

## BANK MERGERS AND THE FREE-RIDER PROBLEM IN THE PHILIPPINE BANKING INDUSTRY

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*This study investigates the excess returns around the merger date using data on Philippine banks involved in mergers and acquisitions for the period 1999–2002. The methodology makes use of a unit root test for the daily and cumulative abnormal returns to test the free-rider problem hypothesis. A unit root test verifies whether a shock, in this case a merger or acquisition, to the excess return or  $A_{it}$  is permanent or temporary. The free-rider problem occurs when the impact of a shock to  $A_{it}$  is permanent, while it does not occur when the impact is temporary. Using the constant and linear trend as exogenous variables in the time series equation, the results indicate that the impact of a shock on daily excess returns is temporary, while its impact on the cumulative excess returns is permanent. The non-rejection of the null hypothesis in the unit root tests performed on cumulative excess returns seems to indicate that the free-rider problem can occur and that investors with information tend to profit from cumulative excess returns.*

### I. INTRODUCTION

The Philippine banking industry has undergone considerable consolidation between 1998 and 2002. This consolidation includes mergers between large commercial banks and the acquisition of smaller banking institutions by relatively larger publicly listed banks. The consolidation may have been the result of market pressures to reduce costs and increase efficiency (Houston and Ryngaert, 1994), as a response to the regulatory regime in the industry (Milo, 2000), or the deregulation and restructuring of the industry (Schott, 1996; Spiegel and Gart, 1996).<sup>1</sup> However, Berkovitch and Narayanan (1993) and Houston and Ryngaert (1994) suggest that mergers and acquisitions may not be due to the synergy motive but rather on agency (empire building strategies) or hubris, (bragging rights). Despite the divergence in the motivation to consolidate, most mergers and acquisitions have one thing in common—to increase dominance and market share that may redound to positive wealth effects

(Houston and Ryngaert, 1994; Soper, 2001; Schott, 1996; Spiegel and Gart, 1996; Agrawal, Jaffe and Mandelker, 1992).

In light of the foregoing arguments, there is a need to investigate whether or not the mergers and acquisitions that transpired in the Philippine banking industry in the period 1999–2002 do result in positive wealth effects. Positive abnormal returns around the merger date may lead to the free-rider problem among atomistic shareholders.<sup>2</sup> The free-rider problem occurs when atomistic shareholders choose not to tender their shares before the merger date and then sell their shares later at a higher price. It is a 'free-rider problem' because all positive wealth effects that accrue to the merged entity should be transferred to the acquiring firm, and shareholders who tendered their shares, meaning those who exchanged their shares for the shares of the acquiring firm at the tender price offered. The shareholders who did not take part in making the merger

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successful specifically referring to those who did not tender their shares at the tender price and help consummate the merger, are 'free-riding' on the positive wealth effects or benefits that may result from the merger.

Although it is recognized that mergers, acquisitions, or takeovers are not equivalent terms with regard to their usage in the

finance literature, this study will use these terms interchangeably. Moreover, Sudarsanam (1995) acknowledges that the terms 'mergers' and 'acquisitions' are used interchangeably in the literature despite having precise connotations in certain contexts.

## II. OBJECTIVES OF THE STUDY

The study will investigate whether or not abnormal returns of the acquiring firm and the target company using the effective merger date as the event result in the free-rider problem. The free-rider problem is extensively documented in the literature, especially on hostile takeovers. When prices do not adjust to new information fast enough and post-merger excess returns are positive and significant, some arbitrage opportunities exist that could give rise to the free-rider problem. Although the announcement date of a potential merger may yield more interesting results due to information asymmetry with regard to the companies involved in the merger and investors, the merger date is more appropriate for this study because the free-rider problem occurs only once the merger is consummated.<sup>3</sup> Moreover, since rumors usually surround the announcement date of a

merger, it is difficult to attribute the abnormal returns on the specific event of interest. In addition, one of the banks included in the study has multiple merger announcement dates, which can make the analysis more difficult due to multiple reference dates.<sup>4</sup> Thus, in order to attribute abnormal returns to a specific event, the effective merger date will be used. The choice of the event as the effective merger date means that a unit root test of whether or not a series is stationary, i.e., excess returns are zero, includes the behavior of stock returns after the merger, when all uncertainty with regard to the merger has been resolved (Halpern, 1983). Moreover, Fama (1991) cites studies showing that the stock prices of acquiring firms hardly react to merger announcements, but thereafter drift slowly to negative returns as the merger date approaches.

## III. SIGNIFICANCE OF THE STUDY

While a number of studies using Philippine data have been conducted on the effect of some economic event on share prices, none has focused on the post-merger returns that could indicate whether or not the free-rider problem can occur. Thus, this study is the first to investigate if a series of excess returns around the merger date has a unit root or not. A series with a unit root may indicate that the market is not efficient,

which may result in some arbitrage opportunities by knowledgeable investors.

The study has implications on the wealth effects of mergers and acquisitions on the shareholders of the target and acquiring firms. The results of this study will contribute to the growing literature on post-merger wealth effects with regard to the free-rider problem since previous studies have shown that post-merger returns of some firms tend to drift to positive returns.

Furthermore, the study investigates the anticipated wealth effects of big bank mergers between 1999 and 2002, whether or not they actually result in enhancing firm value.

In addition, the study has implications on the share tendering strategies of shareholders because rational shareholders would choose to tender at a higher price relative to the tender offer. With regard to the information asymmetry that exists between shareholders of the acquiring and target firms as well as the investing publics

and financial market analysts, the results of this study may be helpful in guiding shareholders when to tender their shares or whether to tender at all, when to start buying the shares of the target or acquiring firm, and when to start selling off shares of the acquiring or target firms, among others. Lastly, the study has implications on the value-creating strategies of firms that make use of mergers and acquisitions as a vehicle for growth (Houston and Ryngaert 1994; Agrawal, Jaffe and Mandelker, 1992; Israel, 1991; Hirshleifer and Titman, 1990).<sup>5</sup>

#### IV. REVIEW OF LITERATURE

The spate of mergers and acquisitions in the Philippine banking industry in the period 1999–2002 may have resulted to positive wealth effects for shareholders. The abnormal return over the event window is interpreted as a measure of the impact of the event to the value of the firm and the methodology assumes that the event is exogenous with respect to the change in market value of the security (Campbell, Lo and Mackinlay, 1997). It follows that the adjustment (positive or negative) in the value of the firm is caused by the merger event.

Studies have been undertaken to investigate the effect of an event in the share prices (i.e., the value of the firm) of the companies involved. The announcement may concern the quarterly earnings report of a company (Campbell, Lo and Mackinlay, 1997), an impending acquisition of a company (Lang, 2000), a hostile or unsolicited bid to acquire another company using tender offers (Bradley, 1980, Israel, 1991, and Hirshleifer and Titman, 1990), and 'friendly' mergers (Halpern, 1973; Mandelker, 1974; Ellert, 1976; Langetieg, 1978; and Malatesta, 1983). These studies either investigated the effect of a merger announcement or the actual merger date on the value of the firm. Moreover, these

studies made use of abnormal returns and cumulative abnormal returns in determining the impact of merger announcements or actual merger dates on the share prices of the firms involved.

Specifically, mergers and acquisitions have been shown to cause abnormal returns before and after the effective merger date (Lang, 2000; Israel, 1991; Hirshleifer and Titman, 1990), as well as on the announcement date of a merger (Lang, 2000) or takeover (Israel, 1991). Some studies argue that the movements in share prices with regard to merger announcements and tender offers have implications on the share tendering strategies of shareholders and the possibility of a free-rider problem among non-tendering shareholders with relatively smaller holdings (Lang, 2000; Hirshleifer and Titman, 1990; Shleifer and Vishny, 1986). However, Hirshleifer and Titman (1990) also argue that efforts to reduce information asymmetry between the acquiring firm and the shareholders of the target firm tend to diminish effects of the free-rider problem.

##### *Tender Offers*

Bradley (1980) examines the characteristics of cash tender offers, involving 258 firms between July 1962 and

December 1977, using a model based on efficient and competitive markets, and rational expectations. He reports that successful tender offers have a mean premium of 49 percent, while the post-execution price (i.e., the stock price after the tender offer period) of a target firm is 36 percent higher than its pre-announcement level. Acquirers suffer significant losses on the target firms' shares they purchased, while target shareholders realize significant gains regardless of the outcome of the offer or whether or not target shareholders tendered their shares. Overall, the study indicates that successful bids tend to increase post-execution share prices of bidders, albeit not enough to cover the premium paid for the target firms.

Franks and Harris (1989) report that the wealth effects of takeovers on the acquiring firms tend to be negative after the merger, reaching -13 percent two years after the effective merger date, which rule out the free-rider problem. The authors propose that the losses are more than enough to offset the small positive wealth effects for acquirers that happened earlier in the acquisition process.

Hirshleifer and Titman (1990) investigate the effect of a hostile takeover on the target firm and acquiring firm's share prices. Citing earlier studies on tender offers, the authors argue that the target firm's stock price reacts negatively on news of failure of an offer, while the potential acquirer's stock price reacts positively to success and negatively to failure of an offer. The authors contend that information asymmetry exacerbates the free-rider problem because the shareholders of the target firm do not have enough information about the post-merger value of the stock. Shleifer and Vishny (1986) argue that the reaction of the share prices on positive or negative news with regard to takeover bids might be attributed to the information asymmetry that exists between potential acquirers and target shareholders, which

may result in a free-rider problem because some shareholders with atomistic shareholdings might choose to tender after the merger, expecting that share prices would increase. Thus, any attempt by the acquiring firm to reduce information asymmetry between the management of the acquiring firm and the target firm's shareholders seem to abate the free-rider problem (Hirshleifer and Titman, 1990).

Israel (1991) investigates the effect of an acquisition on a target firm's share prices as well as the acquirer's. He argues that the contest for control could be divided into two: the initiation stage and the acquisition stage. Target firms' stock prices increase upon announcement of an acquisition attempt, while the evidence on acquirers' value is mixed; while in the acquisition stage, target and acquiring firms earn a normal rate of return for each day after the announcement. Moreover, the author contends that in the acquisition stage there is an additional change in the target firm's equity value, which can either increase or drop, although its expected price change is zero. However, the expected price change of zero does not rule out a positive abnormal return for the acquirer and the target firm since between 40 and 50 percent of both target and acquiring firms realized positive abnormal returns from the second up to the eightieth trading day after the merger. The findings of Israel (1991) support the argument that the free-rider problem can occur, which are also consistent with the results of the HSBC study undertaken by Lang (2000).

### *Mergers and Acquisitions*

Halpern (1973) studied a sample of some 75 acquisitions to directly measure the premiums paid by acquirers to target firms. His method derives the price change that is not explained by market variations, which he considers as the price effect attributable to the merger. He reports that price premiums accruing to smaller firms are

significantly greater than zero at the five percent level, while the premiums accruing to larger firms are not significant. His results tend to indicate synergy or improvement in the performance of smaller target firms which was reflected in the prices paid by acquiring firms.

Mandelker (1974) uses the empirical market line methodology to test two hypotheses: that acquisitions take place under perfect competition and that capital markets are efficient. With regard to the capital market efficiency hypothesis, the findings show that the stock market operates efficiently with respect to "new" information about mergers. The results indicate that stock prices reflect all valuable information even before a merger announcement or the effective merger date. This is consistent with the findings of Halpern (1973) that point to the availability of merger information seven months before the announcement date. The study's findings, which support the efficient market hypothesis, rule out the free-rider problem.

Haugen and Langetieg (1975), citing earlier studies conducted on the synergy in mergers, report that anticipated benefits of mergers are not commensurate to the premiums paid to the target, which led to the underperformance of the acquirers' stock prices relative to their associated industry average. This means that the free-rider problem was not observed.

The findings of Ellert (1976), like those of Halpern (1973) and Mandelker (1974), indicate that the impact on the share prices of merging firms take place starting from 12 months prior to the merger date and that merger information is already available months prior to the announcement of a merger. The results show that cumulative abnormal returns are strongly positive and statistically significant from seven months through the actual merger date for the target firms, while the evidence for the acquiring firms indicates that the cumulative excess returns during this period are not significant.

Langetieg (1978) reinvestigates 149 mergers using other market indices and non-merging firms as the control group. The author reports that the results conform to the findings of Mandelker (1974) and show that acquired firms have significant negative returns of over 12 percent from six to one-and-a-half years prior to the merger and significant positive returns from six months up to the merger date. Moreover, the post-merger performance of the merged firm up to two years after the merger is almost 13 percent, although the negative effect is also observed from non-merging firms during the same period. The results seem to rule out the free-rider problem.

Malatesta (1983) calculates the wealth effects of mergers using the abnormal dollar returns in addition to percentage returns for a period of 36 months (-24, +12) around the merger date. Percentage returns for the acquiring firms several months prior to the merger announcement are insignificantly different from zero, while post announcement returns are significantly negative. These findings are consistent with the results of other studies (see Fama, 1991). The findings of Malatesta (1983) on the shares of acquired firms show that the returns are marginally significant and negative 24 months through four months leading to the merger date, after which the shares of the acquired firms posted significant positive returns through the merger date. After some recalculations, the author concludes that the post-merger performance of large acquirers becomes positive but insignificantly different from zero. Malatesta (1983) contends that, given a positive intercept for acquiring firms and negative intercept for acquired firms, the net present value of merger activity tends to be positive rather than negative. This argument tends to indicate that the free-rider problem can occur.

Houston and Ryngaert (1994) demonstrate that the sample of bank mergers included in their study point to slightly

positive, but statistically insignificant excess returns. This means that the free-rider problem may have existed but the profit that can be gained from the arbitrage opportunity may not be sufficient to cover transaction costs. The findings tend to indicate that mergers involving a higher degree of market overlap have greater potential for cost savings and are viewed more positively by the stock market, which result to some positive drift in post-merger returns. Also, the returns on stock prices stemming from the merger are related to the financing used by the acquiring bank to finance the acquisition.

Lang (2000) investigates the wealth effects, using daily returns data, on the acquisition of Midland by HSBC. The findings indicate that share prices of both companies tend to exhibit abnormal returns after the effective merger date. The share prices of HSBC exhibited negative cumulative abnormal returns up to two weeks after the merger date, while those of Midland exhibited highly positive returns from the announcement date until more than a month after the effective acquisition date. The movement in the opposite direction of the share prices of the HSBC and Midland before and after the merger date may have been due to the information asymmetry

between shareholders of the two banks and the general perception of the just consummated merger among the investing publics.<sup>6</sup> The study documents the increase in Midland's share prices before the merger announcement date up to after the effective merger date, which showed positive daily returns cumulating to more than 60 percent by the end of July 1992 (more than a month after the merger). Although the study did not measure whether or not the abnormal returns are significantly different from zero, the study, through the use of abnormal returns and cumulative abnormal returns plot charts, shows that HSBC and Midland's share prices tend to exhibit abnormal returns before and after the effective merger date due to the highly positive (Midland) or negative (HSBC) drifts in their excess returns leading to and following the merger. These results do not seem to support the efficient market assumption on or around the merger date and tend to indicate that the free-rider problem can occur. The results of Lang (2000) are consistent with the findings of Israel (1991) and Hirshleifer and Titman (1990), which indicate that target firms usually earn positive abnormal returns on or after the merger date but the post-merger results of acquiring firms are mixed.

## V. DESCRIPTION OF DATA

Daily stock prices for the three banks included in the study, as well as the daily closings of the Philippine Composite Index (Phisix), were obtained from the Philippine Stock Exchange (PSE). The daily closing prices of the stocks and the daily closing level of the Phisix, which was used as the market index, were used to compute for the excess returns.

The information on the effective merger dates of financial institutions was taken from

Milo (2000), while the rest of the data on the date of mergers were taken from company disclosures obtained from the PSE. There are fourteen financial institutions involved in mergers and acquisitions from 1998–2002, ten of which are listed, although only five are traded regularly. The study covers mergers and acquisitions of banking institutions that transpired from 1999 to 2002.

## VI. MODEL SPECIFICATION

Abnormal returns are defined as the extent to which returns are different from those that would have been appropriate using a model that generates 'normal' returns (Brown and Warner, 1980) and the abnormal return over an event window is interpreted as a measure of the impact of the event on the share prices of the firm (Campbell, Lo and Mackinlay, 1997). The use of daily stock returns and the characteristics of these data with regard to their effect on event study methodologies have been investigated by a number of studies (see Brown and Warner, 1980 and 1985). Event studies using the market adjusted returns model that make use of standard parametric tests are well specified and the use of daily data on stock returns for an event-study analysis is straightforward (Brown and Warner, 1985).<sup>7</sup>

Following the discussion of Enders (1995) and Johnston and DiNardo (1997), the unit root test is a test for nonstationarity for autoregressive (AR) processes. Using the equation  $Y_t = \alpha + Y_{t-1} + u_t$ , which is called a random walk with drift, where  $\alpha$  is called an intercept or *drift* term, the AR(1) process is said to have a unit root when  $\alpha = 1$ . The conditional expectation is  $E(Y_t | Y_0) = \alpha t + Y_0$ , which increases or decreases without limit as  $t$  increases. The conditional variance, which increases without limit, is  $var(Y_t | Y_0) = t\sigma^2$ . If the unconditional mean and the variance of  $Y$  do not exist, the  $Y$  series is said to be nonstationary. When a unit root test is performed on a series and the null hypothesis is true (i.e., the series has a unit root), the  $Y$  series is said to be a random walk with drift and thus nonstationary. The equation becomes  $Y_t = \alpha_1 + Y_{t-1} + \alpha_2 t + u_t$  for a model with a drift term and a linear time trend ( $\alpha_2$ ).

The  $t$  test does not apply to a nonstationary series because it is only valid if the underlying series is stationary. In the

literature, an alternative test called the Dickey-Fuller (DF) test or *tau* test is used for a nonstationary series. If the computed *tau* value is greater, in absolute terms, than the critical DF *tau* values, the unit root hypothesis is rejected and we conclude that the said time series is stationary. However, if the computed *tau* value is less than the critical DF *tau* value in absolute terms, the null hypothesis cannot be rejected. The non-rejection of the null hypothesis may indicate that the said series is nonstationary (Enders, 1995; Johnston and DiNardo, 1997).

A unit root test on a series with a total of 121 observations (i.e., a 60-day period prior to the merger date, the merger date, and a 60-day period following the merger date) is used to determine whether or not the free-rider problem can occur. Since most of the acquired banks were delisted by the merger date, the unit root tests are performed only on the surviving banks.

The following equations are used to compute the abnormal return and cumulative abnormal returns for each security. Equation (1) shows the *market-adjusted returns model* — a linear equation that relates stock returns to market returns, whose error term has an expectation of zero and a variance equal to  $\sigma_{\text{eit}}^2$  (Campbell, Lo and Mackinlay, 1997).

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

$$E[\varepsilon_{it}] = 0$$

$$\text{Var}[\varepsilon_{it}] = \sigma_{\text{eit}}^2$$

$$R_{it} = \text{return on security } i \text{ at time } t$$

$$R_{mt} = \text{return on market at time } t$$

Brown and Warner (1985) define the market adjusted returns model as:

$$A_{it} = R_{it} - R_{mt} \quad \text{for } i = 1, 2, 3, \dots, n \quad (2)$$

where  $A_{it}$  is the excess return of security  $i$  at time  $t$ . The return on the individual stock  $i$  at time  $t$  is given by equation (3), while the return on the market index at time  $t$ , using the Phisix, is given by equation (4).

$$R_{it} = [(P_{it} - P_{it-1}) / (P_{it-1})] \times 100\% \quad (3)$$

$$R_{mt} = [(I_{mt} - I_{mt-1}) / (I_{mt-1})] \times 100\% \quad (4)$$

In order to determine whether a merger results in a free-rider problem, a unit root test is performed on the daily abnormal

returns, which are computed using equation (2), and the cumulative abnormal returns on the share prices of the banks considered in this study. Studies on the effect of mergers on share prices indicate that the acquiring and target firms' stock prices show abnormal returns prior to and after the effective merger date (Israel, 1991 and Lang, 2000).

A unit root test may indicate that the merger event to  $A_{it}$  is permanent or temporary. If permanent, the free-rider problem can occur; if temporary, it does not occur. This analysis is performed on the daily and cumulative excess returns of the Bank of the Philippine Islands (BPI), Equitable PCI Bank (EBC), and Metro Bank (MBT).

## VII. TEST OF HYPOTHESES

Hirshleifer and Titman (1990) argue that information asymmetry may exacerbate the free-rider problem among atomistic shareholders. The focus of the analysis will be whether or not a merger can result in a free-rider problem. A non-rejection of the null hypothesis of a unit root test (i.e., the series has a unit root) may indicate that the free-rider problem can occur.

Hypothesis 1: *The impact of a merger on a series consisting of daily abnormal returns around the merger date is temporary.*

Hypothesis 2: *The impact of a merger on a series consisting of cumulative*

*abnormal returns around the merger date is temporary.*

If the impact of a shock (merger or acquisition) on daily excess returns around the merger date is temporary (i.e., the series is trend stationary and has no unit root), then the shock has a diminishing effect on the series. This means that the free-rider problem cannot occur. On the other hand, if the impact of a merger on the series is permanent (i.e., the series is difference stationary and has a unit root), then the free-rider problem can occur (Enders, 1995; Johnston and DiNardo, 1997).

## VIII. EMPIRICAL RESULTS AND ANALYSIS

Unit root tests were performed on the daily and cumulative excess returns of the acquiring bank or the surviving merged entity. Overall, the results indicate that the unit root test hypothesis is rejected on a

series composed of daily excess returns, while the unit root test hypothesis is not rejected on a series composed of cumulative excess returns.

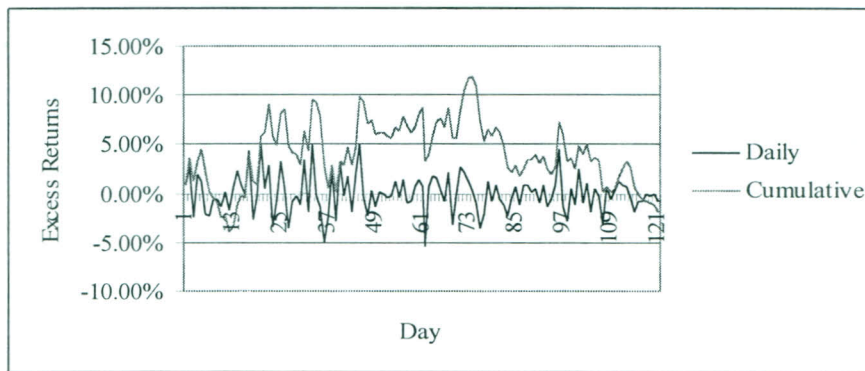


**Bank of the Philippine Islands and Far East Bank**

The shares of Bank of the Philippine Islands (BPI) outperformed the market by 0.62 percent and its cumulative excess returns reached 8.71 percent on merger date, as a result of highly positive, albeit erratic, daily excess returns prior to the merger.<sup>8</sup> The positive drift may have been due to the resolution of uncertainty regarding the

merger (Halpern, 1983). However, the drop in BPI's share price a day after the merger is significant with a *t* statistic of -2.34 although it cannot be attributed to profit taking.<sup>9</sup> The cumulative excess returns graph in Figure 1 shows a positive drift for the first half of the post-merger observation period, which may indicate that the merger was initially well received by the investors (Lang, 2000).<sup>10</sup>

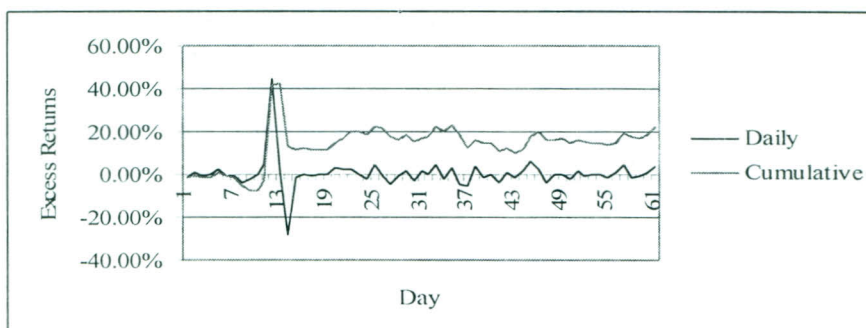
**Figure 1  
BPI Excess Returns**



Far East Bank shareholders who did not tender on merger date would have lost money since the share price of BPI started its precipitous decline 14 trading days following the merger (see Figure 1).<sup>11</sup> This may be attributed to the premium BPI paid for Far East Bank shares.<sup>12</sup> By merger date, this premium has fallen to just 2.73 percent because the share price of BPI has fallen

16.23 percent since the announcement date. This result is congruent to the analysis of Fama (1991) that acquiring firms on average pay too much for target firms, but the market only realizes this slowly. Therefore, Far East Bank shareholders would have profited from their holdings had they tendered their shares in the days leading to or on the merger date.

**Figure 2  
Far East Bank Excess Returns**



**Table 1**  
**Unit Root Test on BPI Daily Excess Returns**

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-12.01788	0.0000
Test critical values:		1% level	4.036310	
		5% level	3.447699	
		10% level	3.148946	
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(BPI_Daily)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BPI_Daily(-1)	-1.104895	0.091938	-12.01788	0.0000
C	0.002374	0.003586	0.661845	0.5094
@TREND(1)	-4.31E-05	5.15E-05	-0.836853	0.4044

**Table 2**  
**Unit Root Test on BPI Cumulative Daily Excess Returns**

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.135498	0.1030
Test critical values:		1% level	-4.036310	
		5% level	-3.447699	
		10% level	-3.148946	
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(BPI_Cumulative)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BPI_Cumulative(-1)	-0.163294	0.052079	-3.135498	0.0022
C	0.008900	0.004075	2.183976	0.0310
@TREND(1)	-3.93E-05	4.96E-05	-0.792841	0.4295

A unit root test performed on the daily excess returns of BPI using a 121-day period around the merger date indicates that the null hypothesis of a unit root test is rejected (see Table 1), which leads to the non-rejection of Hypothesis 1. This means that the series composed of daily excess returns

is stationary and that the free-rider problem cannot occur. However, the unit root test hypothesis is not rejected on a series composed of cumulative excess returns even at the 10 percent level (see Table 2). Since the unit root test indicates that the series composed of cumulative excess returns has a

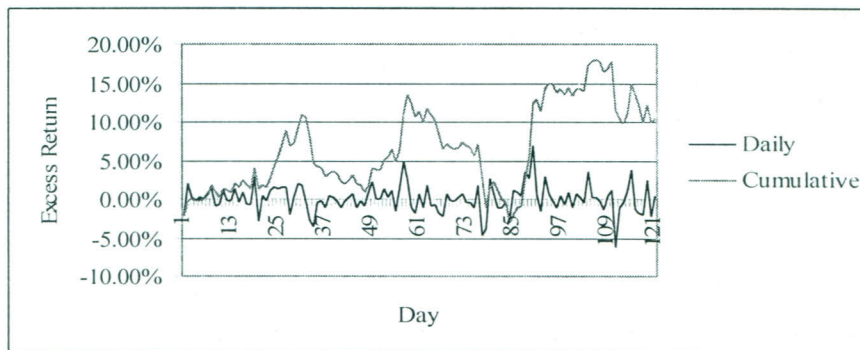
unit root, Hypothesis 2 is rejected, which means that the free-rider problem cannot be ruled out. This may indicate that more knowledgeable investors are able to make a profit through the cumulative returns of their shares.

#### *Equitable Bank and PCI Bank*

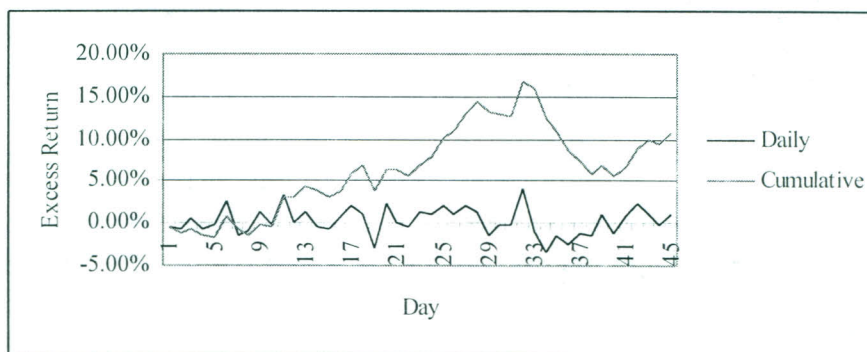
The shares of Equitable Bank posted a 0.56 percent abnormal return, while its cumulative excess returns reached 11.23

percent on merger date.<sup>13</sup> In Figure 3, the daily excess returns graph shows that the movement is random, while the cumulative excess returns graph indicates that the daily returns add up to a large number through time, reaching 10.98 percent 30 days prior to the merger, 11.23 percent on merger date, and above 10 percent for 34 days after the merger, reaching 17.95 percent 45 days following the merger.

**Figure 3**  
**Equitable Bank/Equitable PCI Bank Excess Returns**



**Figure 4**  
**PCI Bank Excess Returns**



The Equitable Bank (Equitable PCI Bank after the merger) data seem to defy the trend in event studies on mergers and acquisitions that the acquiring firm's stock price drift slowly down leading to and

following a merger (Fama, 1991; Franks and Harris, 1989). Although the cumulative excess returns graph shows two troughs or series of low points, one occurring before the merger and the other after, it later

recovers to higher values as positive excess returns outpace negative excess returns in both magnitude and frequency beginning 30 days after the merger. The positive trend extends beyond the observation period, which may indicate that the free-rider problem can occur. Figure 4 shows that on the last trading day of PCI Bank shares, occurring 17 trading days prior to its merger with Equitable Bank, its shares outperformed the market by 1.15 percent with a cumulative excess return of 11.23 percent. PCI Bank started to post positive

cumulative excess returns beginning 51 days prior to the merger and remained highly positive until its last trading day. For PCI Bank shareholders, the period from 50<sup>th</sup> to the 30<sup>th</sup> day prior to the merger is considered the best time to tender or sell shares since the stock price started to drift to negative returns after this period but started to recover a bit by the time it was delisted. Lang (2000) also observed the target firm's drift to positive returns in his study of HSBC's acquisition of Midland Bank.

**Table 3**  
**Unit Root Test on Equitable PCI Daily Excess Returns**

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-9.826504	0.0000
Test critical values:				
1% level			-4.036310	
5% level			-3.447699	
10% level			-3.148946	
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(EQUI_Daily)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EQUI_Daily(-1)	-0.896877	0.091271	-9.826504	0.0000
C	0.002190	0.003237	0.676393	0.5001
@TREND(1)	-2.03E-05	4.64E-05	-0.437837	0.6623

A unit root test performed on the daily excess returns of EBC using a 121-day period around the merger date indicates that the null hypothesis of a unit root test is rejected (see Table 3), which leads to the acceptance of Hypothesis 1. This may indicate that the series composed of daily excess returns is stationary and that the free-rider problem cannot occur. However, the unit root test hypothesis on a series

composed of cumulative excess returns is not rejected even at the 10 percent level (see Table 4). Since the unit root test indicates that the series composed of cumulative excess returns has a unit root, Hypothesis 2 is rejected, which means that the free-rider problem can occur. It appears that informed investors are able to make a profit from cumulative returns.

**Table 4**  
**Unit Root Test on Equitable PCI Cumulative Daily Excess Returns**

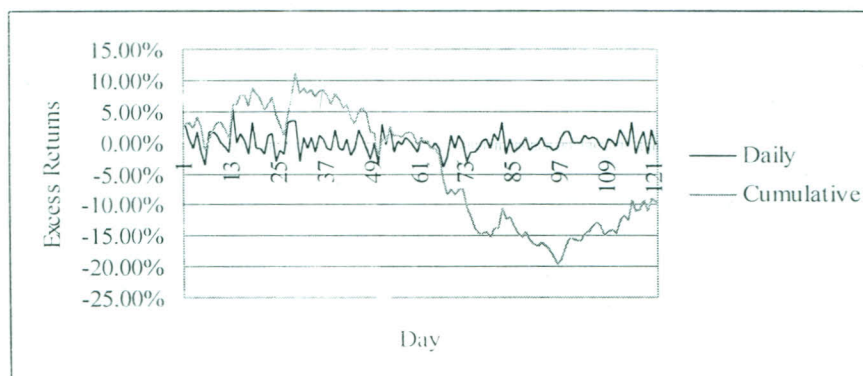
		t-Statistic	Prob.*	
Augmented Dickey-Fuller test statistic		-2.355856	0.4007	
Test critical values:	1% level	-4.036310		
	5% level	-3.447699		
	10% level	-3.148946		
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(EQUI_Cumulative)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EQUI_Cumulative(-1)	-0.090637	0.038473	-2.355856	0.0201
C	0.002570	0.003179	0.808389	0.4205
@TREND(1)	7.46E-05	6.12E-05	1.219081	0.2253

#### *Metropolitan Bank and Solid Bank*

The acquisition of Solid Bank by Metropolitan Bank (MBT) appears not to be well received by the market.<sup>14</sup> On merger date, MBT managed to outperform the market by 0.92 percent but its cumulative excess return is lower at 0.43 percent

because it has previously lagged behind the market. A telling sign that the market may not have approved of the merger can be seen in the post-merger cumulative returns of MBT, which is negative for 58 days and registering at least -10 percent for 45 days in the 60-day period following the merger.

**Figure 5**  
**Metro Bank (1) Excess Returns**



**Figure 6**  
**Solid Bank Excess Returns**

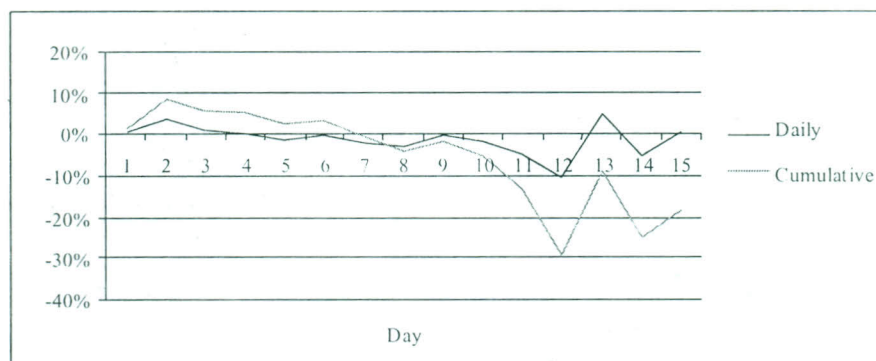


Figure 5 shows that while the daily excess returns hovered between  $\pm 4$  percent in the 121-day observation period in a rather random manner, the cumulative excess returns reached 11.04 percent 32 days prior to the merger and bottomed at  $-19.60$

percent 35 days following the merger. The MBT result is consistent with the analysis of Haugen and Langetieg (1975) that the performance of the acquiring firms' stock is significantly below the market or their industry average.

**Table 5**  
**Unit Root Test on Metro Bank (1) Daily Excess Returns**

		t-Statistic	Prob.*	
Augmented Dickey-Fuller test statistic		-11.90171	0.0000	
Test critical values:				
1% level		-4.036310		
5% level		-3.447699		
10% level		-3.148946		
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(MBT1_Daily)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MBT1_Daily(-1)	-1.083026	0.090997	-11.90171	0.0000
C	-0.001324	0.003028	-0.437329	0.6627
@TREND(1)	3.98E-06	4.34E-05	0.091607	0.9272

**Table 6**  
**Unit Root Test on Metro Bank (1) Cumulative Daily Excess Returns**

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-1.817550	0.6902
Test critical values:		1% level	-4.036310	
		5% level	-3.447699	
		10% level	-3.148946	
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(MBT1_Cumulative)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MBT1_Cumulative(-1)	-0.057843	0.031825	-1.817550	0.0717
C	0.004418	0.004342	1.017479	0.3110
@TREND(1)	-0.000127	8.40E-05	-1.507975	0.1343

The shares of Solid Bank lagged behind the market for the most part of the post-merger observation period, which consists of only seven days because the shares are not traded regularly. Figure 6 shows that the cumulative excess returns of Solid Bank was perpetually negative in the post-merger observation period, despite a positive daily excess return of 5.11 percent six trading days after the merger, which is not sufficient to cover for the steep decline in Solid Bank's share prices in previous trading days. Solid Bank shareholders should have tendered their shares a month prior to the merger date to benefit from the merger.

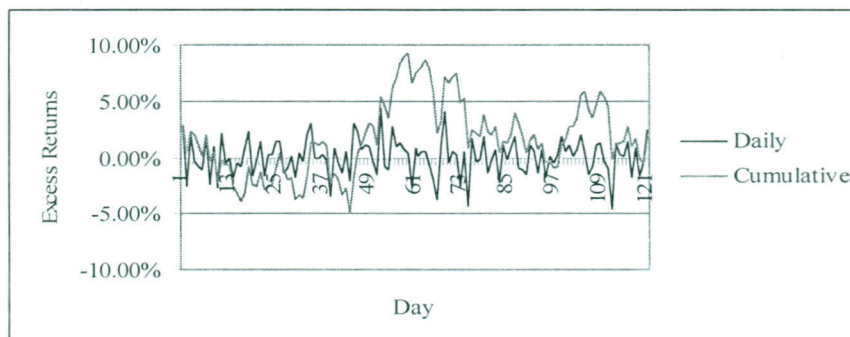
A unit root test performed on the daily excess returns of MBT around the merger date indicates that the series has no unit root (see Table 5), which means that Hypothesis 1 is not rejected. Thus, the free-rider problem cannot occur. However, a unit root test performed on the cumulative excess returns of MBT does not result in the rejection of the unit root null hypothesis (see Table 6). This means that the series

composed of cumulative excess returns has a unit root, which leads to the rejection of Hypothesis 2. This may indicate that the free-rider problem can occur. Nevertheless, Solid Bank shareholders who failed to tender their shares by merger date would have lost money because the cumulative excess returns of MBT shares are in the negative for most of the post-merger observation period.

#### ***Metropolitan Bank and Global Business Bank***

On merger date, MBT shares outperformed the market by 0.86 percent with a cumulative excess return of 7.46 percent, while Global Business Bank (GBB) shares did not trade that day.<sup>15</sup> Metro Bank shares registered positive cumulative excess returns 15 days prior to its acquisition of GBB, especially around the merger date (see Figure 8). The highly positive cumulative excess returns around the merger date seem to indicate an appreciation in shareholder wealth (see Lang, 2000).

**Figure 7**  
**Metro Bank (2) Excess Returns**



**Table 7**  
**Unit Root Test on Metro Bank (2) Daily Excess Returns**

		t-Statistic	Prob.*	
Augmented Dickey-Fuller test statistic		-13.00963	0.0000	
Test critical values:				
1% level		-4.036310		
5% level		-3.447699		
10% level		-3.148946		
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(MBT2_Daily)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
\MBT2_Daily(-1)	-1.179049	0.090629	-13.00963	0.0000
C	-0.000275	0.002919	-0.094249	0.9251
@TREND(1)	2.89E-06	4.19E-05	0.069017	0.9451

A unit root test performed on the daily excess returns of MBT indicates that the series has no unit root (see Table 7). This leads to the non-rejection of Hypothesis 1, which seems to indicate that the free-rider problem cannot occur. However, a unit root test performed on the cumulative excess returns results in the rejection of Hypothesis 2 because the series has a unit root (see Table 8). It appears that more informed investors are able to make a profit on the cumulative returns. With regard to the shareholders of GBB, they should have tendered their shares just around the merger

date in order to profit from the merger. Although the cumulative excess returns graph drifted lower in the middle of the post-merger observation period (Day 62 to Day 121), it recovered briefly before it drifted lower again (see Figure 7). This may indicate that the shareholders of GBB have more than one opportunity to make a profit during the post-merger period. The results of the unit root test on cumulative excess returns and the behavior of the cumulative excess returns graph seem to indicate that the free-rider problem can occur.



**Table 8**  
**Unit Root Test on Metro Bank (2) Cumulative Daily Excess Returns**

		t-Statistic	Prob.*	
Augmented Dickey-Fuller test statistic		-3.032149	0.1280	
Test critical values:				
	1% level	-4.036310		
	5% level	-3.447699		
	10% level	-3.148946		
*MacKinnon (1996) one-sided p-values				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(MBT2_Cumulative)				
Method: Least Squares				
Sample: 2-121				
Included observations: 120 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MBT2_Cumulative(-1)	-0.142115	0.046869	-3.032149	0.0030
C	-0.001180	0.002865	-0.411995	0.6811
@TREND(1)	5.79E-05	4.44E-05	1.303901	0.1948

## IX. DISCUSSION AND CONCLUSION

The unit root tests performed on the daily abnormal returns for the three securities result in the rejection of the null hypothesis of a unit root test, which means that Hypothesis 1 is not rejected. This may indicate that the daily excess returns of the sample banks around their merger dates do not lead to the free-rider problem. The daily abnormal returns graphs do show that excess returns on the merger date are slightly positive but the results of the unit root tests indicate that the series is stationary. The findings that the free-rider problem does not occur when daily returns are used are consistent with the findings of Houston and Ryngaert (1994) on their study on the overall gains from large bank mergers. The daily abnormal returns graphs and the results of the unit root tests indicate that there is no sufficient evidence to reject hypothesis 1. This means that, on average, investors cannot make a profit from daily excess returns around the merger date.

Consistent with the findings of earlier studies (see Franks and Harris, 1989; Agrawal, Jaffe and Mandelker, 1992; Lang, 2000), the cumulative abnormal returns graphs indicate that (positive or negative) abnormal returns persist after the merger date and the series composed of cumulative excess returns is nonstationary for the three banks considered in the study. This seems to indicate that the Philippine stock market is not very efficient and may give rise to the free-rider problem due to the relative slowness of prices to adjust to new information around the merger date. This is consistent with the analysis of Fama (1991) that the market is rather slow in adjusting to firm-specific events. A telling instance where stock prices seem to adjust rather slow to firm-specific events is the significant but negative abnormal return of BPI the day after the merger. This may be due to the high premium BPI "paid" for Far East Bank shares.<sup>16</sup> The steep fall in the stock price of BPI after the merger is an indication that

prices are sticky and do not adjust instantaneously to new information (see Fama, 1991). The decline cannot be attributed to overselling, so it may be due to the realization that BPI "overpaid" the shareholders of Far East Bank but the market reacted to this information only after the merger, when all uncertainty about the imminent merger has been resolved (Halpern, 1983).

The drift observed in the cumulative abnormal returns graphs, which is confirmed by the results of the unit root tests, tend to support the view that the efficient market anomaly of positive or negative abnormal returns in the post-merger period is not resolved (see Agrawal, Jaffe and Mandelker, 1992). The nonstationarity of the series composed of cumulative excess returns tends to lend support to the free-rider problem argument.

The unit root tests on the cumulative excess returns of the three banks indicate that there is a significant drift in the movement of their cumulative excess returns, which may be due to new information. Concerning the share tendering strategies of shareholders of the target firms, the findings indicate that the best time to

tender shares is around five days leading to the merger date and on the merger date itself. Regarding the value-creation strategies of the banks in this study, it is apparent that Metro Bank lost value after its merger with Solid Bank (see Figure 5); while it appears that its shares gained value when it merged with Global Business Bank as shown in the cumulative excess returns graph in Figure 7. The cumulative excess returns graphs of BPI (see Figure 1) and Equitable PCI (see Figure 3) seem to indicate that the market values of these two banks also increased after the merger.

Overall, the findings indicate that a series composed of daily excess returns around the merger date is trend stationary, which means that the shock (i.e., merger) to the system has a diminishing effect on the series (Enders, 1995; Johnston and DiNardo 1997). However, the results indicate that a series composed of cumulative abnormal returns around the merger date is difference stationary, which means that the impact of the merger on the series is permanent (Enders, 1995; Johnston and DiNardo, 1997). In this case, the series has a unit root and that the occurrence of a free-rider problem cannot be ruled out.

## X. DIRECTION FOR FUTURE RESEARCH

The results of the unit root tests and the graphs on cumulative excess returns seem to indicate that investors either gain or lose around the merger date. Berkovitch and Narayanan (1993) classify the motivation for mergers into three: synergy motive, the agency motive, and hubris and argue that agency is the major reason for the existence of value-reducing acquisitions; while the positive post-merger drift in excess returns may be due to synergy, although the synergy motive could also lead to negative returns (Haugen and Langetieg, 1975). It is therefore recommended that a study on the motivation of the mergers be undertaken to

determine its effect on cumulative excess returns and the free-rider problem.

Earnings announcements have been shown in the literature to cause excess returns. Thus, if there have been unanticipated earnings announcements in the 121-day observation period for the securities included in the study, then these should be considered. It is therefore suggested that a more thorough investigation be undertaken to include unanticipated earnings announcements in the analysis in order to rightly attribute any excess returns to the economic impact of a merger (Halpern, 1983).<sup>17</sup>

Houston and Ryngaert (1994) suggest that the characteristics of the acquiring banks be considered since they tend to reduce information asymmetry because attributes such as the acquirer's profitability, considerable operations overlap between the acquirer and the target, and the method of financing the acquisition reveal positive information about the acquirer and the synergies that are likely to be created by the merger. The positive information that is revealed to the market may lead to post-merger positive excess returns that may give rise to the free-rider problem if atomistic

shareholders believe that the post-merger value will be higher because of the expected synergy of the merged entity. It is therefore recommended that a more thorough investigation be undertaken to incorporate these variables in the analysis.

Lastly, it is recommended that some research be undertaken to determine the relationship between the choice of payment, i.e., cash or share swap, for the target firm and excess returns around the merger date. Since all the securities involved in the study made use of share swap, the use of cash might present different results.<sup>18</sup>

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## NOTES

- <sup>1</sup> Milo (2000) documents the consolidation in the Philippine banking sector between 1998 and 2000, and argues that mergers and acquisitions are effected and affected by the current regulatory regime and market structure.
- <sup>2</sup> 'Atomistic' investors are usually individuals with relatively smaller shareholdings that usually do not influence the outcome of a merger, acquisition, or hostile takeover because these investors lack political clout or are simply ignored by investors with relatively bigger shareholdings due to the insignificance of their vote in effecting the outcome of a merger or acquisition.
- <sup>3</sup> If this study were on market efficiency, the announcement dates would be more appropriate. But since this study is on the free-rider problem, the merger date is more appropriate because only after the merger can one measure post-merger returns.
- <sup>4</sup> A case in point was the acquisition of Solid Bank Corporation by the Metro Bank Group, which produced a series of counterclaims with regard to the acquisition. Another example is the anticipated merger (i.e., fueled by rumors) of Asian Bank with PDCP Bank, which did not materialize. Global Business Bank, a subsidiary of the Metro Bank Group, later purchased Asian Bank.

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- <sup>5</sup> The study by Agrawal, Jaffe, and Mandelker (1992) indicates that mergers led to negative post-merger returns, while the other studies show mixed results.
  - <sup>6</sup> Physical distance and information on HSBC's acquisitions history may have exacerbated the information asymmetry between shareholders in Hong Kong and the United Kingdom (UK). HSBC shareholders were uninformed of the market conditions in the UK where most of Midland's operations are located, while Midland shareholders were upbeat about the acquisition of Midland by HSBC because it would have the necessary capital to raise it back to health. Moreover, investors in Hong Kong knew of the unprofitable acquisitions by HSBC in the past, which made them jittery when HSBC announced its intention to acquire Midland. At the time of the announcement and date of acquisition, Midland was still recovering from the effects of the recession in the UK and this made the Hong Kong investors more anxious and responded to the news by selling off HSBC shares. In the UK, investors believed that things could only get better with the acquisition of Midland by HSBC, and this optimism was reflected in the share prices of Midland starting from the date of announcement until well after the effective date of acquisition by HSBC (Lang 2000).
  - <sup>7</sup> Daily returns and daily excess returns for individual securities tend to be highly non-normal, while departure from normality are less pronounced using cross-sectional mean excess returns across securities but simulations conducted by Brown and Warner (1985) indicated that the test statistics for most methods [using daily stock returns] are quite well specified and are not highly sensitive using different experimental procedures, while the goodness of fit tests simulated using sample sizes of five and twenty securities do not indicate misspecification.
  - <sup>8</sup> The merger with Far East Bank was announced on 21 October 1999 or more than six months before the effective merger date, which does not overlap with the 121-day observation period.
  - <sup>9</sup> Only 149,400 shares traded on that day, compared with an average of 297,533 shares traded in the five-day period prior to the merger.
  - <sup>10</sup> Far East Bank shares outperformed the market by 4.04 percent and its cumulative excess return reached 12.11 percent on merger date.
  - <sup>11</sup> The share price of BPI was higher on merger date than on any day after the merger in the observation period.
  - <sup>12</sup> On 21 October 1999, BPI announced that the merger with Far East Bank would be undertaken via a swap of shares at the conversion ratio of 0.6992 BPI shares for every Far East Bank share. This is equivalent to a ten percent premium offered for Far East Bank shares, which closed at PHP70.50 on that day while those of BPI closed at PHP111.00.
  - <sup>13</sup> Equitable Bank and PCI Bank announced a possible merger on 17 May 1999 or four months prior to the effective merger date of 28 September 1999 and confirmed on the merger on 15 June 1999.
  - <sup>14</sup> The acquisition of Solid Bank by Metro Bank was announced on 21 December 1999 or more than six months prior to the effective acquisition date. On 13 September 2000, Solid Bank merged with First Metro Investment Corporation, a 100% subsidiary of Metro Bank. On 29 September 2000, Solid Bank changed its name to First Metro Investment Corporation and became an investment house with quasi-banking functions.
  - <sup>15</sup> Global Bank shares hardly traded after Metro Bank announced its acquisition of Global Bank on 5 December 2001 or eight months prior to the effective acquisition date. Metro Bank acquired the rest of Global Bank nine months after PS Bank absorbed 13 branches of Global Bank.
  - <sup>16</sup> BPI acquired Far East Bank through a share swap agreement.
  - <sup>17</sup> Only unanticipated earnings announcements (i.e., worse or better than expectations) are considered since anticipated earnings announcements hardly cause any movement in the stock prices of the firms involved.
  - <sup>18</sup> The use of cash may also prevent the free-rider problem from happening since the payment is fixed and not based on the relative prices of the two securities.