AMEX between 1983 and 1988. The ADRs include 44 for Japanese firms, 30 for U.K. firms and

21 from other countries. Even for these studies, however, the excess return on the listing date is modest, amounting to less than 1%.[6]

Finally, Foerster and Karolyi (1996) report significantly positive excess returns over a two week period around the listing date for a sample of 161 firms from 14 countries that listed in the U.S. between 1976 and 1992. Further, the excess returns are significantly positive during the year prior to listing and significantly negative during the year following listing. Consistent with the findings of Kadlec and McConnell (1994) for new listings and Merton's (1987) investor recognition hypothesis, the excess returns for all three periods are significantly related to the change in shareholder base. Further investigation indicates that this relation is driven by the subset of ADRs which list on the NYSE.

In a related paper, Chaplinsky and Ramchand (1996) study the direct issue costs and the stock price reactions for a sample of 276 global equity offerings between 1985 and 1992 as well as for a control sample of domestic equity offerings. They report that after controlling for firm and issue characteristics, direct issue costs are lower and stock price reactions less negative for global equity offerings. These direct and indirect cost savings provide economic motivations for dual international listings. Furthermore, the results suggest that the benefits of dual international listings are greater for firms that anticipate future equity offerings. A cross-sectional analysis of excess returns around listings across firms with different probabilities of raising future funds in the stock market may provide further insight.

6.3. International dual listings and stock return volatility

Studies by Barclay, Litzenberger and Warner (1990), Makhija and Nachtmann (1990), Howe, Madura and Tucker (1993), Jayaraman et al. (1993), Cheung et al. (1994) and Chan et al.

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[6] Rosenthal (1983) conducts a test of weak form efficiency by calculating serial correlation in weekly and monthly returns for ADRs. He documents modest serial correlation in weekly and bi-weekly returns, but not in monthly returns. Officer and Hoffmeister (1987) and Wahab and Khandwala (1993) examine the extent to which ADRs can be used to reduce portfolio variance. They conclude that adding ADRs to a domestic U.S. stock portfolio can significantly reduce portfolio variance and that most of the possible variance reduction is achieved with as few as seven or eight securities.

(1995) analyze volatilities of internationally dual listed stocks. Their interest is not in the effects of listing per se. Rather they are interested in drawing inferences about the transmission of information in markets. They note that stock return variances have been found to be greater during trading than during non-trading intervals and exploit international dual listings to focus on the link between the increase in the number of trading hours and stock return variances. Each of these studies examines changes in the variance of returns around new international dual listings to test three theories regarding volatility during trading and non-trading intervals: (1) more public information is released during trading hours, (2) more private information is released, or (3) there is a higher level of noise trading when the market is open.

Barclay et al. examine 16 NYSE firms that listed on the Tokyo Stock Exchange (TSE) in the time period 1980 to 1986 and report no changes in variance of returns following listing. They interpret this result to be consistent with the private-information hypothesis. They base this conclusion on the argument that informed traders will prefer not to shift their trades abroad and, consequently, dual international listing should not affect the amount of private information disseminated. This result is also consistent with the predictions of the public information hypothesis, however they do not discuss this theory.

Using a sample of 37 NYSE firms which listed on the TSE between 1973 and 1988, Makhija and Nachtmann re-examine the cross-listing of NYSE stocks on the TSE. Their study differs from Barclay et al. in two important aspects. They maintain that the cross-listings of NYSE stocks on the TSE increases trading opportunities for informed traders and, hence, cross-listings will increase the amount of private information disseminated. Unlike Barclay et al., Makhija and Nachtmann find that the variability of stocks' returns increases following listings. They interpret this result to be consistent with both the private information hypothesis and the noise hypothesis. To distinguish between these hypotheses, they examine the autocorrelation of returns around the listing date. According to the noise hypothesis, the listing should change the autocorrelation structure of daily returns. Alternatively, the private information hypothesis predicts that listings will not affect the autocorrelation structure of the stocks' returns. They find that the autocorrelation

structure does not significantly change following the listing, and conclude that the increase in variance of returns following dual listings is the result of an increase in the amount of private information released.

Jayaraman et al. examine the returns of 95 foreign firms which listed ADRs on the NYSE over the time period 1983 to 1988. Consistent with Makhija and Nachtmann, they report that cross-listings are associated with an increase in variance and that the autocorrelation structure of returns does not significantly change following the listing. They interpret these results as support for the private information hypothesis.

Howe et al. analyze 40 U.S. firms which listed on overseas exchanges between 1973 and 1984 and had exchange-listed options at the time of their international listing. Their sample includes 20 firms listing in Basel, 10 in Frankfurt, 8 in Paris, and 2 in Tokyo. Like Barclay et al., they contend that the private information theory predicts that international cross-listing will not change return variance. They find that new listings are associated with an increase in implied volatility of the firm's exchange-listed options and attribute this increase to a higher level of noise trading.

Cheung, Ho, Pope, and Draper (1994) study the volatility of 40 stocks that traded on the Stock Exchange of Hong Kong (SEHK), 25 of which also traded on the London Stock Exchange, between 1986 and 1990. In contrast to the previously cited findings, Cheung et al. conclude that the Hong Kong stocks that also traded on the London Stock Exchange had lower open-to-open return variance than those that traded only on the SEHK.

In a related study, Chan, Fong, Kho and Stulz (1995) compare the pattern of intra-day return volatility for European and Japanese stocks that are dually listed on the NYSE or AMEX with a matching sample of American stocks listed on the NYSE or AMEX using data from 1986 and 1987. Despite differences in public information flows, the intra-day patterns of return volatility are quite similar across the three groups of stocks. In particular, all stocks exhibit higher volatility in the morning than later in the day. This pattern is most pronounced for Japanese stocks and least pronounced for American stocks. The authors interpret their evidence as consistent with

the notion that the greater degreee of early morning return volatility associated with foreign stocks reflects overnight accumulation of public information. Since, for example, the Japanese business day occurs while the New York market sleeps, more information about Japanese firms as opposed to American firms will have acccumulated before the open of the New York market. Hence, foreign stocks will exhibit the greatest early morning volatility in New York.

7. Factors influencing the decision to list

In an effort to discern the motives behind the decision to list, or refrain from listing, on a domestic or foreign exchange, studies have explored empirically both managerial attitudes toward dual listing and the characteristics of firms whose stocks are dually listed. Among the studies investigating managerial perceptions of dual listing are Baker and Johnson (1990), Baker and Khan (1993), and Mittoo (1992b). Studies by Cowan, Carter, Dark and Singh (1992) and Saudagaran (1988) shed light on the characteristics of firms that undertake dual listing.

Baker and Johnson survey chief financial officers (CFOs) of firms newly listed on the NYSE or AMEX during the mid-1980s as well as those of firms eligible to list that refrain from doing so. In the Baker and Khan study, data are obtained from surveys of CFOs of AMEX and NYSE firms that listed on the PSE between 1984 and 1990. Managers were asked in each of these two surveys to rank various possible motives for dual listing. Respondents gave highest rankings to the motives of increased liquidity and increased visibility in both studies, as well as enhanced prestige in the AMEX/NYSE listing study. Mittoo (1992b) provides evidence on the motives for foreign dual listing via survey responses of 78 managers of Canadian firms that were listed on exchanges in the U.S. and U.K. as of May 1991. When managers were asked to list the benefits of an international dual listing, among those most frequently cited were: access to foreign capital markets, growth of shareholder base, increased liquidity, and increased visibility. The most commonly stated costs of listing were those associated with meeting regulatory requirements. On the whole, these studies of survey data indicate that managers consider enhanced liquidity and

visibility to be among the primary motives for both domestic and foreign dual listings, and that access to foreign capital markets is an additional motive in the case of foreign dual listings.

Cowan et al. compare a sample of 277 NASDAQ firms that listed on the NYSE between 1973 and 1990 with an industry-matched control sample of firms that were eligible for NYSE listing but remained on the NASDAQ. Listing firms are found to have significantly higher return variances and betas than non-listing firms in the year prior to and the year of listing. Furthermore, measures of unexpected bid-ask spread are significantly higher for listing firms as well. Thus, their analysis suggests reduced estimation risk and increased liquidity as the two primary motives for domestic dual listing. Saudagaran (1988) compares 223 firms from eight countries that are listed on foreign exchanges with a control sample of firms without foreign dual listing. The results of this study indicate that the larger firms are relative to their domestic exchange and the greater their dependence on foreign sales, the more likely they are to be listed on a foreign exchange. These results are consistent with the finding that managers anticipate improved liquidity and visibility upon listing on a foreign exchange.

Overall, the studies of managerial attitudes and characteristics of firms that become dually listed suggest that managers decide to list their firms' stocks on foreign or domestic exchanges when the associated costs, e.g., increased regulatory costs, are outweighed by the perceived benefits of listing, including enhanced visibility and liquidity.

8. Delistings

The reverse of a listing is a delisting. Contrary to listings, delistings are almost always involuntary. An exchange may initiate the delisting when a firm fails to meet certain standards. Alternatively, the SEC may delist a firm for rule violations, but this rarely occurs. Merjos (1963b) reports that delisted firms tend to under-perform the market in the "non-trading interval", i.e., the interval between the last trading date on the exchange and the first trading date on the OTC market. O'Donnell (1969) and Edelman and Baker (1989) also present evidence that stock prices decline around delistings. O'Donnell does so by means of a specific case study. During 1961, Cannon

Mills Inc. had two classes of stock outstanding: Class A which traded on the NYSE and Class B which traded in the OTC market. In February 1962, the Class A stock was delisted and began to trade in the OTC market. O'Donnell reports that the price of the Class A stock subsequently decreased by about 9% relative to the class B stock. Edelman and Baker examine 17 stocks that were delisted from the AMEX during the period 1975 though 1985. They report a negative, but insignificant excess return around the actual delisting date.

Perhaps the most comprehensive study of delistings has been undertaken by Sanger and Peterson (1990) who examine a sample of 520 stocks that delisted from either the NYSE or the AMEX between 1963 and 1985. They center their event study on the announcement date and report an average negative excess return of -8.5% with a further modest decline during the days subsequent to the announcement. Further, the subsample of firms with no prior announcement is associated with a significant negative abnormal return in the non-trading interval, although this is not the case for the full sample. They report no significant positive or negative excess returns subsequent to delisting. Sanger and Peterson assert that the negative excess returns around the announcement may be attributable to a decrease in liquidity. There is a significant increase in the spread and a significant decrease in the trading volume from before to after delisting. Further, a regression analysis indicates that the abnormal returns are significantly negatively related to the change in spread, but insignificantly related to the change in trading volume.

Overall, the evidence on delistings suggests that there is a decline in value around the announcement of these events. This decline appears to be due, at least partially, to a decrease in liquidity. Since delistings are rarely voluntary, they cannot signal the beliefs of managers. However, it is possible that delistings signal a weakened confidence of the exchange regarding the firm's future ability to meet the standards of the exchange, and this may also explain the decline in stock value.

9. The puzzle in post-listing returns

Beginning with Ule in 1937, nearly every event study of new and dual listings has documented that stocks tend to underperform their benchmark following listing. That is, stocks tend to decline in value, at least relative to various indexes following listing. A recent exception to this regularity is the study of new listings by Kadlec and McConnell (1994) who report that stocks did not underperform a market model benchmark during the 1980s. Because of the peculiarity of the finding of negative excess returns during the months after listing, McConnell and Sanger (1987) specifically undertook an analysis of post listing stock returns. They labeled the phenomenon the "puzzle in post listing stock returns".

To begin, they identified all OTC/NASDAQ, AMEX and regional exchange listed stocks that became listed on the NYSE over the period 1926 through 1982 (of which there were 2482) and all OTC/NASDAQ stocks that listed on the AMEX over the period 1963 through 1982 (of which there were 1537). They report that not only did the stocks underperform various benchmarks during the months following listing, but that the stocks, on average, actually declined in price. Further, when they separated the sample into five-year intervals, they found that the stocks declined in value in nine of the 11 possible non-overlapping five-year periods. They then set out to explain this puzzle. Among the hypotheses they explored were the possibilities that (1) the average negative returns were due to a few outlier observations, (2) there is a bias in the initial prices following listing, (3) the negative returns were due to a loss of market maker support for the newly listed stock, (4) the newly-listed firms tended to issue new stock which exerted downward pressure on prices, and (5) "insiders" have a tendency to "dump" newly listed stocks. They found that none of these explanations could explain the negative performance of newly listed stocks.

Recently, Dharan and Ikenberry (1995) have extended the analysis of the puzzle in post listing returns. While McConnell and Sanger focused on returns during the first 12 months following listing, Dharan and Ikenberry extend this analysis for up to three years following listing. They conclude that the post listing negative drift in stock returns persists beyond the first year after listing.

10. Dual listing and disclosure requirements

Biddle and Saudagaran (1989, 1995) specifically investigate the role, if any, that the level of required disclosure in financial statements plays as firms choose the countries in which to have their stocks listed. These authors conduct their study with 207 firms from eight countries with dual international listings on nine different exchanges. Both the NYSE and the AMEX are included from the U.S. The other countries included are Canada, France, Germany, Japan, Netherlands, Switzerland, and the U.K. The challenges confronted by such an investigation are significant. In order to explore this question, the authors must first identify an acceptable scale for ranking the level of required disclosure. To construct such a scale, Biddle and Saudagaran review three prior studies that rank countries according to their level of required disclosure. From these three studies, they compile a weighted ranking. In terms of required disclosure, the U.S. is ranked as the most onerous and Switzerland is ranked as the most permissive. They then estimate a multiple regression in which the independent variable is a dummy variable indicating whether a firm is listed on a particular exchange and the independent variables include the location of the firm, the size of the firm, the industry, and the relative disclosure ranking of the firm's domestic and foreign stock exchange. The relative disclosure ranking is significant. The authors conclude that firms are more likely to have their stock dual listed on an exchange in which the disclosure requirements are less onerous than their domestic exchange. The authors note, of course, that this evidence does not mean that less disclosure is "optimal" for exchanges.

Largely in response to regulatory changes of foreign listing requirements by the U.S. and other several countries the early 1980s, Saudagaran and Biddle (1995) follow-up their 1989 study by examining 459 firms from eight countries that were dually internationally listed in 1992. In addition to using a larger updated sample, they also attempt to emulate more closely managers' perceptions of reporting requirements in individual countries by examining an alternative measure of disclosure level. This measure of required disclosure is based on the survey responses of 142 individuals that were "actively involved in the foreign listing process". Consistent with their

previous study, the U.S. is ranked as having the highest disclosure level while Switzerland is considered as having the lowest. They then conduct both univariate and multivariate tests that examine the factors related to the location of a firm's foreign listing. The univariate tests provide evidence that firms with more stringent domestic requirements are listed in countries with less stringent standards. Moreover, the results from multivariate regressions indicate that the probability that a firm will list on a given foreign exchange is negatively related to the exchange's disclosure level and positively related to the extent that a firm exports to that country. In concluding, the authors make the point that in selecting financial reporting requirements, policymakers are faced with the challenge of weighing the risks of imposing too stringent disclosure standards that leave domestic investors and exchanges at a competitive disadvantage against the goal of ensuring that investors are adequately informed.

11. Dual listings and international capital market integration

The question of whether international capital markets are integrated has received and continues to receive increasing attention both theoretically and empirically. The published studies on this question are numerous and very well done. We do not propose to review that literature here. We are interested in stock listings and, as such, we focus on those studies of capital market integration that exploit dual international listings to draw inferences about the extent to which capital markets are integrated. The event studies of dual international listings reviewed above provide some information about capital market integration. If capital markets are segmented and if a dual listing reduces the degree of market segmentation, the prediction is that a dual listing would lead to an increase in stock price. The absence of any listing effect could then be taken as evidence that the markets under study are integrated. Many of the event studies do draw this inference. As we noted above, however, these studies may smear the listing effect with other effects because they are centered on the listing date rather than the announcement date.

An alternative approach uses dually listed stocks in conjunction with a specific model of asset pricing to explore whether international markets are integrated. Of course, as the authors of

such studies note, these studies have their own limitations in that any test of market integration is a joint test of the specific model employed and of whether the specific markets to which the model is applied are integrated. Studies along these lines have been conducted by Jorion and Schwartz (1986), Mittoo (1992a), and Varela and Lee (1993). Jorion and Schwartz and Mittoo both use Canadian and U.S. data to test whether the capital markets of those countries are integrated. The time period considered by the former is 1968 through 1982 and the sample includes 98 dually listed stocks and the time period considered by the latter is 1977 through 1986 and the sample includes 21 stocks. The time period considered by Varela and Lee is 1965 through 1987. Jorion and Schwartz conduct their tests within the framework of the Sharpe-Lintner CAPM; Mittoo employs the CAPM and the Arbitrage Pricing Theory (APT). Varela and Lee conduct their tests with U.S. and U.K. data and use Black's (1974) international CAPM.

The specifics of the methodologies employed vary across the studies, but they share general commonalties. In each case the hypothesis to be tested is cast in terms of an asset pricing model. The model implies certain restrictions on either the intercept term or the relation between a measure of risk and ex post stock returns. Time series data are used to estimate the risk of portfolios of stocks and the tests are performed with these portfolios. Finally, each study comes to the conclusion that the capital markets in question are better described as segregated rather than fully integrated. The evidence in this regard is that stocks provide "too high" a return relative to their risks if the markets were fully integrated. The exception to this conclusion is Mittoo who concludes that the market for dual listed Canadian stocks can be described as integrated during the latter half of her sample, i.e., 1982-1986.

12. Conclusion

Our aim in this survey was to provide thorough coverage of empirical studies that examine both new and dual intranational and international listings of common stocks. These studies have been conducted to provide managers and policy makers information about the effects of listings per se and to use listings as a venue to provide insights about market organization, market micro-

structure, factors that determine stock prices and returns, and international capital market integration. A survey paper is by definition a summary of the literature it surveys and we will not attempt to summarize that summary here. We merely conclude by noting that the literature on the topic of new and dual listed stocks is much larger and more varied than we had imagined when we began this survey, and that even as we attempt to conclude it, we come across new working papers on a regular basis, especially regarding dual international listings, such that we nearly feel dated already. We feel safe in concluding that the topic of new and dual listed securities will continue to be an area of scholarly exploration.

Appendix 1

A Chronology of Empirical Studies Related to Domestic and International Listings

Authors (year)	Subject Area	Sample	Major Finding
Ule (1937)	Stock returns around OTC-to-NYSE/Curb listings	29 NYSE/Curb listings from 1934-37	Prices increase before listing and decrease after listing.
Merjos (1963a)	Stock returns around NYSE listings	25 NYSE listings in 1963	Pre-listing price increases are mostly maintained in post-listing month.
Merjos (1963b)	Stock returns around NYSE delistings	58 firms that delisted from the AMEX or NYSE from 1961-62	47 of the companies had price decreases upon delisting.
Merjos (1967)	Stock returns around OTC-to-AMEX listings	52 AMEX listings from 1966-67	Pre-listing gains offset by one month post-listing losses in 22 of 36 cases.
O'Donnell (1969)	Stock returns around NYSE delistings	A firm that had one of its two classes of stock delisted	The delisted class decreases in value relative to the unlisted class around delisting.
Furst (1970)	Stock returns around OTC-to-NYSE listings	198 NYSE listings from 1960-65	Controlling for other factors, NYSE listing had no significant positive stock price impact.
Van Horne (1970)	Stock returns around OTC-to-NYSE/AMEX listings	140 NYSE/AMEX listings from 1960-67	Accounting for transaction costs and biases, listing is not found to be value-enhancing.
Goulet (1974)	Stock returns around OTC-to-AMEX listings	113 listings on AMEX from 1968-70, control sample of 29 OTC firms	Weak pre-listing price increase and significant post-listing price decrease are negatively related to changes in shares outstanding.
Tinic and West (1974)	Cost of marketability in agent vs. dealer markets	177 TSE firms in 1971 and OTC/NYSE comparison sample	TSE bid-ask spreads are larger than in the OTC/NYSE markets (there is a higher cost of marketability on the TSE).
Reints and Vandenberg (1975)	Effect of listing on systematic risk	32 NYSE listings in 1968	No significant change in beta is detected from before to after NYSE listing.
Hamilton (1976)	Transaction costs on the NYSE vs. the OTC	191 listed and 209 unlisted stocks, data from 1970	An examination of the bid-ask spread indicates that the exchange has the cost advantage over the OTC market.
Ying et al. (1977)	Stock returns around OTC-to-NYSE/AMEX listings	248 NYSE/AMEX listings from 1966-68	Positive pre-listing abnormal returns and negative post-listing abnormal returns are found.

Hamilton (1978)	Impact of NASDAQ on price of marketability	174 unlisted OTC, 182 NYSE-listed stocks from 1970-71	NASDAQ reduced the price of marketability (bid-ask spreads) for OTC stocks, but OTC spreads are still larger than NYSE spreads.
Fabozzi and Hershkoff (1979)	Effect of listing on systematic risk	109 OTC-to-AMEX listings from 1972-76	No evidence is found that an AMEX listing reduces systematic risk.
Garbade and Silber (1979)	Market integration of regional exchanges	5 dually traded stocks (NYSE and Pacific or Midwest Stock Exchange), data from 1973-75	The regional exchanges are not perfectly integrated with the NYSE, but rather tend to "echo" the NYSE prices.
Hamilton (1979)	Effect of off-Board trading	315 NYSE stocks (240 traded off-Board) in 1975	Off-Board trading reduces bid-ask spreads and return variance slightly (competitive effect outweighs fragmentation effect).
Fabozzi (1981)	Stock returns around OTC-to-AMEX listings	83 AMEX listings from 1972-75	Pre-listing price increases are offset by post-listing price declines.
Dhaliwal (1983)	Effect of listing on cost of capital	29 matched pairs of NYSE/AMEX and OTC stocks from 1970-71	Exchange-listed stocks have significantly lower betas/costs of equity capital.
Rosenthal (1983)	Efficiency of the ADR market	54 NYSE-listed ADRs from 8 countries from 1974-78	Degree of serial correlation of ADR returns consistent with weak-form efficiency of the ADR market.
Cooper et al. (1985)	Effect of listing on liquidity	1515 NYSE, 801 AMEX, 964 NASDAQ stocks in 1981	Controlling for capitalization, exchange listing does not increase liquidity.
Boardman et al. (1986)	Stock returns around NYSE debt listings	50 NYSE debt listings from 1978-81	No significant abnormal returns are detected when firms list debt.
Grammatikos and Papaioannou (1986a)	Value of OTC-to-NYSE listing for poor vs. strong performers	88 new listings on the NYSE from 1975-81	Listing has a positive effect on stock prices, particularly for firms with poor pre-listing performance.
Grammatikos and Papaioannou (1986b)	Stock returns around listing for low vs. high liquidity stocks	88 new listings on the NYSE from 1975-1981	Listing has a positive effect on stock prices, particularly for firms with low pre-listing liquidity.
Jorion and Schwartz (1986)	Integration of the Canadian and North-American markets	749 Canadian stocks (of which 98 are interlisted), data from 1963-82	Purely domestic factors explain a significant portion of Canadian stock returns, hence integration hypothesis is rejected.
Sanger and McConnell (1986)	Effect of NASDAQ on stock returns around NYSE listings	319 listings on the NYSE from 1966-77	The positive abnormal returns around new listings are stronger prior to the

			introduction of NASDAQ in 1971.
Howe and Kelm (1987)	Stock returns around international dual listings	165 U.S. firms on foreign exchanges from 1962-85	Overall, there are insignificant abnormal returns upon listing; some pre-listing price declines are found.
McConnell and Sanger (1987)	Post-dual listing anomaly	2482 new listings on the NYSE from 1926-82	Possible explanations for the negative stock returns following listing are examined, but no full explanation is discovered.
Officer and Hoffmeister (1987)	International diversification with ADRs	20 ADRs on the NYSE, 25 ADRs on the OTC, data from 1973-83	Combining ADRs with domestic securities creates portfolios with lower risk and higher returns than portfolios with only ADRs or domestic securities.
Alexander et al. (1988)	Stock returns around international dual listings	13 Canadian, 10 Japanese, 11 other firms listed on NYSE/AMEX/NASDAQ from 1969-82	There are positive abnormal returns during the period 24 to 2 months prior to listing, no abnormal returns around listing, and negative abnormal returns during the 36 months after listing (particularly for Canadian firms).
Saudagaran (1988)	Characteristics of firms that list on a foreign exchange	223 firms on foreign exchanges, control sample of 258 firms, data from 1981	Firms that are large relative to their domestic exchanges and with more foreign sales are more likely to list abroad.
Bhandari et al. (1989)	Effect of listing on risk	1822 firms that listed on the NYSE/AMEX from 1965-84	Risk tends to increase following new listings.
Biddle and Saudagaran (1989)	Effect of disclosure requirements on choice of exchange	207 firms with listings in eight foreign countries in 1981	Firms are less likely to list on a foreign exchange with stricter disclosure requirements than their own country's exchange.
Edelman and Baker (1989)	Stock returns around AMEX delistings	17 firms that were delisted from AMEX to the NASDAQ from 1975-85	Prices decrease on average insignificantly around the delisting date.
Baker and Johnson (1990)	Managerial perceptions of dual listings	Managerial surveys of OTC/AMEX/NYSE firms from 1982-1987	Enhanced liquidity, visibility and prestige are the primary motives for listing on the AMEX or NYSE.
Barclay et al. (1990)	Dual listing effect on volume and return variance	21 NYSE stocks dual listed on Tokyo exchange from 1980-86	There is no change in return variance upon listing on the Tokyo Stock Exchange.
Becker et al. (1990)	Synchronization of prices in U.S. and	NIKKEI Index, S&P 500, yen/dollar exchange rates	U.S. returns predict subsequent Japanese returns

	Japan	from 1985-88	well, but not vice versa.
Clarkson and Thompson (1990)	Changes in beta around new listings	692 NYSE listings from 1963-87, 198 IPOs from 1976-85	Beta decreases over time for new listings (and IPOs).
Edelman and Baker (1990)	Effect of liquidity on reaction to listing	71 AMEX listings from 1982-87	There is a positive reaction to listing of low liquidity firms on the AMEX.
Howe and Madura (1990)	Effect of international dual listing on risk	68 U.S. listings on four foreign exchanges from 1969-84	Neither beta nor standard deviation appear to change significantly upon listing.
Makhija and Nachtmann (1990)	Effect of international listing on variance	37 NYSE firms on Tokyo exchange from 1973-87	Increases in daily variance, but not multi-day variance are found.
Reinganum (1990)	Difference in liquidity premium between NASDAQ and NYSE	Monthly returns for most CRSP firms from 1973-88	The average return of NYSE firms exceeds that of similar NASDAQ firms, but the difference tends to diminish for larger capitalization stocks.
Sanger and Peterson (1990)	Stock returns around AMEX/NYSE delistings	520 firms delisted from AMEX/NYSE from 1963-85	Abnormal negative returns are found around announcement of delisting; probably due to a decrease in liquidity.
Lee (1991)	Stock returns around international dual listings	141 U.S. firms listed on London/Toronto exchanges from 1962-86	No significant stock price reactions to listings are found.
Baker and Edelman (1992)	Effect of AMEX-to-NYSE transfers on systematic risk	72 AMEX-to-NYSE transfers from 1982-89	Beta changes from before to after listing are insignificant for both high and low volume stocks.
Cowan et al. (1992)	Characteristics of listing vs. non-listing firms	277 NYSE listings from 1973-90 and unlisted control sample	Less liquid firms choose to list on the NYSE.
Lee (1992)	Stock returns around international dual listings	25 U.K./Japanese stocks on Toronto/London exchanges from 1981-89	No significant price effects are found around listing.
Mittoo (1992a)	Integration of the U.S. and Canadian stock markets	11 interlisted and 10 domestic stocks from the TSE 35 index, data from 1977-86	The results are consistent with segmentation over the period from 1977-81 and integration over the period 1982-86.
Mittoo (1992b)	Managerial perceptions of dual listings	78 Canadian firms listed in U.S./U.K., data from 1991	Liquidity and visibility are indicated as primary motives for listing, while regulatory costs are seen as the primary drawback.
Baker and Kahn (1993)	Managerial motives for dual listings	54 managerial surveys of firms dually listed from 1984-90	The highest ranked motives for dual listing are increased liquidity and visibility.
Foerster and Karolyi (1993)	Market segmentation	53 Canadian stocks	Pre-listing price increases,

		dually listed in U.S. from 1981-90	then significant post-listing decreases are interpreted as evidence of segmentation between the two markets.
Howe et al. (1993)	Effect of international dual listing on volatility	40 U.S. firms that listed on 4 foreign exchanges from 1973-84.	Significant increases in volatility subsequent to the international listing are documented.
Jayaraman et al. (1993)	Effect of international dual listing on volatility	95 ADRs (mostly British and Japanese) from 1983-88	There is a permanent increase in volatility of stock returns following listing, but very little change in autocorrelation of returns.
Khan et al. (1993)	Stock returns around domestic dual listings	137 AMEX/NYSE firms listed on the Pacific or Midwest Stock Exchange from 1984-88	There are significant negative abnormal returns subsequent to listing.
Varela and Lee (1993)	International capital market integration	168 U.S. firms on the London Stock Exchange from 1965-87	Some evidence is found that listings decrease required returns due to an integration effect.
Wahab and Khandwala (1993)	Diversification with ADRs	31 pairs of ADRs/stocks of 9 countries from 1988-90	ADRs reduce portfolio variance to a greater degree than the underlying stocks.
Baker et al. (1994)	Post-dual listing anomaly	87 NYSE/AMEX to PSE dual listings from 1984-90	Significant negative post-listing abnormal returns are found for low-liquidity stocks.
Affleck-Graves, Hegde, and Miller (1994)	Differences in the components of the bid- ask spread between NYSE/AMEX stocks and NASDAQ/NMS stocks	339 NYSE/AMEX stocks paired with NASDAQ/NMS stocks	NASDAQ stocks have higher order-processing and adverse selection costs.
Chan, Christie, and Schultz (1995)	Intra-day pattern of bid-ask spreads	17 and 18 firms traded on the NASDAQ in 1991 and 1992, respectively	Spreads are relatively stable throughout the day but narrow at the close, in contrast with previous findings of U-shaped NYSE spreads.
Christie and Huang (1994)	Liquidity effects of moving from NASDAQ to AMEX/NYSE	10 and 32 firms that moved from NASDAQ to AMEX and NYSE, respectively, data from 1973-90	Trading costs decrease when firms (particularly low-liquidity firms) move from a dealer market to a specialist system.
Kadlec and McConnell (1994)	Source of value in NYSE listings	273 new listings on the NYSE from 1980-89	The positive abnormal returns around listing announcements are negatively related to the change in bid-ask spread and positively related to the change in number of

			shareholders.
Chan, Fong, Kho and Stulz (1995)	Intra-day return volatility pattern on the NYSE and AMEX.	13 (1986) and 19 (1987) European, 5 Japanese and matching American stocks listed on the NYSE or AMEX, data from 1986-1987	All stocks exhibit higher volatility in the morning than later in the day, and this pattern is more pronounced for foreign than for American stocks. This is consistent with overnight accumulation of public information.
Dharan and Ikenberry (1995)	Stock performance following listing on AMEX/NYSE	2,889 listings on the AMEX/NYSE from 1962-90	The abnormal returns following listings are negative, particularly for small firms that are not widely held by institutional investors.
Saudagaran and Biddle (1995)	Factors that influence a firm's choice of foreign stock exchange	459 internationally dually listed firms in 1992	The likelihood that a firm chooses a particular foreign listing location is inversely related to the country's required level of disclosure and positively related to the firm's level of exports to that country.
Chaplinsky and Ramchand (1996)	Costs of global relative to domestic equity issues	276 global equity offerings made by U.S. firms from 1985-92	The direct issue costs are lower and the stock price reaction less negative for global equity offerings relative to domestic equity offerings.
Foerster and Karolyi (1996)	Stock returns around dual listings	161 firms from 14 countries that listed in the U.S. from 1976-92	There are negative abnormal returns before, positive abnormal return around, and negative abnormal returns following listing. These abnormal returns are related to the change in shareholder base and the exchange on which the shares are listed.

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