Article

Successful Cross-border Acquisitions of Latin American Financial Institutions: Identifying Success Factors

Global Journal of Emerging Market Economies
4(3) 347–367

SAGE Publications
Los Angeles, London,
New Delhi, Singapore,
Washington DC
DOI: 10.1177/0974910112459699
http://eme.sagepub.com

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Abstract

This article examines the shareholder wealth effects for foreign companies that announce acquisitions of financial institutions in Latin America. We examine data for 636 transactions for the period 1985–2009. We employ event study methodology coupled with a cross-sectional regression to determine if shareholders of the acquiring firm receive positive returns. The results indicate that acquirers receive positive returns when the acquisition involves a target bank in a market with low market access, high market risk, and greater control post acquisition. These findings offer improvements on previously examined variables and provide insight into a market not sufficiently examined in prior research.

Keywords

Cross-border acquisitions, financial intermediaries, Latin American market

Introduction

Latin America is a large, diverse region, and the countries in the region have very different national financial systems. The region's financial services sectors are, in the aggregate, small in relation to the region's annual output of goods and services, but the size of the national financial sectors varies widely. Many of the national financial systems are bank dominated, but several of the countries in the region have capital markets that have become large enough and deep enough to outweigh the banks, and to give issuers credible alternative sources of financing. The region's national financial systems, though small on average, have been capable of triggering crises that have done great harm. The most famous of these were the Mexican default of August 1982 and the Mexican devaluation of December 1994. But there was also the Brazilian devaluation of 1999 and the breakdown of Argentina's convertibility plan in 2001–2002.

This history of volatility and low penetration of financial services made the region attractive for international financial institutions to enter, and many non-Latin institutions bought their way into the region by acquiring local financial services providers. That allowed them to quickly get into the businesses of executing monetary payments, and also mobilize savings and allocate investment (Fries & Taci, 2001).

By purchasing existing businesses, acquirers were able to comply with existing governmental controls on interest rates charged and received, margin requirements, portfolio allocation, capital requirements, and acceptable risk.

A review of the literature on banking shows that earlier writers focused on themes that have been at the forefront of national debates. Two themes are the importance of location and the privatization of state-owned banks. Another frequently studied topic is performance. Despite the important role of the financial services sector, we did not find papers that examine bank performance in Latin America, in particular from the viewpoint of raising or lowering shareholder wealth. The exception is Mexico, which has the advantage or curse of proximity to the United States, and which was the first Latin American country to be invited to join the Organization for Economic Cooperation and Development (OECD). This lack of studies on performance is surprising, because there are noteworthy patterns in the performance of financial services providers in many countries in the region, not only in Mexico, and there are large magnitudes of shareholder wealth creation and destruction in several other countries in the region.

To consider as many cross-border transactions as possible, we gathered data for 636 transactions across 17 countries during the period between 1985 and 2009. We then classified the transactions into subsets, in order to study transactions that were, in ways we specify below, similar to each other. To identify the subsets that created shareholder wealth, we employ event study methodology to capture the impact on shareholder wealth as a result of the transaction announcement.

To explore the factors influencing the direction and magnitude of market reaction and determine which factors influence value creation (or destruction), we also examine a cross-sectional sample of the firms. Several papers have employed cross-sectional method including Cornett et al. (2003), Kiymaz (2004), and DeLong (2001). The results of this study indicate that shareholders reacted positively to acquirers who enter markets with low market access and high risk. In addition, shareholders reacted positively to transactions that provide high levels of diversification and result in high levels of control over the acquired institution. Their reactions were similar in regard to transactions that were a result of privatization programs. We investigated whether market growth provided excess returns, and found that statistically more robust windows suggest a positive relationship between market growth and shareholder reaction, but market growth was not a consistent or strong source of abnormal returns. These findings are a refinement of variables and that previous studies used, and give more detail about the conditions that led to abnormal returns. This study reveals that cross-border transactions in the financial services sectors of Latin America are a worthy topic for further research, and a source of insights about the development processes of the countries in the region.

A literature review and explanation of the theoretical basis for this analysis follows. Discussion of the hypotheses and the data and methodology are next. We then present the research findings, followed by concluding remarks and suggestions for further research.

Financial Institutions and International Expansion: Theoretical Issues

In the economic literature, financial institutions are typically treated separately from unregulated industries, because financial institutions are tightly regulated and have so much involvement with unrelated, less regulated industries. Even after being acquired by a foreign financial intermediary, banks continue to be subject to a wide range of governmental controls on interest rates charged and received, margin requirements, portfolio allocation, and acceptable risk (Prager, 1997). Theories seeking to justify mergers and acquisitions in the financial institution sector note both positive and negative externalities. Milbourn et al. (1999) review drivers for merger and acquisition activity in the banking sector that range from strategic motivations, such as economies of scale and scope that increase shareholder wealth, to agency issues in which CEOs seeking reputational benefits try to maximize their own utility instead of shareholder value.

With regard to positive drivers of value creation, Berger and Humphrey (1992) point out that improvements in cost efficiency could save real resources, add to bank capital, and result in more favorable prices for consumers and greater bank output. In particular, relevant justifications for mergers and acquisitions in the banking sector include cost synergies and revenue synergies. After a deal is announced, shareholder wealth should change in a direction and magnitude that indicates how investors perceive these synergies.

Kiymaz (2004) finds that the wealth effects of cross-border mergers are different than those of domestic mergers because cross-border mergers have potential costs and benefits that differ from domestic mergers. For example, cross-border mergers could be value additive if foreign institutions operate more efficiently than domestic institutions. This additional value might be a result of differences in the general level of economic activities among nations or some other macro variable. We consider this additional value in terms of positive externalities and, possibly, option values, which would result in a higher firm value.

It is possible that positive externalities and potential option value can exist in the context of a cross-border acquisition, but negative externalities can also exist in the same context. For example, if the costs of creating and maintaining a diversified corporate network exceed the benefits, the firm will experience value destruction. Informational asymmetries and overvalued assessments of the target and potential synergies could also have adverse effects on the value of acquiring firms (Hitt et al., 2001; Kissin & Herrera, 1990). Finally, the added complexity in cross-border acquisitions in terms of regulation, monitoring costs, and cross-cultural integration can impact shareholder wealth.

The literature offers conflicting evidence regarding the effects of international expansion on firm value, and few studies address these issues in relation to financial institutions. The divergent views and the wide range in empirical results are not surprising, given that the M&A literature supports a complex interplay of firm-specific, industry-specific, and country-specific factors in the process of cross-border acquisitions. This study contributes to the literature by examining the possible shareholder wealth effects for financial institutions that seek to create firm value by acquiring firms in Latin America.

Hypotheses Development

Drawing on several related theories across the literature, this article will consider the potential impact of several country-specific and deal-specific factors.

Country Characteristics and Value Implications

The literature on shareholder wealth effects attempts to explain the factors that positively impact the value of the firm after the acquisition announcement, including regulatory issues, economic growth, and country-specific risk. Latin America has exceptional growth opportunities coupled with volatile financial and political environments. This article is the first to examine these issues as they relate to cross-border acquisitions in the region.

In addition to country-specific factors, this article examines firm-specific characteristics of the target in the context of influencing the direction and magnitude of market reaction. The first set of hypotheses follows:

The *market access* hypothesis considers the influence on the performance of acquiring firms as it relates to various regulations, restrictions, and protection in the target country. This hypothesis draws on literature concerning countries in other parts of the world, not countries in Latin America. Governments can significantly impact the degree of cross-border merger and acquisition activities. Barth et al. (2004) identify six regulatory and supervisory variables from the World Bank Regulatory and Supervisory database. These variables include activity regulations, entry regulations, capital stringency, depositor insurance protection, supervisory power, and the private monitoring index.

The *market growth* hypothesis follows the idea that market growth provides opportunities for foreign banks to capture revenue from additional lending and lower bankruptcy costs. Focarelli and Pozzolo (2001) argue that one of the most important factors driving foreign direct investment in banking is the growth of the host market. Levine and Zervos (1998) find that stock market liquidity and banking development positively predict growth, capital accumulation, and productivity improvements. In addition, Clarke et al. (2003) point out that economic growth creates profit opportunities for banks.

The *market risk* hypothesis considers the idea that in any cross-border investment, the perceived risk of the host country plays a critical role in the initial investment decision in terms of the required rate of return or discount rate to apply to the investment. Grosse and Goldberg (1991) use a country risk measure, quoted annually from *Institutional Investor,* to assess acquisitions of US firms. They base the ranking on a semiannual survey of 100 bankers worldwide who are asked to rate the country's creditworthiness. They also calibrate the sophistication of the bank's analytical model and exposure. This article uses a similar approach to look at the risk profile of the target country to determine if it impacts the acquiring firms' ability to extract above-normal returns from cross-border investments.

In light of the literature, we develop the following two hypotheses to test potential shareholder wealth effects of the previously mentioned target-specific characteristics.

Hypothesis 1a: Low market access, low market growth, and high market risk should have a negative impact on shareholder returns.

Hypothesis 1b: High market access, high market growth, and low market risk should have a positive impact on shareholder returns.

Firm-specific Target Characteristics and Value Implications

In addition to characteristics of the target country, the literature posits that firm-specific characteristics are likely to have an impact on the value of the acquiring firm.

The *diversification* hypothesis investigates potential costs and benefits of diversification. Petersen and Rajan (2002) note that the geographic distance between banks and their credit customers has increased. DeLong (2001) looks at OECD countries and finds that bank mergers that diversify either geographically or by activity do not create value for shareholders. Focarelli and Pozzolo (2001) argue that one of the most important factors driving foreign direct investment in banking is the potential for diversification. Grosse and Goldberg (1991) look specifically at the United States and find that geographic distance is "somewhat positively correlated with bank presence; the further away the parent bank, the more likely it is to build a U.S. asset base."

We base the *control* hypothesis on the idea that the percent owned by the foreign entity after the acquisition could affect the success of the acquisition. Although many foreign investments are called acquisitions, control remains in local hands, or control rests with a combination of parties other than the foreign investor (i.e., host country banks or host country government). The degree of control might be a critical factor for the potential profitability of the acquisitions. Claessens et al. (2001) define a bank as "foreign" if at least 50 percent of its shares are foreign owned (i.e., when there is foreign control of a bank's operations). The relevant proposition is that the more independence (control) the acquiring firm gains post acquisition, the more likely shareholders will react positively.

We develop the following hypotheses to examine the value implications of the aforementioned deal-specific target characteristics.

Hypothesis 2a: Greater geographic diversification benefits and higher control (independence) should have a positive impact on shareholder returns.

Hypothesis 2b: Less geographic diversification and lower control should have a negative impact on shareholder returns.

Privatization and Value Implications

Privatization generally means a process of the transfer of assets from public enterprises to the private sector. Privatization and deregulation have opened the financial services industry to greater competition. "As a result, foreign banks have been playing an increasingly crucial role in restructuring and internationalizing banking markets in these economies" (Jeon et al., 2011). Allen and Rai (1996) state "Global competition among financial intermediaries should enhance their efficiency of operations, thereby discouraging any deviation from cost minimizing and optimal production plans." Megginson (2005) notes that privatization generally improves performance, although he notes that it is typically less in the financial institutions sector than in nonfinancial industries.

Hypothesis 3a: If the acquisition is part of a privatization program (i.e., the acquired institution was partly or wholly owned by the local government and its shares were publicly traded on the local stock exchange), there should be a positive impact on shareholder returns.

Hypothesis 3b: If the acquisition is not part of a privatization (i.e., the acquired institution was not partly or wholly owned by the local government), there should be a negative impact on shareholder returns.

Data and Methodology

The primary databases used for this analysis include: *SDC Platinum*, *Bank Regulation and Supervision*, *DataStream*, *World Development Indicators*, and *Institutional Investor*. Additional data came from

BankScope, *Factiva*, *International Monetary Fund*, *World Economic Outlook*, and the *Global Financial Data* databases. From the *SDC Platinum* database, we select cross-border transactions from 59 financial institutions, representing 20 acquiring countries and 16 target countries for the period between 1985 and 2009. The oldest transaction was announced May 15, 1985, and the most recent December 1, 2009. From *DataStream*, equity prices are compiled. We discuss the additional aforementioned databases below in association with their relevant proxies.

We filter transactions based on region and industry: the initial search included 1,241 announcements. After eliminating transactions from undefined investor groups, governments, employees, and those with missing data, illiquid return data, or unconfirmed transactions, the final dataset includes 636 cross-border transactions for financial institutions from the Latin American region, all within the time period 1985–2009.

Approximately 30 percent of the transactions listed in the *SDC Platinum* database lack information for the value of the transaction. One reason this information is missing is that several of the transactions were privately negotiated. We provide details regarding the sample characteristics in Tables 1–3 below.

Table 1

Table 1 lists a sample of the 636 selected transactions from the period between 1985 and 2009. The initial search included 1,241 announcements from the *SDC Platinum* database that are filtered based on region and industry. In addition transactions from undefined investor groups, governments, employees, and those with missing data, illiquid return data, or unconfirmed transactions, were eliminated from the sample.

Table 1. Sample Firms

Date	Target Company	Country	Acquirer (Ticker)	Country
12/22/06	Banagricola	El Salvador	Bancolombia SA	Colombia
01/24/06	Banca Nazionale del Lavoro SA	Argentina	HSBC	United Kingdom
03/25/97	Banco ABC-Roma SA (Globopar)	Brazil	Arab Banking Corp BSC	Bahrain
08/16/06	Banco ABN-AMRO Real SA-Non	Brazil	Lehman Brothers Holdings Inc	United States
08/27/98	Banco Aleman Platina SA	Panama	MM Warburg & Co KGaA	Germany
12/09/99	Banco Anglo Colombiano (Lloyds)	Colombia	Llyods TSB Group PLC	United Kingdom
07/07/95	Banco Boliviano Americano SA	Bolivia	Interbanco	Chile
10/10/97	Banco Capital	El Salvador	Credicorp Ltd	Peru
02/17/98	Banco Comafi SA	Argentina	Banca Popolare Vincentina	Italy
10/06/88	Banco de Investiment Bajio	Brazil	Dai-Ichi Kangyo Bank Ltd	Japan

(Table 1 continued)

(Table 1 continued)

Date	Target Company	Country	Acquirer (Ticker)	Country
12/19/89	Banco de Montevideo	Uruguay	Deutsche Bank AG	Germany
04/27/98	Banco de Bajio	Mexico	Banco Sabadell SA	Spain
08/12/97	Banco del Caribe	Venezuela	Bank of Nova Scotia, Toronto	Canada
11/10/94	Banco Exterior CA	Venezuela	Fierro Group SA	Spain
12/05/95	Banco Fivenez	Venezuela	Banco Popular Del Ecuador SA	Ecuador
06/11/04	Banco Futuro	Honduras	Lafise Valores SA	Guatemala
08/15/12	Banco Industrial-Branches (11)	Brazil	Banco del Bajio	Mexico
05/13/94	Banco Latino de Colombia	Colombia	Banco del Pacifico SA	Ecuador
10/27/94	Banco Losango SA	Brazil	Banco Exprinter	Argentina
12/18/06	Banco Mercantil Brasil SA-Ret	Brazil	Morgan Stanley	United States
12/29/89	Banco O'Higgins	Chile	Antofagasta Holdings PLC	United Kingdom
03/18/94	Banco Pan de Azucar (Uruguay)	Uruguay	Banknord	Italy
07/08/98	Banco Real SA	Brazil	ABN-AMRO Holding NV	Netherlands
12/14/00	Banco Rio de la Plata SA	Argentina	Merrill Lynch & Co Inc	United States
11/03/04	Banco Societe Generale	Argentina	Banco Banex SA	Costa Rica
07/21/99	Banco Sud Americano	Chile	Bank of Nova Scotia, Toronto	Canada
08/20/03	Banco Sudameris Colombia	Colombia	Gilex Holding BV	Netherlands
03/27/98	Banco Supervielle SocGen SA	Argentina	Societe Generale SA	France
12/20/96	Banco Tequendama (Fogade)	Colombia	Credicorp Ltd	Peru
01/08/98	Banco Union SA	Paraguay	NJC Securities Corp	Switzerland
06/29/00	Bancoplus	Paraguay	BBVA SA	Spain
12/21/94	Badesco	Peru	Grupo Errazuriz	Chile
01/06/95	Bank of Tokyo-Argentinian	Argentina	ABN-AMRO Holding NV	Netherlands
04/24/06	BankBoston Uruguay	Uruguay	Banco Itau Hldg Financeira SA	Brazil
01/11/01	BLS	Argentina	Deutsche Bank AG	Germany
07/01/93	Centra Distribucion	El Salvador	NB Sestemas	Spain
05/02/00	Chase Manhattan Bank—Panama	Panama	HSBC Holdings PLC {HSBC}	United Kingdom
12/23/92	Corporacion Financiera de	Colombia	Latinoamerico Progreso	Venezuela
04/18/90	Grupo Alfa	Brazil	Rousse-Uclaf SA	France
07/21/06	Grupo Banistmo SA	Panama	HSBC	United Kingdom

(Table 1 continued)

(Table 1 continued)

Date	Target Company	Country	Acquirer (Ticker)	Country
12/13/06	Grupo Cuscatlan	El Salvador	Citigroup Inc	United States
02/14/96	Grupo Financiero Bancomer SA	Mexico	Bank of Montreal, Ontario, CA	Canada
06/12/00	Grupo Financiero Bancomer SA	Mexico	BBVA SA	Spain
06/02/95	Grupo Financiero Bital SA	Mexico	Banco Comercial Protugues SA	Portugal
04/28/92	Interbanc	Peru	Interncontinental Bank (ICBK)	United States
07/20/94	Interbanc (Peru)	Peru	International Financial Hjdg	Cayman Islands
07/19/04	Llyods TSB Bank SA	Colombia	Primer Banco del Istmo SA	Panama
08/02/91	Surinvest	Uruguay	Rabobank	Netherlands
07/01/99	Uniao de Bancos Brasilerios SA	Brazil	JP Morgan Corsair II	United States
08/27/97	Unibanco Seguros SA	Brazil	AIG	United States

Table 2

Table 2 shows the mean, median, standard deviation, kurtosis, skewness, and the number of transactions (n) with available data for the implied equity value, transaction value, stake acquired, acquirer's market capitalization and acquirer's total assets for the sample of 636 transactions over the period 1985–2009.

Table 2. Average Assets and Sales of the Sample Firms (Millions of US$)

	Mean	Median	St. Dev.	Kurtosis	Skewness	n
Target Implied Equity Value[a] ($)	884.99	420.54	1342.4502	5.453064	2.365358	103
Transaction Value ($)	296.85	73.00	872.3061	134.524502	10.119184	323
Stake Acquired (%)	57.73	50.00	36.3528	–1.540163	–0.047446	412
Acquiror Market Capitalization ($)	44818.29	17963.54	62351.8881	3.277377	1.942047	187
Acquiror Total Assets ($)	252250.88	90252.18	429741.1694	7.973801	2.807745	473
Total Transactions						636

[a]The implied equity value is calculated based on the stake acquired and the purchase price.

Table 3

Table 3 presents the total number of transactions for each country included in the sample. The average deal value, percentage acquired, target equity value, and acquirer market capitalization are also presented below.

Table 3. Average Transaction and Acquirer Information by Target Country (Millions of US$)

Target Country	Total No. of Transactions	Average Deal Value ($)	Average % Acquired (%)	Average Target Equity Value ($)	Average Acquirer Mkt Cap ($)
Argentina	112.00	162.53	62.51	825.47	44,421.71
Bolivia	6.00	99.50	63.70	200.00	n/a
Brazil	155.00	287.48	70.63	1,280.22	40,344.23
Chile	73.00	181.80	52.37	691.30	78,780.09
Colombia	41.00	120.79	58.81	381.26	62,235.90
Costa Rica	5.00	293.64	93.33	293.64	38,963.46
Ecuador	4.00	1.60	76.50	2.13	4,388.18
El Salvador	16.00	320.59	76.13	355.31	176,565.93
Guatemala	6.00	n/a	62.74	n/a	121,377.98
Guyana	1.00	0.33	n/a	11.02	n/a
Mexico	130.00	455.67	55.81	1,798.72	49,474.68
Nicaragua	1.00	11.05	50.60	21.84	n/a
Panama	12.00	471.00	69.14	584.86	67,499.95
Paraguay	5.00	15.00	87.75	n/a	n/a
Peru	44.00	54.20	56.37	128.46	44,843.75
Uruguay	9.00	30.67	87.15	64.23	50,023.51
Venezuela	16.00	85.89	54.74	239.17	n/a

Methodology

We use event study methodology to evaluate the impact of the acquisition announcement on the firm's value. Some important assumptions of the event study methodology include that markets are efficient,[1] the event is unanticipated, and there is an absence of "noise" during the event window.[2] The premise of these assumptions is that once information is publicly available, the information will alter investors' perceptions of the impact on future cash flows to the firm. This impact will then be reflected positively (with a higher share price) or negatively (with a lower share price) as investors buy or sell the security in reaction to the new information. The market model assumes that a stable linear relationship exists between the market return and the security return (MacKinlay, 1997). For a detailed description of the event study methodology, please contact the corresponding author.

Cross-sectional Analysis of Cumulative Abnormal Returns

The previous literature reveals that value captured in an acquisition depends on a range of factors. This study develops the following multivariate model to explain the cross-sectional variation in the cumulative abnormal returns:

$$\begin{aligned} CAR_{(t1,t2)} = {} & a_i + b_1(MKTA) + b_2(MKTG) + b_3(MKTR) \\ & + b_4(DIVER) + b_5(CONTROL) + b_6(PRIV) + e_i \end{aligned} \tag{9}$$

MKTA is our *market access* variable based on an assessment of the regulatory and supervisory environment by Barth et al. (2004) MKTG is our *market growth* variable based on real per capital GDP growth following Levine and Zervos (1998). MKTR is our *market risk* variable based on a country risk measure quoted annually in the *Institutional Investor* magazine following Grosse and Goldberg (1991). DIVER is a proxy for the geographic *diversification* of the acquirer following Grosse and Goldberg. CONTROL is a measure of the percentage pursued by the acquiring firm and PRIV is a dummy variable taking on the value of one if the transaction is a privatization and zero otherwise.

Analysis and Results

For this large dataset, encompassing a time period when many Latin American countries were pursuing policies aimed at increasing the amount of financing that private firms and individuals would be able to obtain, and a time period when many Latin American countries were opening their capital markets to foreign competition, it is to be expected that cross-border announcements would produce a jumble of results, and that many of the results would be negative. Large international financial institutions would react to the many opportunities that arose, as countries that previously had been closed to outsiders suddenly welcomed inward investment in their finance sectors. The acquirers might not have been able to assess the local environments thoroughly enough, so they might plunge in, overpay for a local financial institution, and then find out that the opportunity was not so glittering and the local institution was not so well positioned as they had imagined.

It should be no surprise, therefore, that the results reported in Table 4 indicate that on average, cross-border acquisition announcements of financial institutions in Latin America resulted in a negative impact on shareholder wealth. The abnormal return one day prior to the announcement was negative and statistically significant at the 1 percent level. One explanation might be that shareholders were not as sanguine as the corporate managers who decided to acquire financial institutions in those countries. It is also possible that shareholders might have had less information than the corporate managers, or might have held outdated views. The Third World debt crisis was very much in the news in 1985, the first year of our sample period. But by that time, many Latin America economies were recovering from the deep recession of 1982. Most had also suffered banking crises in 1982, so they were rethinking the concepts underlying their national financial systems. Many decided to invite foreign financial institutions into their countries, and decided to allow those foreign financial institutions to buy existing local financial institutions, and allowed the newcomers to operate in lines of business that had previously been reserved for purely local firms. For those historical reasons, it is reasonable that shareholders would have less reason for optimism than the corporate managers who decided to make the acquisitions.

It should also be no surprise that the performance of such a large set of cross-border acquisitions would revert toward the mean for wider event windows. We found that mean cumulative abnormal returns were statistically significant only in the immediate time close to the event date, and became statistically insignificant for all wider event windows. We expect this, as larger event windows will enable the introduction of noise or confounding effects that could obscure the impact of the event under consideration.

It is revealing that positive market reactions associated with the various event windows range from 42.07 percent to 48.19 percent. This shows that the market reaction was negative at first, and then became less negative, but did not reach the 50:50 level.

Table 4

Table 4 summarizes the cumulative abnormal returns from cross-border acquisition announcements at different levels of significance using several tests. The time interval is the period during which significant effect of the event is expected to be captured. Positive market reactions associated with the various event windows range from 42.07 percent to 48.19 percent. Wider event windows are insignificant as there is a higher possibility of the introduction of noise or confounding effects, which could obscure the impact of the event under consideration. The positive/negative abnormal return count assumes that information once publicly available will alter investors' perceptions of the impact on future cash flows to the firm and this impact will then be reflected positively (with a higher share price) or negatively (with a lower share price) as investors buy or sell the security in reaction to the new information if the markets are efficient, the event was unanticipated, and an absence of "noise" during the event window. The Patell Z "a standardized abnormal return approach, which estimates a separate standard error for each security-event and assumes cross-sectional independence" (Cowan, 2007). The Wilcoxon Test cross-sectionally ranks the estimation-period and event-period abnormal returns (Cowan, 2007). In the table, $, *, **, and *** denote statistical significance at the 10%, 5%, 1%, and 0.1% levels, respectively. The symbols (<< correspond to $, *, and show the direction and generic one-tail significance of the generalized sign test. Table 4 presents the daily abnormal returns at time, *t* (ARt) for the sample of 636 transactions examined during the 1985–2009 period. Daily abnormal returns are computed from the market model as prediction errors, day 0 refers to the announcement date associated with the transaction as reported in the SDC *Platinum* database.

The negative cumulative abnormal returns imply that value destruction, or negative investor sentiment, is associated with cross-border acquisition announcements in the industry and region under investigation. Despite that broadly unrewarding set of transactions, however, there are subsets that display more positive characteristics.

This study considers additional factors to see if they influence returns from cross-border announcements. These additional factors are target country characteristics, firm-specific factors, and a transaction factor, privatization, which can influence shareholder wealth creation or destruction. We discuss these factors in greater detail in the following sections.

Table 4. Cumulative Abnormal Returns from Cross-border acquisition Announcements

Interval	Mean (%)	Positive: Negative		Patell Z		Wilcoxon Test		Total No. of Transactions	Positive Market Reaction (%)
(–10, +2)	–0.16	299:338		–0.707		–4625.5		637	46.94
(–10, +1)	–0.16	307:330		–0.731		–3240.5		637	48.19
(–1, 0)	–0.21	284:352	(	–2.422	**	–13590	**	636	44.65
(–1, +1)	–0.30	263:369	<<	–2.809	**	–16640	***	637	42.07
(–2, +1)	–0.22	301:336	<<	–1.771	*	–9347.5	*	637	47.25
(–1, –1)	–0.21	271:365		–3.337	***	–16415	***	636	42.61
(0,0)	–0.01	298:338		–0.089		–2224		636	46.86
(+1, +1)	–0.09	300:337		–1.440		–6991.5	$	637	47.1
(–10, +5)	–0.17	301:336		–0.681		–3099.5		637	47.25
(–5, +5)	–0.25	300:337		–1.271		–6473.5	$	637	47.1
(–5, +1)	–0.24	302:335		–1.483		–9176.5	*	637	47.41

Target Country Characteristic Factors

Our data come from 17 countries, but over 85 percent of the transactions we considered come from only six countries: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. There might be some systematic variation in subsets of the countries in our dataset, or in individual countries, but in this study we seek pan-regional patterns. We consider several firm-specific factors of the target firm's country to explain the cross-sectional variation in the cumulative abnormal returns associated with the acquisition. This section discusses the findings from three specific country characteristics: market access, market growth, and market risk.

The first factor, market access, is a proxy for the regulatory environment within the target country. This factor is important because governments directly impact the regulatory and supervisory conditions of the host country, which can affect the success of the cross-border merger. Regulation is a large part of the merger and acquisition process, and can delay or derail an acquisition. A variety of regulations have profit implications for a foreign acquirer, including regulations on capital requirement, deposits, deposit insurance, and risk management. In addition, regulators control where new banks can be chartered, where banks can expand by adding branches or a holding company acquisition, and which banks can merge with or acquire other banks. And after a foreign acquisition, banks are subject to a wide range of governmental controls on interest rates charged and received, margin requirements, portfolio allocation, and acceptable risk (Prager, 1997).

Another issue that makes this factor of interest is the wide range of regulatory environments across countries. For example, in Peru, securities and real estate activities in banking are permitted and insurance activities are permitted and unrestricted, but in Nicaragua, banks are prohibited from these activities. Allen and Rai (1996) find that "[l]arge banks in separated banking countries…have significantly less efficient operations than any other bank group." Barth et al. (2004) determine that the less restrictive the general regulatory environment in the host country, the higher the level of foreign bank entry.

The classification of transactions based on market access indicates that the greater difficulty of market access (as identified by a higher score based on an index of activity regulations, entry regulations, capital stringency, depositor insurance protection, supervisory power, and private monitoring collected from the *Bank Regulation and Supervision* database) increases the abnormal return to the acquirer. This result is intuitively appealing: if the local markets are under-banked, the newcomer will be able to make profits without having much difficulty finding customers. Nevertheless, this result is different from what Focarelli and Pozzolo (2001) found. Their findings indicate that markets that are difficult to enter might be unrewarding for other reasons. Our finding is that an acquirer announcing an acquisition into a market that is difficult to enter might be perceived positively by its shareholders. But we acknowledge that markets that are difficult to enter might not always be worth entering.

The second factor, market growth, yields mixed results. The results indicate a positive relationship between market growth and shareholder wealth creation. A higher market growth in the target country leads to positive shareholder reaction. This finding is consistent with Beck et al. (2000) who examined the impact of financial development on the sources of economic growth. The authors find a statistically significant relationship between financial sector development and growth in real per capita GDP. We find, however, that in the two wider windows (–10, +5) and (–5, +5), the results indicate a negative relationship between market growth and shareholder wealth effects. The wider cumulative return windows overturn the immediate positive reaction, and suggest that acquisitions in higher growth countries lead to negative abnormal returns. There are many possible explanations for these mixed findings. One might be that announcing an acquisition in a fast-growing country would attract an initially positive assessment, but in the ensuing days, when investors have time to examine the acquisition, the assessment might be that the buyer overpaid.

We base the third factor, market risk, on *Institutional Investor* country credit ratings. Our results might be influenced by a secular trend in the ratings. The average risk rating of the selected countries was initially approximately half of the global average (and approximately one quarter of the U.S. score). That is consistent with the view that Latin America experienced a Lost Decade during the 1980s. More recently, the average risk ratings of the Latin American countries have moved toward the global average. This subsample of countries, therefore, was initially in the bottom quartile of the global ranking in terms of country credit ratings as defined by the *Institutional Investor*, and has now moved in line with the global average.

The regression results indicate a significant relationship between market risk and shareholder wealth (Table 5). Specifically, acquisitions in countries with higher risk lead to positive shareholder returns post acquisition announcement. One possible explanation is that shareholders have confidence that the acquirer has information that the level of risk is coming down, and that the acquirer will be able to achieve positive results with the acquired institutions. The results were significant at the 5 percent level in the (–5, +5) interval. That is a strong result considering the diverse nature of the data and the time interval which includes periods of recession, growth, stability, and turbulence.

In conclusion, the target country characteristics examined indicate that there were specific subsets in our large set of acquisitions that led to positive shareholders returns. Indicators of market access, growth, and risk all produced results worthy of further study.

Table 5

Mean cumulative abnormal returns to the shareholders under the different firm-specific factors of the target firm's country during the different time intervals and at various levels of significance are presented in Table 5. The target country factors are: market access, market growth, and market risk. The firm-specific factors include diversification and control (independence). Whether the transaction was part of a privatization was also considered. In the table, * and ** denote statistical significance at the 5 percent and 1 percent levels, respectively. The table presents the daily abnormal returns at time, *t* (ARt) for the sample of 636 transactions examined during the 1985–2009 period. Daily abnormal returns are computed from the market model as prediction errors, day 0 refers to the announcement date associated with the transaction as reported in the SDC *Platinum* database.

Firm-specific Factors

We consider firm-specific factors, ranging from the domicile of the acquirer versus the target and the control the acquirer is able to gain post acquisition. We consider these factors as they could influence the shareholder returns post acquisition announcement.

The first factor, diversification, connects the home country to which the acquiring firm reports to the home country of the target. DeLong (2001) finds that bank mergers that diversify geographically do not create value for foreign shareholders. Focarelli and Pozzolo (2001) argue that one of the most important

Table 5. Cross-sectional Regressions: Cumulative Abnormal Returns

	CAR (–10, +5)	CAR (–10, +2)	CAR (–10, +2)	CAR (–5, +5)	CAR (–1, 0)	CAR (–1, +1)	CAR (–2, +1)
Intercept	–0.013	–0.021	–0.033	–0.011	–0.015	–0.028	–0.033
(t-stat)	–(0.311)	–(0.594)	–(9.941)	–(0.286)	–(0.968)	–(1.39)	–(1.493)
Market Access	0.0010	0.0011	0.0012	0.0008	0.0004	0.0007	0.0008
	(1.0452)	(1.364)	(1.5441)	(0.9032)	(1.112)	(1.5268)	(1.6941)
Market Growth	–0.0281	0.0114	0.0455	–0.0386	0.0191	0.0472	0.0706
	–(0.3266)	(0.1592)	(0.6412)	–(0.4984)	(0.6298)	–(1.1826)	–1.5827
Market Risk	–0.0004	–0.0003	–0.0002	–0.0004	–0.0001	–0.0001	–0.0002
	–1.5373	–1.5303	–(1.0206)	–(1.9583)*	–(1.6308)	–(0.8256)	–(1.4507)
Diversification	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	–(1.438)	–(2.0682)**	–(1.8398)*	–(0.5281)	(0.9399)	–(0.6181)	(0.1022)
*Interdependence**	0.0004	0.0030	0.0049	–0.0025	0.0016	0.0043	0.0061
	(0.0363)	(0.3125)	(0.5132)	–(0.2404)	(0.4256)	(0.8204)	(1.0448)
Privatization	0.0157	0.0118	0.0138	0.0084	0.0059	0.0050	0.0079
	(0.9756)	(0.882)	(1.0393)	(0.5808)	(1.0391)	(0.6719)	(0.9504)
Adjusted R^2	0.005	0.013	0.010	0.002	0.001	0.003	0.008
F-value	1.492	2.439	2.115	1.264	1.053	1.053	1.053

factors driving foreign direct investment in banking is the potential for diversification. The analysis that we present here indicates that higher diversification leads to a positive abnormal return. The results are significant in the (–10, +2) and (–10, +1) intervals, at the 1 percent and 5 percent significance, respectively. Our findings indicate that diversifying into the Latin American region has been positively received by shareholders of the acquiring institutions. All announcements of diversifying into the Latin American region, however, have not been positively received. Investors were not applauding all announcements regardless of other attributes. That result is informative when considered in relation to the more general result that long distance acquisitions are less successful.

The second factor, control, reveals that the greater control the acquirer obtains, the greater the possibility for positive abnormal returns. The percent the foreign entity owned post acquisition, and particularly owning 50 percent or more, could affect the success of the acquisition. After the acquisition, if control is divided, with parties other than the foreign investor (i.e., host country banks or host country government) involved in day-to-day management or involved in setting priorities, the results could be unsatisfactory for the shareholders of the acquiring institution.

In conclusion, both firm-specific factors examined indicate that higher diversification and higher control lead to the potential for positive abnormal returns to the acquiring firm's shareholders.

Privatization Factor

The final factor examined is whether or not the acquisition was part of a privatization program. The results indicate that transactions that were part of a privatization program have a positive impact on future cash flows to the acquiring firm (Table 6). This result is consistent with anecdotal reports that privatizations were underpriced, or were sweetheart deals. It is also consistent with the view that privatizations were initiated by local governments to achieve rapid improvements in the efficiency of the local financial services sectors.

Table 6

Table 6 shows several tests of significance. The positive/negative abnormal return assumes that information once publicly available will alter investors' perceptions of the impact on future cash flows to the firm and this impact will then be reflected positively (with a higher share price) or negatively (with a lower share price) as investors buy or sell the security in reaction to the new information if the markets are efficient, the event was unanticipated, and an absence of "noise" during the event window. Patell Z "a standardized abnormal return approach, which estimates a separate standard error for each security-event and assumes cross-sectional independence" (Cowan, 2007); Wilcoxon Test, which cross-sectionally ranks the estimation period and event period abnormal returns (Cowan, 2007); generalized sign Z test "examines whether the number of stocks with positive cumulative abnormal returns in the event

Table 6. Acquirer's Daily Abnormal Returns from Cross-border Acquisition Announcements

Day	Mean (%)	Positive: Negative		Patell Z		Wilcoxon Test		Generalized Z		Total No. of Transactions	Positive Market Reaction (%)
AR_{-10}	0.20	337:299	>>	1.705	*	6949	$	2.639	**	636	52.99
AR_{-9}	–0.09	292:344		–0.703		–9491	*	–0.933		636	45.91
AR_{-8}	0.07	307:329		0.918		359		0.258		636	48.27
AR_{-7}	–0.07	298:338		–1.202		–5537		–0.457		636	46.86
AR_{-6}	0.06	316:320		0.675		1283		0.972		636	49.69
AR_{-5}	–0.08	275:361	<	–1.065		–11986	**	–2.283	*	636	43.24
AR_{-4}	0.06	304:332		–0.426		–4172		0.019		636	47.80
AR_{-3}	0.06	318:318		1.109		912		1.131		636	50.00
AR_{-2}	0.11	317:319		1.325	$	3946		1.051		636	49.84
AR_{-1}	–0.29	271:365	<<	–3.337	***	–16415	***	–2.600	**	636	42.61
AR_{0}	0.01	298:338		–0.089		–2224		–0.457		636	46.86
AR_{1}	–0.04	300:337		–1.44	$	–6991.5	$	–0.336		637	47.10
AR_{2}	–0.04	293:344		–0.018		–4823.5		–0.891		637	46.00
AR_{3}	–0.03	299:338		–0.303		–3911.5		–0.415		637	46.94
AR_{4}	–0.06	299:338		–0.457		–4283.5		–0.415		637	46.94
AR_{5}	–0.15	305:332		0.586		–1015.5		0.061		637	47.88
AR_{6}	–0.02	297:340		0.067		–5463.5		–0.574		637	46.62
AR_{7}	–0.02	295:342		–0.498		–5573.5		–0.732		637	46.31
AR_{8}	–0.01	300:337		–0.201		–3554.5		–0.336		637	47.10
AR_{9}	0.08	306:331		1.219		1023.5		0.140		637	48.04
AR_{10}	–0.03	313:324		–0.172		–2844.5		0.695		637	49.14

window exceeds the number expected in the absence of abnormal performance" (Cowan, 1992); total no. of transactions, and positive market reaction (%). In the table, $, *, **, and *** denote statistical significance at the 10%, 5%, 1%, and 0.1% levels, respectively. The symbols <, <<, and >> correspond to $, * and show the direction and generic one-tail significance of the generalized sign test. The table presents the daily abnormal returns at time, *t* (ARt) for the sample of 636 transactions examined during the 1985–2009 period. Daily abnormal returns are computed from the market model as prediction errors, day 0 refers to the announcement date associated with the transaction as reported in the SDC *Platinum* database.

Concluding Remarks

This article investigates the effects of six metrics on the success of cross-border mergers and acquisitions of financial institutions in Latin America. We base this analysis on data for 636 transactions across 17 countries, during 1985–2009. This article fills an existing void by empirically testing a large set of acquisition announcements, using variables that influence success, such as market access, market risk, market growth, diversification, control, and privatization. To examine stock market reaction to acquisition announcements, we employ two empirical methods: an event study followed by a cross-sectional regression of the results.

The results indicate that shareholders reacted positively to acquirers who enter markets with low market access and high risk. In addition, shareholders reacted positively to transactions that provide high levels of diversification and result in high levels of control over the acquired institution. Shareholders also reacted positively to transactions that were a result of a privatization program. These findings provide new specifications of variables that have been previously examined, and give insight into large category of acquisitions that have not been examined in this way previously.

The results diverge from previous studies that focus on other geographical regions or time periods. There are unexpected findings with respect to regulatory environment and risk. These may be due to the Latin American region's well-known efforts to redesign their national financial systems, and the reductions in country risk that so many Latin American countries have been able to achieve during the period studied. The divergence is obvious when considering, for example, Barth et al. (2004). They attest to the importance of the regulatory environment, and Cornett et al. (2003) find that it is an important factor in positive shareholder reaction. Interestingly, results from this research suggest that shareholders prefer a more restrictive regulatory environment. This might indicate that foreign investors, who are able to enter the market through an acquisition, will be more protected from additional foreign competition due to the tighter regulatory environment in the banking sector. Or tighter regulation might imply that foreign-owned firms will be treated fairly vis-à-vis local institutions.

This article shines the spotlight on a large and highly varied set of acquisition announcements, shows that there are unexpected patterns in the data, and raises questions for future research. Extracting the successful transactions from the dataset indicates that there may have been success factors that we did not identify. To illustrate that point, we identify successful acquisitions as those that have consistent positive cumulative abnormal returns across all intervals. Approximately 17 percent of the 636 acquisitions created wealth for shareholders across all intervals examined. It is intriguing to think that it might have been possible to predict those successful acquisitions, especially intriguing because the successful acquisitions added between 2.3 percent and 6.9 percent of value to the firm, depending on the interval examined. Those abnormal returns suggest that the data merit further analysis, and also raise the hope that there might be undiscovered indicators of which new acquisitions in the region will be successful.

Appendix 1. Event-Study Methodology Used (will be available on author's website)

We give the market model used in this analysis in the following equation:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}. \tag{A.1}$$

In equation (A.1) we assume the error of the security *i* to be zero and the variance of the error term to be equal to the squared standard deviation. We denote the time index as *t*, $i = 1, 2, 3\ldots$, N for security *i*, *m* is the market portfolio, R_{it} and R_{mt} are the returns on security *i* and the market portfolio *m* for the time period *t*, and ε_{it} is the error term for security *i*. We estimate equation (A.1) over a 255-day period, which runs 11 days prior to the event. We define the event window as the period (–10, +10) days after the event at t = 0. We use the estimates of α_i and β_i from equation (A.1) to predict the normal return during the event window. With regard to the market portfolio, most US-centric event studies use the Center for Research in Security Prices (CRSP) value-weighted index as a benchmark for their analysis. Empirical studies on international securities consider the DataStream Total Market World (TOTMKWD) index more appropriate.[3] We calculate the difference between the predicted return and the actual return for a period, also known as the abnormal return, using the following formula:

$$AR_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mt}\right). \tag{A.2}$$

We estimate the abnormal return and relevant test statistics at each instant within the event window. After this step, we use aggregated abnormal returns (AAR) to draw overall inference on the abnormal return observations for the event(s) of interest.

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it}. \tag{A.3}$$

According to McWilliams and Siegel (1997), the length of the event window is "possibly the most crucial research design issue." There are several aspects to consider when determining the event window. The first is the length of the window. Ryngaert and Netter (1990) demonstrated that "a short event window will usually capture the significant effect of an event." In addition, the authors note that the nature of the event should also drive the decision. For example, if "leakage of information is likely, the window should include some time prior to the announcement of the event so that abnormal returns associated with the leakage will be captured." After careful consideration of issues such as information leaks, two-day events, and confounding effects, as well as a review of relevant literature, we select the event window of (–10, +10). We compare the expected returns on the stock calculated from model (1) for the security during the event window (–10, +10) with the actual returns observed on each day within the event window. We calculate the sum of the abnormal returns for a given event window, the cumulative abnormal return (CAR), as follows:

$$CAR_i\left(T_1,T_2\right)=\sum_{t=T_1}^{T_2} AR_{it} \tag{A.4}$$

We use the CARs[4] to determine whether the acquisition had a material effect on the firm value. Positive CARs indicate that the equity market expects the acquisition to create value, and negative CARs imply value destruction. The estimation window is 255 days, with a lower limit of 30 days ending 11 days prior to the announcement of the acquisition by the bidder. Fuller et al. (2002) report that announcement dates provided by *SDC Platinum* database were correct for the majority of the sample they studied; the remaining announcement dates were off by no more than two trading days. Based on prior research in this area, we select the following cumulative abnormal returns to capture most of the announcement effect CAR(–10,+2), CAR(–10,+1), CAR(–1,0), CAR(–1,+1), and CAR(–2,+1).[5] To test the null hypothesis of a zero cumulative abnormal return, we employ the following Z test:

$$\mathrm{CAR_i}\left(\mathrm{T_i},\mathrm{T_2}\right)\sim \mathrm{N}\left(0,\sigma^2_{\mathrm{i}}\left(\mathrm{T_i},\mathrm{T_2}\right)\right): Z=\frac{CAR}{\left(\sigma_i^2\left(T_1,T_2\right)\right)^{1/2}}\sim \mathrm{N}(0,1). \tag{A.5}$$

The Patell (1976) parametric test for standardized abnormal returns standardizes the event-date prediction error for each stock by its standard deviation. The test statistic assumes cross-sectional independence in abnormal returns and no event-induced change in the variance of the event-period abnormal returns. We calculate the test statistic as follows:

$$t_{Patell}=\frac{\sum_{i=1}^{N} SR_i}{\sqrt{N}}, \tag{A.6}$$

where N is the number of stocks in the portfolio; SR_i is the standardized abnormal returns of the *i*th stock, calculated by dividing the event-period abnormal return on the *i*th stock on the day *t* by the standard deviation of the estimation period abnormal returns. The denominator is approximately equal to the square root of the number of firms in the portfolio. We also report the cross-sectional standard deviation test statistic (CSectErr t) and the generalized sign Z test. The cross-sectional standard deviation test statistic is an extension of the Patell test, which compensates for a possible variance increase on an event date by incorporating a cross-sectional variance adjustment (Boehmer et al., 1991). The generalized sign Z test "examines whether the number of stocks with positive cumulative abnormal returns in the event window exceeds the number expected in the absence of abnormal performance" (Cowan, 1992). We calculate the generalized sign Z test statistic as follows:

$$Z_G=\frac{w-n\hat{p}}{\left[n\hat{p}\left(1-\hat{p}\right)^{1/2}\right]}, \tag{A.7}$$

where w is the number of stocks in the event window T_1,T_2, that have a positive cumulative abnormal return; $\hat{p}$ is the fraction of positive abnormal returns in the estimation period

$$\hat{p} = \frac{1}{n}\sum_{j=1}^{n}\frac{1}{255}\sum_{t=E_1}^{E_{255}} S_{jt}, \ \text{where}\, S_{jt} = \begin{cases} 1\, if\ AR_{jt} > 0 \\ 0\ \text{otherwise} \end{cases} \tag{A.8}$$

The null hypothesis for the generalized sign test is that the fraction of positive market returns in each period (interval) is the same as that in the estimation period. One can find further discussion of these test statistics and citations on these topics in Cowan's (2007) Eventus 8.0 User's Guide. We report cumulative abnormal returns for the following event windows: CAR(–10,+5), CAR(–10,+2), CAR(–10,+1), CAR(–5,+5), CAR(–1,+1), CAR(–1,+1), and CAR(–2,+1). The dependent variables in the event study are the cumulative abnormal returns. We discuss this in the following section.

$$\begin{aligned} CAR_{(t1,t2)} = a_i + b_1(MKTA) + b_2(MKTG) + b_3(MKTR) \\ + b_4(DIVER) + b_5(CONTROL) + b_6(PRIV) + e_i, \end{aligned} \tag{A.9}$$

where:

MKTA = We develop an index of regulatory restrictions based on six regulatory and supervisory variables: activity regulations (AR), entry regulations (ER), capital stringency (CS), depositor insurance protection (DI), supervisory power (SP), and the private monitoring index (PMI), as a proxy for market accessibility and include regulatory and supervisory conditions following Barth et al. (2004).

MKTG = The proxy for market growth is the traditional measure of economic growth (real per capita GDP growth) following Levine and Zervos (1998). We captured the fluctuation of market growth on an annual basis, which ranged from –13.4 percent (Panama 1988) to 17.9 percent (Venezuela 2004). We calculate data for market growth from the *International Monetary Fund, World Economic Outlook* database.[6] To approximate market growth, we select the log of the growth in GDP of the target country for the analysis.

MKTR = The proxy selected for market risk is a country risk measure quoted annually in *Institutional Investor* magazine, which assigns a degree of risk to each country on a scale of 100 (very low risk) to 0 (very high risk) and follows Grosse and Goldberg (1991).

DIVER = A proxy that considers diversification in the context of geographic proximity, the number of miles from the acquiring bank's capital and the target bank's closest major city and follows Grosse and Goldberg (1991).

CONTROL = The proxy for the independence (control) variable (percentage stake pursued by the bidder) is the percentage of shares acquired, as reported by the *SDC Platinum* database.

PRIV = a dummy variable, taking the value one if the transaction is a privatization, and zero otherwise.

Notes

1. For a discussion of debate on market efficiency see Fama (1991).
2. "Noise" or "confounding effects" can include "the declaration of dividends, announcement of an impending merger, signing of a major government contract, announcement of a new product, filing of a large damage suit, announcement of unexpected earnings, and change in a key executive." See McWilliams and Siegel (1997) for a more detailed discussion of these issues.
3. See for example, Foerster and Karolyi (2000); Doidge et al. (2007); and Bekaert et al. (2007).
4. The precision-weighted cumulative average abnormal returns reported "fulfills the reporting needs for which researchers sometimes report an average standardized cumulative abnormal return (average SCAR)." See Cowan (2007).
5. See for example, Morck et al. (1990), Cornett et al. (2003), Kiymaz (2004), DeLong (2001), and Subrahmanyam et al. (1997).
6. See for example, International Monetary Fund (2006).

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