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Impact of Cade's decisions on the market value of merging firms

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Abstract

This paper applies traditional event study methodology to assess the impact of Brazilian merger control policy on the market value of merging firms based on a sample of 16 mergers and acquisitions from October 2006 to April 2013. There is no evidence that the publication of SEAE's and SDE's reports affects the market value of the acquirers. Cade's decision, by contrast, has a substantial positive impact on the bidders' stock prices. The average cumulative abnormal return over a 41-day interval around Cade's decision equals 7.531%, and it is comparable to the 7.257% gain obtained by acquirers' shareholders around the merger announcement. The absence of a negative correlation between abnormal security returns around the merger announcement and around Cade's decision suggests that the remedies proposed by Cade to approve the operations and to restore competition do not impose significant economic constraints on the firms' behavior or, in other words, that they are too weak.

Keywords: Merger control policy; Cade, Event studies.

1. Introduction

Companies engaged in horizontal mergers and acquisitions are usually thought to benefit from the increasing market power of the resulting firm, which allows it to reduce the price paid to suppliers or charge a higher price to consumers, and from the redeployment of the combined assets of the two firms toward higher-valued uses. To the extent that, in an efficient market, the price of a security reflects the present value of its expected future cash flows, any event that influences the future prospects of a firm, such as mergers and acquisitions, will impact stock prices. Several researchers have investigated the effect of the announcement of the transaction and of merger control decisions on stock prices. See, inter alia, Eckbo and Wier (1985), Kim and Singal (1993), Aktas et al. (2004), Duso et al. (2007) and Duso et al. (2011). These studies, however, have focused on the U.S. and EU jurisdictions.

This paper assesses the impact of the Brazilian antitrust authorities' decisions on the bidders' stock prices based on a sample of 16 mergers and acquisitions from October 2006 to April 2013 in which both the acquirer and the target were listed on the BM&FBovespa. We rely on the traditional event study methodology introduced by Fama et al. (1969). For a good review of the event study methodology, the reader is referred to MacKinlay (1997).

The assessment of the strength of Brazilian antitrust authorities' decisions is motivated by the existing debate in the literature about the effectiveness of merger control institutions. Kim and Singal (1993), for example, argue that they are too lenient and allow anticompetitive mergers to go through, while

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Aktas et al. (2004) stress that they destroy synergistic efficiencies by unnecessarily intervening in the marketplace. This raises the question of the appropriateness of the remedies proposed by the antitrust authorities to deter anticompetitive mergers and to restore competition.

After the selection of an event of interest and of the event window, we calculate the abnormal return of the security over this interval, given by the difference between the actual return and the predicted return (constructed from the parameter estimates of the market model in a period prior to the event window). Then we aggregate these abnormal returns over time and across securities, giving rise to the average cumulative aggregated abnormal return, which is the basis for the statistical tests. Under the null hypothesis of no impact, the cumulative abnormal return should be statistically indistinguishable from zero over any interval around the event of interest.

Our findings suggest that the market anticipates the announcement of Brazilian mergers and acquisitions and that they have a sizable impact on security prices. This impact is basically concentrated in the seven days prior to and including the announcement date. The average cumulative abnormal return over this period rises roughly 7.3% and it is statistically positive at any conventional level of significance.

The results also provide evidence that the non-binding opinions issued by the Secretariat for Economic Monitoring (SEAE) and the Secretariat of Economic Law (SDE) in the course of the instruction phase of the case do not affect stock prices. Cumulative abnormal returns over the 41-day interval around the publication of SEAE's and SDE's reports, for instance, equal 1.623% and 1.416%, respectively, and are not statistically different from zero. This conclusion is not sensitive to the width of the interval around the event dates.

The final decision of the Administrative Council for Economic Defense (Cade), by contrast, affects stock prices. The empirical estimates point to a gain of 7.531% over the 41-day period centered at the event date, which indicates that the market interprets the end of uncertainty and the consequent approval of the operation, even with provisions, as good news. The absence of a negative correlation between abnormal returns around the announcement of the transaction and around Cade's decision suggests that the restrictions do not impose significant economic constraints on the acquirer's behavior or, in other words, that they are too weak.

It must be stressed that this is not the first paper that applies the event study methodology to study the effect of Brazilian mergers and acquisitions on security prices. Camargos and Barbosa (2006), for instance, analyze whether the information contained in the merger announcement is immediately incorporated into stock prices. Patrocínio et al. (2007) examine the relationship between intangibility, measured by the book to market ratio, and the gains from corporate acquisitions. Nevertheless, neither of these papers addresses the effectiveness of merger policy in Brazil and their impact on security returns.

The remainder of this paper is organized as follows. Section 2 discusses the steps involved in the analysis of merger and acquisitions by the Brazilian antitrust authority. Section 3 sets forth the methodology employed to measure the impact of the events of interest on security returns. Section 4

describes the dataset used in this paper. Section 5 presents the empirical results, highlighting the estimates of the abnormal and cumulative abnormal returns. Finally, Section 6 presents the conclusions.

2 Analysis of Merger and Acquisitions by the Brazilian Antitrust Authorities

The contemporary competition defense system in Brazil began with Law No. 8,884, enacted on June 11, 1994. The Law created the so-called Brazilian System for Competition Defense (SBDC), composed of SEAE of the Ministry of Finance, SDE of the Ministry of Justice, and Cade, an independent tribunal administratively linked to the Ministry of Justice. It also required that the parties involved in mergers, acquisitions and other forms of association between competitors submit transactions to the analysis of SBDC and for Cade's approval.

This system was recently altered by Law No. 12,529, of November 30, 2011, which concentrated in a single entity, Cade, the instruction and decision phases in antitrust cases. In the new structure, Cade is composed of: a Tribunal, with seven council members; the General Superintendence (SG), which took over the functions that SDE played in the previous structure; and the Department of Economic Studies (DEE), which provides technical support for the analysis of concentration acts and administrative proceedings that require in-depth economic scrutiny.

Although both antitrust laws not only regulate concentration acts (mergers, acquisitions and associations between competitors) but also administrative proceedings (surpression of anticompetitive conduct), we will focus, for the purposes of this study, on the description of the procedures adopted in the analysis of concentration acts, since the goal of this paper is to estimate the impact of the opinions issued by SEAE, SDE and SG, as well as Cade's decision, on the market value of the companies involved in these transactions. Possible impacts on the market value resulting from Cade's decision regarding administrative proceedings are not analyzed in this study.

Under Law No. 8,884/94, the analysis of a concentration act began with the issuance of a non-binding opinion by SEAE, followed by the analysis of SDE[3]. Then, the records were forwarded with proper instructions to the Reporting Commissioner of the case (assigned on a random basis upon the notification of the concentration act), who passed them on to the Cade Attorney General's Office. That office was then required to provide an opinion on the case. Its opinion generally focused on the legal aspects of the matter, but could be extended to the merits of the operation as well. At the same time, the Public Prosecutor's Office had the option to manifest itself for or against the deal.

All opinions took the form of a written report. Its non-confidential version became public on the date it was forwarded to the next body responsible for the instruction phase of the case. The public version of the reports omitted strategic information and business trade secrets, but explicitly contained the opinion

(3) As of January 2006, SDE no longer does a detailed analysis of concentration acts. It began to issue a simplified report which fully adopted the opinion of SEAE as the basis for its recommendation.

of each body, recommending the unqualified approval of the act, the approval with provisions or the rejection of the whole operation.

When the Reporting Commissioner received the records from the Cade Attorney General's Office, he usually undertook supplementary actions in the form of additional requests for information from the parties involved in the concentration. The Reporting Commissioner also analyzed economic and legal opinions submitted by the parties in favor of the approval of the operation. Upon completion of this process, the Reporting Commissioner placed the matter on Cade's trial docket for a vote at a plenary session. At the judgment session, the Reporting Commissioner presented his report and his vote with the decision. Until the judgment session, neither of these two documents would be disclosed to the public or revealed to the other commissioners.

After the reading of the Reporting Commissioner's report and vote, the other members cast their votes. The final decision was made by a simple majority of votes of the commissioners present at the meeting, subject to a minimum quorum of four members. The commissioners could request the opportunity to review the case file in detail, suspending the judgment for fifteen days, or ask for the withdrawal of the case from the trial docket for the same purpose, with no deadline for the return of the case to the plenary session for voting.

Thus, the date of filing of the Reporting Commissioner's vote was not necessarily the same as the final Cade's decision. In fact, in most cases of greater economic impact, such as the merger between Perdigao and Sadia, these dates were different due to the further analysis requested by the other commissioners. This further analysis might lead to negotiations with the participants of the concentration aimed at imposing some restrictions on the original operation for its approval.

Law No. 12,529, passed in November 2011 and first implemented in June 2012, simplified the procedures associated with the instruction phase of concentration acts. All prior instruction began to be made solely by the SG, which has the prerogative to approve operations that in its judgment do not have the potential to cause excessive concentration. The Cade Tribunal possesses the prerogative to review concentration acts approved by the SG and it is the appropriate instance for third-party challenges to their approval.

The new Law also altered the threshold for notification of concentration acts, obliging firms to notify SBDC if the following two conditions were met: (i) one of the economic groups involved in the transaction had gross revenue of at least R$ 400 million in the year prior to the notification; and (ii) the gross revenue of the other economic group reached at least R$30 million over the same period. These values were subsequently updated to R$ 750 million and R$ 75 million, respectively, by Interministerial Ordinance No. 994, of May 30, 2012. Under Law No. 8,884/94, by contrast, notification was mandatory if one of the parties involved recorded a gross revenue of more than R$400 million in the year prior to the transaction or if the combined market share in one of the relevant markets was higher than 20%.

However, the most significant change brought by the new Law was the need for Cade's prior approval of concentration acts. Under Law No. 8,884/94, the participants of a concentration act could act together and integrate their operations from the date of signature of the instruments of incorporation, as if they were, indeed, a single company. In the event that Cade decided to fully unwind the transaction, the parties would have to restore the status quo that existed before the operation. But it is easy to see the difficulty, after a long period, usually years, of unwinding a transaction in which the parties were already effectively operating in an integrated manner. The ex post rejection of the operation undeniably created embarrassments for Cade's decision.

Cade tried to overcome these embarrassments with the establishment of an instrument – the Agreement to Preserve the Reversibility of the Operation (APRO) – which basically consisted of a compromise between Cade and the participants of the concentration act whereby the companies were prohibited from taking certain actions and implementing joint policies that could prevent them from unwinding the transaction and from returning to the previous status quo.

APRO gave Cade degrees of freedom for a final decision, but, by its nature, it was a limited tool. The actual resumption of Cade's decisional autonomy effectively occurred when Law No. 12,529 came into force. Under the new antitrust Law, the parties cannot consummate the transaction before Cade's final ruling. Any joint action before the formal approval of the operation constitutes a violation of the economic order and is punishable under the terms of the Law.

3. Event Study Methodology

First, let us define some notation to facilitate the measurement and analysis of abnormal returns, following MacKinlay (1997). Returns are indexed in event time by τ. Denote by $\tau = 0$ the event date, let $\tau = T_1 + 1$ and $\tau = T_2$ represent the event window and $\tau = T_0 + 1$ and $\tau = T_1$ form the estimation window. Thus, $L_1 = T_1 - T_0$ and $L_2 = T_2 - T_1$ are, respectively, the length of the estimation and of the event window.

Further, define R_{it} as the continuously compounded return of security i at time t, for i = 1, ... ,N and $t = T_0, \ldots, T_2$, and, analogously, R_{mt} as the market return at time t. The market model assumes that R_{it} and R_{mt} are related through the following specification

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (1)$$

where ε_{it} is a mean-zero uncorrelated error term with constant variance, i.e.,

$$E[\varepsilon_{it}] = 0 \ , \quad Var[\varepsilon_{it}] = \sigma^2_{\varepsilon_i}$$

and α_i and β_i are unknown parameters, estimated using the estimation window.

The abnormal return for security i is computed using the event window as the difference between the actual return and the return predicted by the market model, that is,

$$\hat{AR}_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau}, \qquad \tau = T_1 + 1, \ldots, T_2$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the ordinary least squares estimates of α_i and β_i.

Under the null hypothesis that the event does not affect the security return, the abnormal return has mean zero and variance given by

$$\sigma^2\left(\hat{AR}_{i\tau}\right) = \sigma^2_{\varepsilon_i} + \frac{1}{L_1}\left[1 + \frac{(R_{m\tau} - \hat{\mu}_m)^2}{\hat{\sigma}^2_m}\right]$$

where $\hat{\mu}_m$ and $\hat{\sigma}^2_m$ denote, respectively, the mean and variance of the market return over the estimation window.

MacKinlay (1997) points out that the market model represents an improvement over the constant mean model since it removes the portion of the variation of the security return that is related to the index. As a result, the variance of abnormal returns is reduced, improving the ability to detect event effects. Obviously, the higher the R^2 of the regression in (1), the greater is the reduction in the variance and the larger is the gain from the use of the market model.

To assess the impact of the event over a window of several days, the individual abnormal returns must be aggregated through time. Define the cumulative average abnormal return for security i from τ_1 to τ_2, where $T_1 < \tau_1 \leq \tau_2 \leq T_2$, as the sum of the individual abnormal returns over this interval, namely,

$$\hat{CAR}_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau=\tau_2} \hat{AR}_{i\tau}$$

Under the null hypothesis, $\hat{CAR}_i(\tau_1, \tau_2)$ has also mean zero and asymptotic variance (as L_1 increases) given by

$$\sigma^2_i(\tau_1, \tau_2) = (\tau_2 - \tau_1 + 1)\sigma^2_{\varepsilon_i}$$

In order to draw overall conclusions, we have to further aggregate the cumulative abnormal return across securities, such as in (2), and work with averages instead:

$$\overline{CAR}_i(\tau_1, \tau_2) = \frac{1}{N}\sum_{i=1}^{N} \hat{CAR}_i(\tau_1, \tau_2) \qquad (2)$$

The corresponding variance can be expressed as

$$Var\left(\overline{CAR}_i(\tau_1, \tau_2)\right) = \frac{1}{N^2}\sum_{i=1}^{N} \sigma^2_i(\tau_1, \tau_2)$$

and the null hypothesis can be tested using the standardized CAR statistic

$$\frac{\overline{CAR}_i(\tau_1, \tau_2)}{Var\left(\overline{CAR}_i(\tau_1, \tau_2)\right)^{1/2}}$$

which converges to the standard normal distribution as L_1 increases.

4. Description of the Data

The starting point for the construction of the dataset used in this study is a sample of 19 mergers and acquisitions between October 2006 and April 2013 in which both the acquirer and the target were listed on the BM&FBovespa. We selected from this initial sample only those transactions for which the market value of the target in the quarter prior to the announcement date was at least 10% of the market value of the acquiring firm.

Table 1 lists the final sample of 16 mergers and acquisitions analyzed in this paper, in conjunction with the announcement date and the market values of the firms in the quarter prior to the announcement. We see that there is a huge variation in the market values of the acquirers and of the targets, which range, respectively, from R$ 1,398 billion to R$ 93,830 billion and from R$ 436 million to R$ 31,604 billion. The acquirers' mean market value equals R$ 12,465 billion and is approximately twice as large as that of R$ 6,064 billion for the targets.

Table 1
Dates of Announcement of the Acquisitions and Market Values of the Acquirer and of the Target in the Quarter Prior to the Announcement

Companies	Announcement Date	Market Value (R$ billions)	
		Acquirer	Target
Net/Vivax	11/10/2006	5,021	1,314
BMF/Bovespa	25/03/2008	16,173	16,684
Oi/Brasil Telecom	25/04/2008	15,731	11,940
Totvs/Datasul	22/07/2008	1,398	658
Gafisa/Tenda	01/09/2008	3,581	1,795
Brascan/Company	10/09/2008	1,579	853
VCP/Aracruz	15/09/2008	8,681	14,430
Itaú/Unibanco	03/11/2008	93,830	31,604
Perdigão/Sadia	18/05/2009	5,938	2,522
Pão de Açúcar/Ponto Frio	08/06/2009	7,289	799
Duratex/Satipel	22/06/2009	1,777	436
Amil/Medial	19/11/2009	3,466	757
Braskem/Quattor	22/01/2010	12,299	1,746
Drogasil/Raia	02/08/2011	2,000	1,612
Cosan/Comgás	03/05/2012	13,730	5,118
Kroton/Anhanguera	22/04/2013	6,954	4,750
Mean		12,465	6,064

Table 2 shows the dates of publication of SEAE's, SDE's and the SG's reports, when applicable, and of Cade's decision. From Table 1 and Table 2, it is apparent that, in some cases, there is a significant lag between the announcement date and the recommendation of SEAE and between the publication of SDE's report, which in general occurs a couple of days after the release of SEAE's recommendation, and Cade's final decision. The acquisition of Medial by Amil, announced on November 19, 2009, is illustrative of the delays. SEAE published its report recommending the approval of the acquisition with provisions

only on September 6, 2011, almost two years after the announcement date. After the publication of SDE's one page report agreeing with the recommendation of SEAE on September 12, 2011, Cade took another nineteen months to reach a decision on April 17, 2013.

In a few cases, by contrast, the decision of the antitrust authority was rather rapid. Brascan announced the acquisition of Company, for instance, on September 10, 2008 and roughly two months later SEAE suggested the unqualified approval of the acquisition. In its report on November 27, 2008, SDE followed SEAE's recommendation and Cade finally approved the acquisition on January 21, 2009. The time elapsed between the announcement date and the final decision was just four months and eleven days.

Table 2
Dates of Publication of SEAE's, SDE's and SG's Reports and of Cade's Decision

Merger/Acquisition	SEAE's Report	SDE's Report	SG's Report	Cade's Decision
Net/Vivax				12/12/2007
BMF/Bovespa	23/05/2008	27/03/2008		09/07/2008
Oi/Brasil Telecom	01/07/2009	13/07/2009		20/10/2010
Totvs/Datasul	25/03/2009	01/04/2009		05/08/2009
Gafisa/Tenda	18/02/2009	03/03/2009		15/04/2009
Brascan/Company	17/11/2008	27/11/2008		21/01/2009
VCP/Aracruz	04/10/2010	15/10/2010		24/11/2010
Itaú/Unibanco	18/12/2009	13/01/2010		18/08/2010
Perdigão/Sadia	29/06/2010	30/06/2010		13/07/2011
Pão de Açúcar/Ponto Frio	24/03/2011	27/04/2011		17/04/2013
Duratex/Satipel	04/02/2011	11/02/2011		29/06/2011
Amil/Medial	06/09/2011	12/09/2011		17/04/2013
Braskem/Quattor	25/01/2011	25/01/2011		04/05/2011
Drogasil/Raia	04/04/2012	24/04/2012		23/05/2012
Cosan/Comgás			16/08/2012	12/09/2012
Kroton/Anhanguera			04/12/2013	14/05/2014

5 Empirical Results

In this section, we examine to what extent the announcement of the acquisition, the publication of SEAE's and SDE's reports and Cade's decision influence the returns of acquirers' stocks. We take the Ibovespa as the market benchmark and consider a pre-acquisition period of 250 days and an event window of 41 days centered on the event date. For those companies that have common and preferred stocks listed on BM&FBovespa, we pick the preferred stock, which is more actively traded.

Since only two mergers and acquisitions were submitted to the approval of SBDC under the new antitrust Law, we do not carry out a separate analysis for the impact of the publication of the SG's report. Instead, we treat the dates of release of the SG's reports as if they were the dates of publication of SEAE's and SDE's opinions, augmenting the sample for the analysis of the latter events.

5.1 Estimates of the Parameters of the Market Model

Table 3 presents the OLS estimates of β_i in regression (1) for the estimation periods preceding the announcement of the merger, the publication of SEAE's and SDE's reports and Cade's decision along with the respective standard errors and the R^2 of the regressions. A few comments are in order. First, we observe that the mean beta is fairly stable across the estimation periods, ranging from 0.731 to 0.776.

Table 3
Ordinary Least Squares Estimates of the Market Model

Acquirer	Announcement Date		SEAE's Report		SDE's Report		Cade's Decision	
	Beta (SE)	R^2	Beta (SE)	R^2	Beta (SE)	R^2	Beta (SE)	R^2
Net	0,896 (0,088)	0,294					0,992 (0,068)	0,462
BMF	0,777 (0,278)	0,202	1,206 (0,176)	0,342	1,294 (0,239)	0,356	1,365 (0,169)	0,346
Oi	1,074 (0,069)	0,491	0,862 (0,062)	0,439	0,871 (0,062)	0,444	0,783 (0,076)	0,298
Totvs	0,425 (0,079)	0,106	0,295 (0,047)	0,138	0,294 (0,047)	0,136	0,334 (0,047)	0,167
Gafisa	1,220 (0,084)	0,458	1,525 (0,072)	0,646	1,554 (0,073)	0,647	1,492 (0,077)	0,606
Brascan	0,541 (0,092)	0,123	0,539 (0,074)	0,176	0,513 (0,068)	0,186	0,495 (0,070)	0,169
VCP	0,734 (0,068)	0,323	1,354 (0,094)	0,466	1,401 (0,088)	0,503	1,365 (0,093)	0,463
Itaú	0,947 (0,047)	0,621	1,180 (0,043)	0,756	1,135 (0,045)	0,720	1,053 (0,048)	0,659
Perdigão	0,689 (0,051)	0,420	0,503 (0,066)	0,190	0,499 (0,066)	0,188	0,691 (0,092)	0,186
Pão de Açúcar	0,604 (0,043)	0,444	0,543 (0,079)	0,161	0,553 (0,077)	0,172	0,364 (0,069)	0,101
Duratex	1,044 (0,064)	0,522	0,839 (0,089)	0,265	0,825 (0,087)	0,265	0,832 (0,099)	0,222
Amil	0,443 (0,069)	0,143	0,568 (0,086)	0,150	0,547 (0,082)	0,152	0,299 (0,087)	0,045
Braskem	0,777 (0,080)	0,274	0,651 (0,086)	0,186	0,651 (0,086)	0,186	0,680 (0,085)	0,205
Drogasil	0,502 (0,117)	0,069	0,520 (0,095)	0,107	0,506 (0,095)	0,104	0,514 (0,094)	0,109
Cosan	0,779 (0,061)	0,394	0,730 (0,051)	0,450	0,730 (0,051)	0,450	0,626 (0,053)	0,358
Kroton	0,238 (0,080)	0,035	0,272 (0,095)	0,032	0,272 (0,095)	0,032	0,469 (0,084)	0,113
Mean	0,731 (0,086)	0,307	0,773 (0,081)	0,300	0,776 (0,084)	0,303	0,772 (0,082)	0,282

Further, we note that the variability of the individual betas within estimation periods is larger than across the periods, as expected. For Cade's decision, for example, they vary from a minimum of 0.299 for Amil to a maximum of 1.492 for Gafisa[4].

Turning now to the statistical significance of the coefficients, we see that all of them are more than two standard deviations from zero. It is worth emphasizing that even in those cases in which the number of observations is substantially less than 250 and the standard errors are larger, such as in the period prior to the announcement of the merger between BM&F and Bovespa, we can still safely reject the null hypothesis that they are zero at the 5% level[5].

The average R^2 shows little variation across estimation periods, ranging from 0.282 to 0.307. These figures suggest that the market model effectively reduce the variance of abnormal returns and that it is preferable to the constant mean return model. An inspection of Table 3, however, reveals that the explanatory power of the Ibovespa returns differs markedly across regressions. Itau, which has the greatest participation in the Ibovespa among the stocks analyzed, has the highest R^2's. For this stock, the R^2 varies from 0.621 to 0.756 over the four estimation periods considered. At the other extreme, the fraction of Kroton abnormal returns explained by the market model is less than 4% in the periods prior to the merger and to the publication of SEAE's and SDE's reports. The gain associated with the use of the market model, therefore, is not uniform across individual securities.

5.2. Merger Announcement

Table 4 presents the average abnormal and cumulative abnormal returns around the announcement date, from day -20 to day 20, along with the corresponding standard errors. For most abnormal returns, it is not possible to reject the hypothesis that they are statistically equal to zero in favor of the hypothesis that they are positive adopting the conventional level of significance of 5%. There is evidence that they are greater than zero only on days t=-19, t=-5, t=-3 and t=0. These positive abnormal returns of 2.159%, .455%, 1.704% and 2.307% have associated t statistics of 3.450, 2.325, 2.724 and 3.687.

The cumulative abnormal returns depicted in Figure 1 suggest that the market anticipates the forthcoming announcement. The average CAR sharply increases from day t=-7 to day t=0, varying from -0.032% to 7.257% over this period. Even if we focus on the CAR from day -20 to day 0, we can safely reject the hypothesis that it is equal to zero, as indicated by the t statistic of 2.532. We also observe that in the days after the announcement and before day t=-7, the CAR is relatively stable, as would be expected.

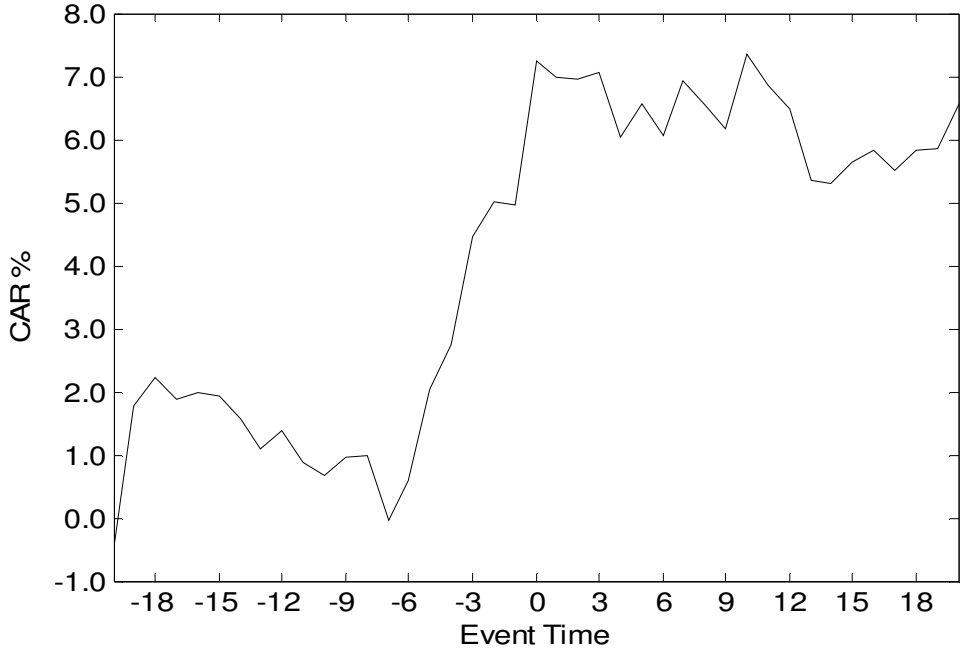
(4) The reduction in Amil's beta from the period prior to SDE's to the period preceding the antitrust authority decision was probably a consequence of the tender offer launched by the controlling shareholders to delist the company from BM&FBovespa, which took place a few days after Cade's decision.

(5) BM&F started trading on November 30, 2007, less than four months before the announcement of its merger with Bovespa, which occurred on March 25, 2008.

Table 4
Aggregated Abnormal and Cumulative Abnormal Returns Around the Merger Announcement

Event Day	**AR_t %**	***t*-stat**	**CAR_t %**	***t*-stat**
-20	-0.395	-0.631	-0.395	-0.631
-19	2.159	3.450	1.765	1.994
-18	0.450	0.719	2.214	2.043
-17	-0.326	-0.521	1.888	1.509
-16	0.091	0.145	1.979	1.415
-15	-0.041	-0.066	1.938	1.265
-14	-0.378	-0.604	1.560	0.943
-13	-0.460	-0.735	1.100	0.622
-12	0.291	0.466	1.391	0.741
-11	-0.504	-0.806	0.887	0.449
-10	-0.206	-0.330	0.681	0.328
-9	0.284	0.454	0.965	0.445
-8	0.019	0.030	0.984	0.436
-7	-1.016	-1.625	-0.032	-0.014
-6	0.619	0.990	0.587	0.242
-5	1.455	2.325	2.042	0.816
-4	0.703	1.124	2.745	1.064
-3	1.704	2.724	4.449	1.676
-2	0.562	0.898	5.010	1.838
-1	-0.060	-0.096	4.950	1.770
0	2.307	3.687	7.257	2.532
1	-0.258	-0.413	6.999	2.385
2	-0.047	-0.075	6.952	2.317
3	0.117	0.187	7.069	2.307
4	-1.037	-1.655	6.032	1.928
5	0.546	0.872	6.578	2.062
6	-0.518	-0.827	6.060	1.864
7	0.878	1.402	6.938	2.096
8	-0.367	-0.586	6.571	1.950
9	-0.398	-0.637	6.173	1.801
10	1.196	1.910	7.368	2.115
11	-0.519	-0.829	6.849	1.935
12	-0.375	-0.599	6.474	1.802
13	-1.112	-1.777	5.362	1.470
14	-0.061	-0.098	5.301	1.432
15	0.338	0.540	5.639	1.502
16	0.182	0.291	5.821	1.530
17	-0.301	-0.482	5.520	1.431
18	0.301	0.481	5.820	1.490
19	0.030	0.047	5.850	1.478
20	0.718	1.146	6.568	1.639

Figure 1
Cumulative Abnormal Return for Merger Announcement From Event Day -20 to Event Day 20



The impact of the merger documented in Table 3 is larger than those previously reported in the literature for the U.S. Malatesta (1983), for instance, provides an estimate of 0.80 for the average cumulative abnormal return of a sample of 256 successful bidding firms over the public announcement month. Eckbo (1983) also reports a moderate average gain of 1.58% for 102 acquirer firms from twenty days before through ten days after the announcement. Asquith (1983), based on a sample of 196 successful bidding firms, finds an even smaller CAR of only 0.20% from nineteen days before through the first public announcement.

5.3 Publication of SEAE's and SDE's Reports

We turn now to the examination of the effect of the publication of SEAE's report on security returns. Table 5 shows the average abnormal and cumulative abnormal returns around the announcement date. Abnormal returns are not statistically significant at the 5% significance level, with the exception of those on days t=-15 and t=8, which are relatively far from the event date. It must be stressed that the number of rejections is highly consistent with the theoretical coverage of the confidence intervals. The cumulative abnormal return also does not display any trend. It oscillates between -1.0% and 2.5% and from the beginning to the end of the event window equals only 1.623%, not being statistically significant. In sum, there is no evidence that the market responds to the publication of SEAE's report.

Table 5
Aggregated Abnormal and Cumulative Abnormal Returns Around the Publication of SEAE's Report

Event Day	AR_t %	*t*-stat	CAR_t %	*t*-stat
-20	-0.816	-1.317	-0.816	-1.317
-19	0.231	0.372	-0.586	-0.669
-18	0.717	1.158	0.132	0.123
-17	0.334	0.539	0.465	0.376
-16	-0.206	-0.332	0.259	0.187
-15	1.499	2.418	1.758	1.159
-14	0.152	0.246	1.910	1.165
-13	-0.675	-1.089	1.236	0.705
-12	-0.111	-0.179	1.125	0.605
-11	0.138	0.222	1.262	0.644
-10	-0.134	-0.217	1.128	0.549
-9	-0.723	-1.167	0.405	0.189
-8	0.725	1.171	1.131	0.506
-7	-0.004	-0.007	1.126	0.486
-6	0.425	0.687	1.551	0.647
-5	0.064	0.104	1.615	0.652
-4	0.403	0.651	2.019	0.791
-3	0.191	0.308	2.210	0.841
-2	-0.230	-0.372	1.979	0.733
-1	0.068	0.111	2.048	0.739
0	-0.659	-1.064	1.389	0.489
1	0.019	0.031	1.408	0.485
2	0.541	0.873	1.949	0.656
3	-1.053	-1.699	0.896	0.295
4	0.283	0.456	1.179	0.381
5	-0.161	-0.260	1.018	0.322
6	0.107	0.172	1.124	0.349
7	0.542	0.875	1.666	0.508
8	-1.251	-2.020	0.415	0.125
9	-0.477	-0.770	-0.062	-0.018
10	-0.130	-0.211	-0.192	-0.056
11	0.549	0.886	0.357	0.102
12	-0.092	-0.149	0.265	0.074
13	0.543	0.877	0.808	0.224
14	0.461	0.744	1.269	0.346
15	0.157	0.253	1.425	0.384
16	0.545	0.881	1.971	0.523
17	0.153	0.247	2.124	0.556
18	-0.216	-0.349	1.908	0.493
19	0.431	0.696	2.339	0.597
20	-0.716	-1.156	1.623	0.409

Table 6
Aggregated Abnormal and Cumulative Abnormal Returns Around the Publication of SDE's Report

Event Day	AR_t %	*t*-stat	CAR_t %	*t*-stat
-20	0.648	1.029	0.648	1.029
-19	0.566	0.900	1.214	1.364
-18	0.143	0.228	1.357	1.245
-17	-0.221	-0.351	1.136	0.903
-16	-0.113	-0.180	1.023	0.727
-15	-0.512	-0.814	0.511	0.331
-14	0.282	0.447	0.792	0.476
-13	0.167	0.266	0.959	0.539
-12	0.011	0.018	0.971	0.514
-11	-0.424	-0.674	0.546	0.275
-10	-0.538	-0.855	0.008	0.004
-9	-0.841	-1.336	-0.832	-0.382
-8	0.520	0.826	-0.313	-0.138
-7	0.229	0.364	-0.084	-0.036
-6	0.298	0.474	0.214	0.088
-5	-0.244	-0.388	-0.030	-0.012
-4	-0.579	-0.920	-0.609	-0.235
-3	0.927	1.474	0.319	0.119
-2	0.028	0.044	0.346	0.126
-1	-0.416	-0.661	-0.070	-0.025
0	-0.352	-0.560	-0.422	-0.146
1	-0.377	-0.599	-0.798	-0.270
2	-1.207	-1.918	-2.005	-0.664
3	-0.190	-0.301	-2.194	-0.712
4	1.867	2.968	-0.327	-0.104
5	0.090	0.142	-0.238	-0.074
6	1.109	1.763	0.871	0.267
7	-0.180	-0.285	0.692	0.208
8	-0.885	-1.407	-0.194	-0.057
9	0.917	1.458	0.723	0.210
10	0.744	1.183	1.467	0.419
11	0.387	0.616	1.854	0.521
12	0.205	0.325	2.059	0.570
13	-0.916	-1.456	1.143	0.312
14	0.570	0.906	1.713	0.460
15	-0.677	-1.076	1.036	0.274
16	-0.835	-1.327	0.201	0.052
17	-0.060	-0.095	0.141	0.036
18	0.717	1.139	0.857	0.218
19	0.812	1.290	1.669	0.419
20	-0.253	-0.402	1.416	0.352

Next, we assess whether the publication of SDE's report affect security returns. Table 6 contains the average abnormal and cumulative abnormal returns around the publication of SDE's report. Only two out of ten abnormal returns, on days t=2 and t=4, immediately after the announcement, are statistically different from zero. However, they have opposite signs, which we take as evidence of no reaction. This conclusion is corroborated by the CAR, which fluctuates between -2.5% and 2.5% and does not exhibit a clear pattern. It is worth mentioning that SDE usually follows SEAE's recommendation. Thus, it is not surprising that SDE's report does not influence abnormal returns.

5.4. Cade's Decision

Table 7 presents the abnormal and cumulative abnormal returns around Cade's decision. Only four abnormal returns, on days t=17, t=-1, t=6 and t=9, are individually greater than zero at the 5% level. Nevertheless, taken together, all abnormal returns provide strong evidence that Cade's decision does matter. From day t=-20 to day t=-1, for instance, the cumulative abnormal return equals 4.946%. Its associated t statistic of 1.899 enables us to reject the null hypothesis at the 5% level in favor of the alternative that it is greater than zero.

The market seems to anticipate the content of the final decision and react favorably to it. Thus, the market interprets the end of uncertainty as good news. We recall that in all cases the operation was approved, sometimes with restrictions. Figure 2, which plots the evolution of cumulative abnormal returns, shows that the gains before the final decision are spread over the twenty-day period preceding it, in contrast to the gains accruing to the shareholders around the announcement of the acquisition, which are concentrated on the seven-day period prior to the event.

We also observe in Figure 2 and in Table 7 a delayed reaction to Cade's decision. The cumulative abnormal return sharply increases a few days after the approval of the operation. From day t=5 to t=12, for example, it jumps from 3.406% to 8.015%. In the subsequent days, the CAR slightly decreases, reaching 7.531% on day t=20, with a corresponding t statistic of 2.025. The gain over the 41-period interval around Cade's decision is comparable to the gain of 7.257% over the seven-day period prior to and including the day of the merger announcement.

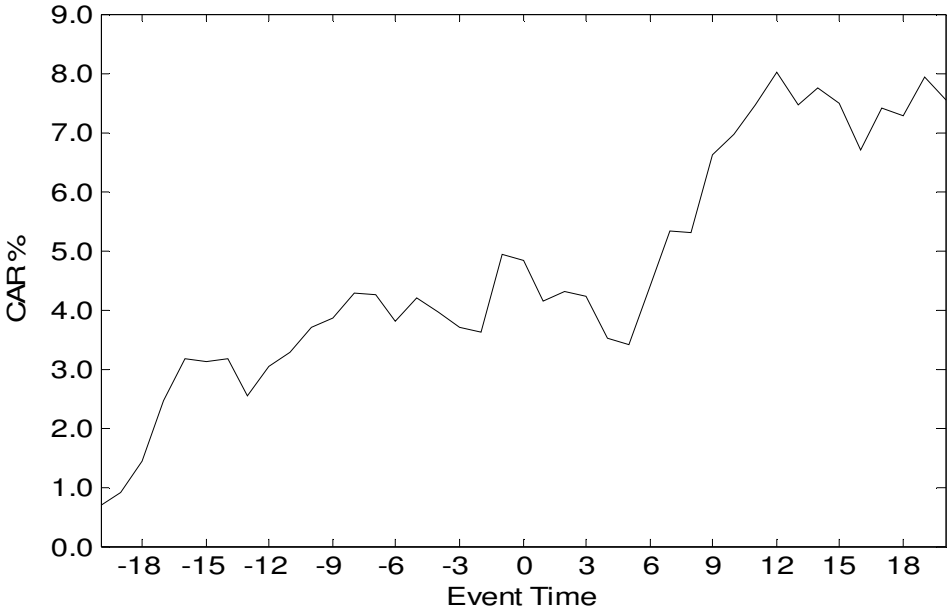
There is no evidence that anticompetitive rents generated by mergers and acquisitions are dissipated by the antitrust authority decision. In the case of effective antitrust decisions, one should expect a negative correlation between security prices around the merger announcement and security prices around Cade's decision, something that we do not observe in the data. Thus, it seems that the restrictions imposed by Cade to approve the operations are too weak.

We are left, however, with a puzzle. If the market is efficient and Cade rarely blocks a transaction, we expect investors become aware of the final outcome. If this is the case, the price of the security should incorporate almost all benefits from the merger/acquisition at the time of the announcement. Of course there is always a probability that the operation is rejected and the market, as a result, will assign a value to a positive resolution of the uncertainty. But the small probability of rejection does not seem compatible with an abnormal price run-up of approximately 7.5% around Cade's decision, which is of the same order of magnitude as that of the stock price increase around the merger announcement.

Table 7
Aggregated Abnormal and Cumulative Abnormal Returns Around Cade's Decision

Event Day	AR_t %	*t*-stat	CAR_t %	*t*-stat
-20	0.702	1.205	0.702	1.205
-19	0.205	0.353	0.908	1.102
-18	0.536	0.920	1.443	1.431
-17	1.023	1.757	2.466	2.118
-16	0.693	1.189	3.159	2.426
-15	-0.040	-0.069	3.119	2.186
-14	0.058	0.099	3.176	2.061
-13	-0.644	-1.106	2.532	1.537
-12	0.507	0.871	3.039	1.740
-11	0.240	0.412	3.279	1.781
-10	0.413	0.710	3.692	1.912
-9	0.167	0.287	3.860	1.913
-8	0.417	0.716	4.277	2.037
-7	-0.037	-0.064	4.239	1.946
-6	-0.443	-0.760	3.797	1.683
-5	0.405	0.696	4.202	1.804
-4	-0.247	-0.423	3.955	1.647
-3	-0.259	-0.444	3.696	1.496
-2	-0.074	-0.127	3.622	1.427
-1	1.324	2.272	4.946	1.899
0	-0.124	-0.212	4.822	1.807
1	-0.671	-1.151	4.151	1.520
2	0.143	0.246	4.294	1.538
3	-0.079	-0.136	4.215	1.477
4	-0.691	-1.186	3.525	1.210
5	-0.118	-0.203	3.406	1.147
6	0.997	1.712	4.403	1.455
7	0.926	1.591	5.330	1.729
8	-0.024	-0.041	5.306	1.692
9	1.320	2.267	6.626	2.077
10	0.322	0.553	6.949	2.143
11	0.505	0.867	7.454	2.263
12	0.561	0.964	8.015	2.396
13	-0.545	-0.935	7.470	2.200
14	0.277	0.475	7.747	2.248
15	-0.250	-0.437	7.497	2.147
16	-0.788	-1.380	6.709	1.896
17	0.704	1.232	7.412	2.068
18	-0.148	-0.259	7.264	2.001
19	0.671	1.175	7.935	2.160
20	-0.405	-0.709	7.531	2.025

Figure 2
Cumulative Abnormal Return for Cade's Decision From Event Day -20 to Event Day 20



Conclusion

This paper applied the event study methodology to a sample of 16 mergers and acquisitions in Brazil between October 2006 and April 2013 to evaluate the impact of merger announcement and merger control policy on the market value of the acquirers. The results suggest that there is a positive abnormal return of approximately 7.3% around the announcement of the transaction, concentrated in the seven days prior to and including the day of the announcement.

The publication of SEAE's and SDE's reports, by contrast, does not seem to have any effect on the market value of the acquirers. But Cade's final decision does influence stock returns. The average cumulative abnormal return over a 41-day period around the final decision equals 7.5% and has roughly the same magnitude of the gains accruing to shareholders around the merger announcement.

To the extent that rents generated by mergers and acquisitions are not subsequently dissipated by Cade's decision, the results are consistent with the view that the remedies proposed by Cade to approve the operations and restore competition are too weak. The sizable positive abnormal return around the final decision is nonetheless puzzling, even if we recognize that the market attaches a value to the resolution of the uncertainty. It is difficult to reconcile the magnitude of the gain around Cade's decision with the fact that the antitrust authority seldom cancels a merger.

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