Are M&A Premiums Too High? Analysis of a Quadratic Relationship between Premiums and Returns

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This paper analyzes whether bidders are overpaying in banking takeovers in Europe. According to the synergy hypothesis, the bid price in mergers and acquisitions (M&A) depends on the synergies expected; thus, the premium is expected to have a positive influence on the bidder's returns. If the bidder overpays for the target, however, the premium will have a negative effect on the bidder's returns, as stated in the overinvestment hypothesis. Based on the above hypotheses, the analysis of 49 M&A from 1995 to 2004 shows a quadratic relationship between premiums and bidders' returns with a relative maximum of 21 percent. Therefore, bidders paying above this premium could be overpaying in their deals.

Introduction

Since the 1990s, the banking industry in a majority of developed countries has experienced a consolidation process where mergers and acquisitions (M&A) among credit institutions have reached unprecedented levels. This process has induced an important restructuring of the banking sector which has led to a significant reduction in the number of credit institutions.

As a result, the study of mergers and acquisitions has attracted considerable interest from the academic world, which has focused on the causes and consequences of these operations. Many research papers that have analyzed the effect M&As have on market value study the abnormal returns obtained by stockholders in response to the announcement of an operation. These studies generally show that the stockholders of the acquiring organizations are negatively affected, whereas those of the

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acquired organization can benefit, with the joint effect of the operation being positive or not significant (Houston and Ryngaert, 1994; Cybo-Ottone and Murgia, 2000; Beitel et al., 2004).

The success of an M&A is based not only on the future profits expected to be obtained, but also on the capacity to complete the operation at a price that is not greater than the profits. In this regard, the premium (bid price above the market value of the target's shares) has awakened considerable interest as an explanatory factor for the returns obtained by the stockholders of the bidders and targets in mergers or acquisitions (Hayward and Hambrick, 1997; Grullon et al., 1997; Mueller and Sirower, 2003; Moeller et al., 2005).

The existing literature assumes that premium has a positive influence on the abnormal returns obtained by the stockholders of the target organization. There is no consensus, however, regarding the relationship between premiums and bidders' returns due to the existence of two hypotheses. On one hand, it is possible that merger premiums may proxy for the synergies between a bidder and its target, thus promoting a positive relationship between premium and return (Bradley et al., 1983; Antoniou et al., 2007). On the other hand, high premiums may proxy for overpayments in mergers, thereby increasing the likelihood of a value-destroying deal which should lead to a negative relationship between the premium and return (Varaiya and Ferris, 1987; Sirower, 1997; Schwert, 2003).

Moreover, prior studies, both in the industrial and financial sectors, have assumed a linear relationship between premiums and acquirers' returns. It is possible that this relationship depends on the magnitude of the premium. The premium initially would have a positive influence on abnormal returns of the bidder, thus supporting the synergy hypothesis. If the premium were too high, the effect would be negative, as formulated in the overpayment hypothesis. If this were the case, a quadratic relationship between the premium and the acquiring company's returns would be expected.

Therefore, we establish a new theoretical relationship between the premium and returns in M&A, and we then empirically test this relationship. This research aims to answer the following questions:

- Do managers pay a price in acquisitions according to the expected synergies?
- Do they pay too much in M&As?
- When is the premium considered too high?

The answers will be useful for market analysts, financial institutions, investors, regulators, and the scientific community in general, given that we will be able to determine when the premium is considered as overpayment and accepted negatively by the market, thus producing a negative effect in the acquirers' returns.

The bidders' abnormal returns first are estimated using event study methodology in a sample of M&As performed by European banks from 1995 to 2004. The rela-

tionship between premiums and returns then is studied in a regression analysis. The results show a quadratic relationship between premiums and returns. The results show a positive influence of the premium on returns until the premium is considered too high and the relationship becomes negative. Moreover, in our sample, a premium of 21 percent is considered too high by the market.

Bank Mergers and Acquisitions, Value Creation, and Premium

The effect that M&As have on the market value of the firms that participate in the operation has been an important research topic in the merger and acquisition literature. Many research papers have studied the abnormal returns obtained by stockholders on the announcement of an M&A. Although the results of these papers vary in terms of the sample analyzed, the period of time considered, the study's target countries, or the length of the window, they show that the stockholders of the targets obtain positive abnormal returns. With regard to the bidders, the results are mixed. There are studies that show certain earnings, and others that observe negative or non-significant returns (Houston and Ryngaert, 1994; Becher, 2000; Cybo-Ottone and Murgia, 2000; DeLong, 2001; Houston et al., 2001; Hart and Apilado, 2002; Beitel et al., 2004; Scholtens and Wit, 2004; Campa and Hernando, 2006).[1] In any case, the returns of the acquiring companies' stockholders, whether positive or negative, tend to be small. Finally, when the acquiring and the acquired companies are considered jointly, most of the studies show earnings, albeit of a reduced magnitude (e.g., Houston and Ryngaert, 1994; Beitel et al., 2004).

Some authors have undertaken more in-depth analyses of the abnormal returns derived from M&As and have studied the factors that explain them through regression analyses. Among these variables, diversification, means of payment, and other variables related to the size, profitability, or stock ownership of the organizations have proven to be significant (Houston and Ryngaert, 1994; Grullon et al., 1997; Subrahmanyam et al., 1997; Cybo-Ottone and Murgia, 2000; DeLong, 2001, 2003; Cornett et al., 2003; Beitel et al., 2004; Louis, 2004; Campa and Hernando, 2006).

Along with these variables, the premium also has gained considerable relevance as an explanatory factor of the abnormal returns derived from M&As (Hayward and Hambrick, 1997; Mueller and Sirower, 2003; Antoniou et al., 2007). In this work, attention is focused on this last variable because the earnings derived from an M&A depend not only on the expected results of the operation in terms of scale and scope economies, diversification, increase in market power, or improvement in management, but also on the ability to complete the transaction at a price that is not higher

[1]Rhoades' research (1994) reviews 21 papers that use event study methodology to analyze the abnormal returns in M&A operations from 1980 to 1993. For the bidders, abnormal negative returns are shown in seven papers, while non-significant ones are given in another seven, positive returns in three, and mixed returns in four. Regarding target organizations, eight papers show abnormal positive returns, and one shows non-significant returns.

than the future expected profits (e.g., Hayward and Hambrick, 1997; Flanagan and O'Shaughnessy, 2003).

The premium refers to the bid price above the market value of the shares of the target to ensure the operation's success and gain control over the acquired organization. The stockholders of the target organization will demand a minimum price that will ensure them high profits so that the offer can be accepted. Any price less than the decided minimum would allow them to reject the operation in the hope that another company will make a new offer with a higher premium (Greenfield, 1992). Thus, the greater the premium offered, the greater will be the target stockholders' returns.

In the case of the acquiring company, however, some studies show that the premium positively influences the abnormal returns. Other studies find a negative relationship. These results are based on the following hypotheses: the synergy hypothesis which establishes a positive relationship between the premium and abnormal returns and the overpayment hypothesis which identifies a relationship in the opposite direction.

With regard to the synergy hypothesis, the greater the value the acquirers expect to obtain from the operation, the higher the amount they will be willing to pay for the merger or acquisition (Bradley et al., 1983; Slusky and Caves, 1991; Antoniou et al., 2007). According to this hypothesis, the premium could be a sign of the value the acquirer assigns to the M&A and of the probability of obtaining synergies. Therefore, a positive relationship between premiums and returns is expected.

With regard to the overpayment hypothesis, it is possible that the acquiring company pays a premium higher than the profits expected by the market, which could lead to a negative relationship between the premiums and returns (Varaiya and Ferris, 1987; Sirower, 1997). The payment of a high premium gives rise to a transfer of wealth to the stockholders of the company acquired. This would, at least partially, explain why the majority of empirical studies have found that after an acquisition, the stockholders of the acquiring organization are negatively affected while the stockholders of the target organization obtain extraordinarily positive returns (Houston and Ryngaert, 1997; Becher, 2000).

In the banking sector, this hypothesis is supported by Grullon et al. (1997) who analyzed a sample of US deals.[2] The variable used to measure the premium has limitations, however, given that the premium is measured using the ratio of the value of the operation to the assets of the target organization—the book value of an organization is not the perfect substitute for the market value of its net assets. Louis (2004), although not directly including the premium as an explanatory factor for the abnormal returns of the acquiring company, does consider an indirect relationship. This

[2]In the industry sector, this hypothesis is supported by Sirower (1997), Mueller and Sirower (2003), and Hayward and Hambrick (1997).

author observes how the fact that an acquiring company had previously been the target of an acquisition is an explanatory variable of the abnormal negative returns observed for the acquiring company when it participates in other M&As. This relationship can be justified by the higher premium these acquiring companies pay to ensure the success of the operation.

The overpayment hypothesis has been justified in the existing literature using different arguments. First, it has been proposed that the managers of the acquiring company tend to overpay because, according to the hubris hypothesis, they overestimate the future profits derived from the operation (Roll, 1986). Second, the existence of several acquiring companies that compete for the target company makes the premium increase as successive offers are made. This causes the company that finally gains control to pay an excessively high price, which is known as the *winner's curse* (Ruback, 1982). Finally, the existence of agency problems could cause the managers to pay a high price for an operation because they seek personal gain without taking into account the profits to be derived from the operation (Shleifer and Vishny, 1997). In this case, a high premium would be a sign of the existence of agency problems, which would have a negative effect on the valuation the market makes of the operation.

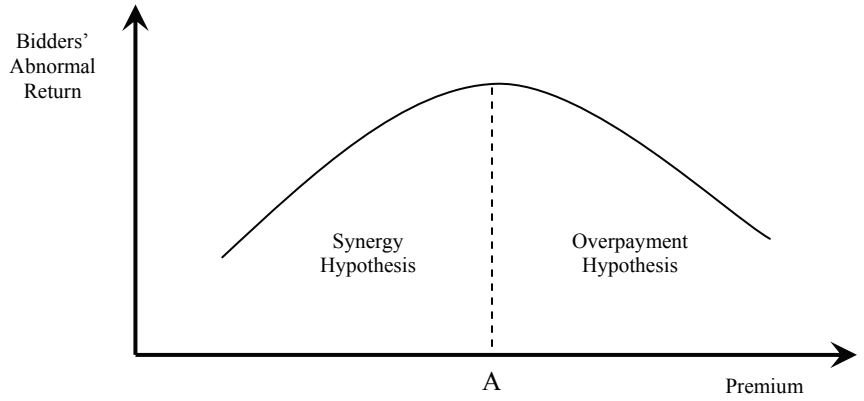
A common characteristic of previous studies that have analyzed the existing relationship between the premium and abnormal returns is that they have considered a linear relationship. If the relationship is positive, the synergy hypothesis prevails. If the relationship is negative, the overpayment hypothesis prevails. Finally, other studies do not find a significant relationship between the premium and returns in M&As. If no relationship is found, both hypotheses might be compensating each other (Moeller et al., 2005; Cheng and Lung, 2004; Bharadwaj and Shivdasani, 2003).

The relationship between returns and premiums, however, could depend on the magnitude of the premium. If this were the case, the market would begin considering the premium as a sign of greater earnings expected from the M&A and the premium would start having a positive influence on the acquiring firm's abnormal returns as proposed by the synergy hypothesis (as shown in Figure 1). As the premium increases, however, the overpayment hypothesis becomes more relevant and the slope of the curve decreases until point A beyond which the overpayment hypothesis becomes more important than the synergy hypothesis. Therefore, from point A onward, the market assumes that the premium is too high and the relationship between the premium and returns becomes negative. Thus, according to this statement, a quadratic relationship is predicted between the premium and the acquiring company's abnormal returns in contrast to the linear relationship assumed in the previous literature.

The aim of this research is to analyze whether the premium's influence over the acquiring company's abnormal returns depends on the magnitude of the premium

and, consequently, whether there is a quadratic relationship between both variables. This relationship, to our knowledge, has not been researched in previous studies.

Figure 1—Relationship between the Premium and Bidders Abnormal Return in M&A



Sample

An empirical analysis was performed for a sample of mergers and acquisitions involving banking institutions of the European Union during the period 1995-2004. Initially, there was information available on 1,285 M&A announcements by European credit institutions from the database Thomson One Banker. To perform a valid analysis, a series of filters were applied:

- M&A in which both companies, the acquirer and the target, are listed on the Stock Exchange were considered. A total of 205 operations met this condition.
- To ensure that the operations analyzed involve a change in control, those in which the acquiring company's ownership of the target company was below 50 percent after the acquisition were eliminated. (The sample was reduced to 110 operations.) Likewise, those in which the ownership was equal to or over 50 percent before the operation also were eliminated. (The sample was reduced to 64 operations.)[3]
- The operations with insufficient data in the estimation period as well as in the event's window were eliminated. (Eleven operations eliminated.)

[3]Beitel et al. (2004) consider within their sample of acquisitions only those operations that involve a change in control and in which the acquiring company holds more than 50 percent after the operation. This condition allows eliminating operations in which the objective is purely financial and which do not pursue objectives inherent to M&As. In principle, the theory regarding M&As only justifies significant abnormal returns in operations that involve a change in control. Therefore, research that does not consider this fact within the sample could produce biased results in the analysis of the abnormal returns obtained with the operation.

- Four operations in which one of the members participated in another M&A during the days considered in the event window also were eliminated to avoid biases in calculations, as that done by other authors such as Cornett et al. (2003) and Zhang (1998).

After applying the above filters, the sample was left with 49 operations on which the analysis was performed. Within the announced operations, 41 were completed and eight were not.[4]

The sources of information used in this study are Thomson One Banker, which provides information on the characteristics of M&A operations; Datastream, which provides information on the companies' daily stock quotes; Bankscope, which facilitates information on profit and loss accounts and balance sheets of the credit institutions; and World Development Indicators, which provides macroeconomic information on the countries.

Table 1 shows the number of operations per country of both the acquiring and the target company and the number of operations performed each year.

Analysis of the Influence of Premium on Abnormal Returns

To analyze the market's response given the announcement of a merger or acquisition operation, the standard methodology of the event study with daily returns has been used. This methodology analyzes the response in the price of shares around the day of the operation's announcement based on the calculation of abnormal returns. These are defined as the difference between the returns actually obtained on a given day and the returns expected according to the market model. To do this, the index for the banking sector developed by the Datastream database in each of the countries has been selected as a reference of the market return (Beitel et al., 2004). The period of analysis for estimation is 250 days, beginning 270 days prior to the announcement of the operation and ending 21 days before, in an attempt to keep the model estimation from being influenced by the event itself.

Once the market model is estimated, abnormal returns are calculated within the event window of 41 days (20 days before and after the announcement). A broad period has been set for the calculation of excess returns to take into account possible reactions in the price of the shares before and after the date of the event, given the difficulty in controlling possible filtrations or rumors that could accelerate the market's reaction to the date of the operation's announcement. In addition, abnormal returns have been cumulated using windows of variable duration to homogenize the profits of all of the companies considered and avoid bias which could cause an inexact delimitation of the event window.

[4]Following Houston and Ryngaert (1994), we analyzed completed and withdrawn M&As because the market may not know which deal will be completed at the time of the initial operation agreement. In the analysis, we included a dummy variable to control for the differences between completed and withdrawn M&As.

Table 1—Sample Composition

Panel A: Acquirer and Target Classified by Country[1]

Country	Acquirers	Targets
Austria	2	2
Belgium	0	1
Czech Republic	0	2
Denmark	1	0
France	7	4
Germany	4	2
Greece	6	8
Italy	7	7
Luxembourg	0	1
Netherlands	1	0
Norway	2	4
Poland	1	1
Portugal	1	2
Spain	6	4
Sweden	3	2
Turkey	0	1
United Kingdom	8	8
Total	49	49

Panel B: Mergers and Acquisitions Classified by Year

Year	Number of Operations
1995	1
1996	0
1997	7
1998	5
1999	15
2000	7
2001	7
2002	2
2003	2
2004	3
Total	49

[1]The analysis is only displayed for the acquiring companies. The distribution by country is presented for both bidder and target with the objective of describing the operations.

To test the null hypothesis that accumulated abnormal returns are equal to zero, the statistic based on standardized excess returns (Dodd and Warner, 1983) has been used, which allows us to infer whether the event analyzed has a significant impact on the market value of the companies that have announced a merger or acquisition operation. The results obtained from the event study are included in Table 2. In addition to the average cumulative abnormal return (ACAR) of each of the windows considered, the significance statistics are shown.

The results indicate the existence of abnormal negative returns on the days around the date of announcement of the operation, generating the greatest loss of value, -0.88 percent, in the window [-1; +1]. The analysis also shows that, for these

organizations, a significant reaction occurs only within the three days around the date of the event.

Table 2—Abnormal Returns (Event Study)

	ACAR	Dodd and Warner's Test	p-value
[-20; 0]	-0.0081	-0.779	0.2180
[-10; 0]	-0.0064	-0.683	0.2472
[-5; 0]	-0.0011	0.055	0.5220
[-1; 0]	-0.0078	-3.287	0.0005***
[0]	-0.0074	-3.781	0.0001***
[-1; +1]	-0.0088	-2.995	0.0014***
[-5; +5]	-0.0013	-0.263	0.3963
[-10; +10]	-0.0130	-1.133	0.1287
[-20; +20]	-0.0144	-1.159	0.1233

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significance at the 0.1 level

In addition to the event study, we performed a regression analysis to determine the influence that the premium has on cumulative abnormal returns (CAR) and the existence of a non-linear relationship between the two. The estimates have been made for the CAR obtained in the window [-1; +1]. This window is the most relevant, given that it registers the most immediate effect produced by the announcement of an operation. Evidence has shown that the most significant market value changes occur at the merger announcement date or on the day before the announcement (Beitel et al., 2004). Thus, this window allows comparisons due to it being the most analyzed by previous studies.

A mixture of the two hypotheses, synergy and overpayment, could lead to the prediction of a quadratic relationship between premiums and bidders' returns. The existence of this non-linear relationship is tested by estimating the following model:

$$\begin{aligned} CAR,i = {} & \alpha + \beta 1 PREMIUM,i + \beta 2 PREMIUM2,i \\ & + \beta 3 RSIZE,i + \beta 4 CASH,i + \beta 5 RROEi \\ & + \beta 6 DOMESTIC,i + \beta 7 PEROWN,i + \beta 8 GDP,i \\ & + \beta 9 DOMCRED,i + \beta 10 WITHDRAW,i + \varepsilon,i \end{aligned} \quad (1)$$

The independent variables are defined below. The premium is the main factor directly related to the subject-matter of this research, whereas the rest are included in the model as control variables. Table 3 includes a summary of the variables used in the regression analysis.

Premium. The premium (PREMIUM) is measured as the ratio of bid price to market price of the target organization 21 days before the announcement (Brewer et al., 2000; Bharadwaj and Shivdasani, 2003). With the objective of testing the non-linear relationship between the premium and abnormal returns of the acquiring institution, in equation (1) we formulate a quadratic relationship introducing the PREMIUM2 variable. It is expected that the premium starts with a positive influ-

Table 3—Summary Statistics

PREMIUM: Bid price/market price of the target 21 days before the announcement; RSIZE: Market value of the target/Market value of the acquirer (both 21 days before the announcement of the M&A); CASH: Dummy = 1 if the payment is made in whole or in part in cash and 0 if the operation is financed completely with stock; RROE: Target ROE/Acquirer ROE; DOMESTIC: Dummy = 1 if the M&A is domestic and 0 if it is cross border; PEROWN: Ownership percentage of the target bank owned by the acquirer bank before the acquisition; WITHDRAW: Dummy = 1 if M&A was withdraw and 0 otherwise; GDP: Natural logarithm of the GDP per capita base on purchasing power parity; DOMCRED: Domestic credit to GDP

Variable	Expected Relationship	Mean	Median	Standard Error	Minimum	Maximum
PREMIUM	+/-	1.3048	1.2054	0.4165	0.6965	3.2827
RSIZE	-	0.2717	0.2608	0.2253	0.0020	0.9106
CASH	+	0.6531	1.0000	0.4809	0.0000	1.0000
RROE	+/-	0.7194	0.8586	1.1355	-6.1899	2.5333
DOMESTIC	+	0.6735	1.0000	0.4738	0.0000	1.0000
PEROWN	+	5.6094	0.0000	13.7000	0.0000	49.0300
WITHDRAW	+/-	0.1633	0.0000	0.3734	0.0000	1.0000
GDP	+	9.9215	9.9536	0.3287	8.8883	10.6634
DOMCRED	+	1.0038	1.0104	0.2577	0.3360	1.5011

ence, but the influence becomes negative when it reaches higher values. This type of relationship would imply that the PREMIUM variable has a positive coefficient, and the PREMIUM2 variable has a negative coefficient.

Relative size. The reduction in costs of the new organization is easier in the acquisition of smaller organizations. In particular, previous research tends to measure this using a variable that considers the size of the target company to the size of the acquiring (De Long, 2001; Louis, 2004). The greater the difference in size, the greater is the probability that the acquiring company will improve the efficiency and profitability of the target through scale and scope economies offering new services and technologies. In addition, a greater size of the target organization makes the union of different cultures in a merger more difficult and expensive. Hence, a negative relation between this variable and abnormal returns is to be expected. The relative size (RSIZE) is measured as the ratio of market value of the target to market value of the acquirer, both 21 days prior to the announcement of the operation.

Payment method. The CASH variable is a dummy variable that assumes the value 1 if the payment is made in whole or partly in cash, and 0 if the operation is financed completely with stock. In principle, better results can be expected when the operation is financed with cash rather than with stock (Grullon et al., 1997; Cornett et al., 2003; Louis, 2004). Although several explanations have been given for this effect, the most widely-used refers to informational asymmetries (Hansen; 1987),[5] which is based on the premise that the managers have private information about their

[5]Other alternative hypotheses focus on the fiscal differences between payment methods (Brown and Ryngaert, 1991), financial synergies, and capital structure (Travlos, 1987), or on Jensen's theory of free cash flow (1986).

companies that they do not share with investors. As such, a positive relation is to be expected between this variable and the abnormal returns.

Relative ROE (RROE). This variable is measured as the ratio of ROE of the target to ROE of the acquirer. On one hand, the acquirer may be more interested in those institutions that have been correctly managed because they are considered to be more valuable and profitable (Brewer et al., 2000; Díaz and Sanfilippo, 2009). On the other hand, if the acquiring is more profitable than the acquired, the former can transfer its greater management abilities to the target organization and improve its efficiency (Beitel et al., 2004; Louis, 2004). Hence, either positive or negative relation is to be expected between this variable and the abnormal returns.

Geographical diversification. Domestic M&As offer a greater potential for obtaining synergies derived, for example, from the elimination of redundant costs by geographical overlapping (Houston and Ryngaert, 1994). Hence, a greater creation of value is to be expected in domestic operations than in those operations performed between organizations in different countries (Grullon et al., 1997; Beitel et al., 2004, among others). The DOMESTIC variable is a dichotomous variable that assumes the value of 1 if it is a national operation and 0 if it is an international one.

Previous ownership. The variable PEROWN is the ownership percentage of the target bank owned by the acquirer bank before the acquisition. A prior ownership may be beneficial for bidders because it dissuades rival bidders and may reduce the resistance of target managers (Bris, 2002; Akhigbe et al., 2007). Hence, a positive relation between this variable and abnormal returns is to be expected.

The country's development. The market in which the organizations participating in the M&A operate can determine the possibility of generating profits and maximizing the value. Hence, we introduce two variables referring to the target organization (Campa and Hernando, 2006). First, GDP, which considers the degree of development of the country to which each target bank in the sample belongs, is measured using the natural logarithm of the GDP per capita based on purchasing power parity (Díaz et al., 2004). Second, we used the ratio of a country's domestic credit to GDP (DOMCRED) to control for the development level of the financial systems of the countries analyzed (Buch and DeLong, 2004).

To control for the possible differences between the completed and withdrawn operations, we introduced a dummy variable (WITHDRAW) that takes a value of 1 if the operation was withdrawn and 0 if it was completed.

The estimation of the coefficients for each of the models considered has been done through regression. The Breusch-Pagan test has been applied to each of the estimations in such a way that in those models where the test suggests the presence of heteroscedasticity, White's correction (1980) has been applied. Table 4 shows the results obtained from our analysis.

Table 4—Cross-sectional Regression Analysis [-1; +1]

PREMIUM: Bid price/market price of the target 21 days before the announcement; RSIZE: Market value of the target/Market value of the acquirer (both 21 days before the announcement of the M&A); CASH: Dummy = 1 if the payment is made in whole or in part in cash and 0 if the operation is financed completely with stock; RROE: Target ROE/Acquirer ROE; DOMESTIC: Dummy = 1 if the M&A is domestic and 0 if it is cross border; PEROWN: Ownership percentage of the target bank owned by the acquirer bank before the acquisition; WITHDRAW: Dummy = 1 if M&A was withdraw and 0 otherwise; GDP: Natural logarithm of the GDP per capita base on purchasing power parity; DOMCRED: Domestic credit to GDP.

	Linear Model			Quadratic Model		
Variables	Coefficient	t (p value)	Standardized Coefficient	Coefficient	t (p value)	Standardized Coefficient
PREMIUM	-0.0969	-2.45** (0.019)	-0.6244	0.1854	2.8*** (0.008)	1.1944
PREMIUM2				-0.0767	-4.4*** (0.000)	-1.8256
RSIZE	0.0141	0.42 (0.677)	0.0493	0.0047	0.14 (0.893)	0.0165
CASH	0.0384	2.34** (0.024)	0.2858	0.0361	2.37** (0.023)	0.2682
RROE	0.0268	3.76*** (0.001)	0.4711	0.0167	2.54** (0.015)	0.2930
DOMESTIC	0.0016	0.08 (0.940)	0.0121	0.0226	1.3 (0.200)	0.1655
PEROWN	0.0010	2.18** (0.035)	0.2117	0.0009	2.06** (0.046)	0.1916
WITHDRAW	0.0128	0.72 (0.476)	0.0741	0.0080	0.47 (0.638)	0.0463
GDP	-0.0432	-1.84* (0.073)	-0.2195	-0.0303	-1.54 (0.132)	-0.1540
DOMCRED	-0.0601	-2.08** (0.044)	-0.2398	-0.0649	-2.5** (0.017)	-0.2586
Constant	0.5492	2.37** (0.023)		0.2002	0.99 (0.327)	
R^2	0.5344			0.6916		
R^2-Adj.	0.4269			0.6104		
B-P	13.98			0.78		

t value in parentheses. B-P is the Breusch-Pagan test, and it is distributed as a chi-square with one degree of freedom. In those models where B-P test suggests the presence of heteroscedasticity White's correction (1980) has been applied

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significance at the 0.1 level

The results of the estimations, made presuming a linear model, show a significant negative influence of the premium on the abnormal returns. These results, as would the results of many other studies, support the overpayment hypothesis (Sirower, 1997; Hayward and Hambrick, 1997; Grullon et al., 1997). The acquiring institutions would pay a price for the target organization above the profits expected by the market.

The results obtained in the estimations of the quadratic model present a different relationship between the premium and abnormal returns than that of the linear model. In particular, it is observed that the PREMIUM variable has a significant positive coefficient, and the PREMIUM2 variable presents a significant negative coefficient. This confirms the quadratic relationship between the premium and abnormal returns; therefore, this relationship will depend on the magnitude of the premium. The premium begins to have a positive influence on the abnormal returns, supporting the synergy hypothesis. When the premium is too high, however, the effect becomes negative, as posited in the overpayment hypothesis, and gives rise to a non-linear relationship.

The quadratic relationship obtained presents a relative maximum, which can be obtained by calculating the derivative of the CAR (equation 1) regarding the premium. Equaling the partial derivative to zero, the point of inflection would be $-(\beta 1/2\beta 2)$. Using the coefficients from Table 4, that point is 1.2086. Given that our estimations show that $\beta 2$ is negative, these points represent the maximum. It follows that in the sample of banks analyzed, when the amount paid in an operation did not exceed the value of the target company by 21 percent, the premium was a sign of future synergy and would have positive influence for the stockholders of the bidders. In contrast, if that threshold is surpassed, the market begins to assume that the acquirer is overpaying for the operations, and the acquirer's shareholders will be penalized.

Regarding the control variables, it is worth noting that the CASH variable is significant and positive both in the linear and the quadratic models. Therefore, as other authors (Travlos, 1987; Masse et al., 1990; Campa and Hernando, 2004) have found, payment with stock implies a penalization on the shareholders' returns. The RROE also has a positive influence on the abnormal returns, showing how the acquisition of more profitable banks has a positive effect on the bidder's returns. The PEROWN also proves to be a significant variable. This variable presents a positive influence over the abnormal returns. Thus, abnormal returns are bigger when the bidder owns a prior percentage of the target bank. On the other hand, the DOMCRED and GDP variables, which measure the characteristics of the countries where the operations occurred, also have given significant results.

To evaluate the economic significance of the variables, the standardized coefficients for each variable in the models are shown. This allows the scale effect to be removed from the estimated coefficients and helps to determine which factors have the greatest influence on the dependent variable. The premium has the greatest influence by far, followed by the relative ROE, the payment method, and the DOMCRED variable. The effect the premium has on the bidder's abnormal returns is more significant than the other variables referring to the deal or the firm's own characteristics.

Conclusions

The purpose of this research is to test the influence of the premium on the value bank mergers and acquisitions generate by analyzing the existence of a non-linear relationship between premiums and bidders' returns. In particular, the mixture of the synergy hypothesis and the overpayment hypothesis could lead to the prediction of a quadratic relation between premiums and returns.

The results obtained from the event study show the existence of abnormal negative returns in the acquiring organizations. In the regression analysis, we identified a non-linear relationship between premiums and returns. As a result, the premium begins to have a positive influence on the abnormal returns, thus supporting the synergy hypothesis. When the premium is too high, however, the effect becomes negative (as formulated in the overpayment hypothesis). Therefore, the magnitude of the premium conditions its relationship with the abnormal returns and thus gives rise to a quadratic relationship. Moreover, in our sample when the amount paid in an operation does not exceed the value of the target organization by more than 21 percent, the premium becomes a sign of the future synergy and will have positive effects for the acquiring organization's shareholders.

In that regard, our research reveals the importance of both the premium and the correct valuation by the acquiring company of the profits expected from the operation in merger and acquisition processes. In particular, in all of these processes it should be precisely specified where and how profits are expected to be obtained to avoid an overestimation of the profits. Furthermore, it would apparently be necessary to reinforce the corporate control mechanisms of the companies due to the important role played by managers in the valuation of profits. Along these lines, it is essential to continue with the establishment of guidelines that increase transparency and improve the protection of the stakeholder in keeping with Good Governance Codes. In this way, information asymmetries and agency problems would be reduced in mergers and acquisitions. This would avoid the payment of a high price caused exclusively due to the search for private benefits by managers.

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