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Evidence from India**

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Working Paper  
(WP06/2021)



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December 2021

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**Citation Guideline:**

Chidambaran, N. K., Dipali Krishnakumar and Madhvi Sethi (2021), "Do Emerging Markets Evaluate M&As Correctly? Evidence from India". NIBM Working Paper Series, WP06/December. URL: [https://www.nibmindia.org/static/working\\_paper/NIBM\\_WP06\\_NKCDKMS.pdf](https://www.nibmindia.org/static/working_paper/NIBM_WP06_NKCDKMS.pdf)

## **Do Emerging Markets Evaluate M&As Correctly?: Evidence from India**

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NIBM Working Paper No. 06  
December 2021

### **ABSTRACT**

We examine whether emerging markets capture the value impact of corporate events using data on acquisitions by Indian Firms. We measure market reaction to acquisition announcements using Cumulative Abnormal Returns (CAR) around acquisition announcements and measure the longer-term performance using matched sample buy and hold abnormal returns (BHAR) and return on assets (ROA). Our data period spans the sixteen-year from 2001 to 2016 a period encompassing the early liberalization period in India, the years of the financial crisis, and a post crisis recovery period. Acquisition activity, both domestic and cross-border increased over the period. Markets react positively to acquisition announcements for both domestic and cross-border deals, with positive and significant Cumulative Abnormal Returns (CAR). We find no evidence of post-announcement drift or reversal in either BHAR or ROA. These results suggest that Indian markets are accurately able to judge the benefits of acquisition transactions without a subsequent market correction. Cross-sectionally, firms with a long-term view, as proxied by their governance metrics gain from acquisitions over the long-term. We find that the crisis had a negative impact on acquisitions by Indian firms. Acquisition activity recovered after the crisis but returns to acquirers are no longer significant.

**Keywords:** Emerging Markets, Indian Markets, Market Efficiency, Mergers and Acquisitions, Cross-Border CAR, BHAR

### **JEL Classification Number:**

**Acknowledgement:** We thank the National Stock Exchange for research support. We also thank Nagpurnanand R. Prabhala and participants at the South West Finance Association conference for comments and feedback

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# Do Emerging Markets Evaluate M&As Correctly?:

## Evidence from India

### 1. Introduction

Mergers and Acquisitions are an important avenue by which firms invest and grow. Proponents of growth by acquisition argue that combining the acquiring and target firms results in synergies that enhances shareholder value. Studies have examined the abnormal returns around acquisition announcements to infer the value impact of these transactions. In emerging markets, inferring the value impact of acquisitions gets confounded by the degree to which financial markets are efficient in incorporating information. Further, in many developing markets, regulations restricted transactions that result in changes in corporate control and such restrictions have been eased only recently. Whether markets are able to infer the value impact of M&A activity in emerging markets with rapidly changing regulatory environments to a more mature market, is an interesting empirical issue. In this paper, we examine the short-term market reaction (CAR) in conjunction with the long-term buy and hold abnormal returns (BHAR) of acquisitions by Indian firms over the period from 2001 to 2016 to infer whether markets were able to accurately capture the market impact of corporate control.

The Indian market presents an interesting laboratory to gauge the efficiency of emerging markets as the economy has through rapid changes, especially with respect to corporate control transactions. The early 2000s saw heightened acquisition activity following the liberalization of Indian markets starting in the late 1990s. The passage of the Foreign Exchange Management Act in 1999 started the process on the international front by allowing firms to use 100 per cent of the proceeds of their American Depository Receipts/Global Depository Receipt issues for acquisitions of foreign companies and for direct investments in joint ventures and wholly owned subsidiaries. In terms of investment size, the allowable expansion overseas was increased in steps, from 100% of net-worth in 2002 to 400% of net-worth in 2010. Backed by the liberalization of outward investment policies, cross-border acquisitions by Indian firms rose from a meager \$23 million in 1990 to \$29 billion in 2007 (UNCTAD, 2013). A number of acquisitions by Indian firms made news headlines; not only in the Indian press but also internationally; for example, the acquisition of Tetley Tea, Jaguar and Corus by the Tata group; acquisition of Novelis by Hindalco; acquisition of Zain Telecom by Bharti Telecom. These acquisitions signaled the entry of India into the global acquisition market place. On the domestic front, deal activity where both the acquiring and target firms are from India, i.e. *domestic* deals, also increased during the period from 2001-2016. The strong economic conditions and the need to consolidate drove much of the activity in the domestic market. Indian acquirers perceived synergies arising from market access and need to improve their competitiveness in the domestic market.

Stock markets react to announcements of deal activity, passing their judgement on whether the acquiring firms gained in the transaction. If the acquiring firms capture any benefit of the synergies of the transaction, markets will react positively with a boost in the stock price of the acquirers. On the other hand, if the acquiring firms got what they paid for, or indeed overpaid for the target, we would expect an insignificant to negative

market reaction. We measure the market's immediate reaction to deal announcement, i.e. the *announcement effect*, by calculating the Cumulative Abnormal Return (CAR) around the announcement date, to gauge the market's reaction to transaction.

Estimation of acquisition synergies and the valuation of the target firm is, however, inherently opaque especially in emerging market countries that do not have a history of corporate control transactions. If markets react positively, does it signal a euphoric response to the acquisition or does it signal an accurate valuation of expected positive synergies? Stock prices may initially have a positive (or negative) reaction only for markets to reverse and correct over the longer term. To disentangle these effects we examine the subsequent long-term buy and hold abnormal returns in conjunction with the short-term announcement effect. If the long-term BHAR is significantly positive or negative following the acquisition, suggesting a post announcement drift or a post-announcement reversal respectively, it would imply that the markets did not capture all information or over-reacted to the announcement.

Our data is from SDC Platinum and CMIE's Prowess database. We are able to identify complete data for 1,115 deals over the period from January 2001 to December 2016, which constitutes our data sample. The data include deals where the target firm is a domestic firm, which we refer to as *Domestic* deals, and where the target firm is non-Indian firm, which we refer to as a *Crossborder* deal. There are 676 Domestic and 439 Crossborder deals in our sample.

We measure CARs over a window of  $[-1,+1]$  days and  $[-5,+5]$  days around the announcement date using a market model to benchmark to assess whether the observed returns are above below expected returns based on the model. We find that the 3-Day CAR is positive and statistically significant for the full sample and the subsamples of Domestic and Crossborder acquisitions. Clearly, the equity markets infer a positive value to M&A activity by Indian acquirers.

To examine whether markets overacted to the acquisition announcement, or fail to incorporate the full value of the deal, we examine the long-term market reaction using a 24-month buy-and-hold returns (BHAR24) and 36-month buy-and-hold returns (BHAR36) subsequent to the announcement. We find that both BHAR24 and BHAR36 are positive, but not significant. We, thus, do not see any reversal of the initial positive market reaction over the 24-month window, nor do we see a post announcement drift. These results suggest that Indian acquirers do not experience a post announcement drift, either negative or positive. We interpret these results to indicate that Indian capital markets were able to accurately incorporate the value impact of acquisitions, as shown by our CAR results, and did not over-react or under-react to the news, as shown by our BHAR results.

We next examine the cross-sectional variation in BHARs. We find that Crossborder CARs are higher than Domestic CARs in our sample period. This perhaps represents the effect of liberalization when Indian firms were able to take advantage of synergetic possibilities in foreign markets for the first time. It is also plausible that the media attention on what may be perceived as high profile transaction leads to a euphoric reaction in Indian markets. However, cross-sectionally, BHARs do not differ for Domestic and Crossborder deals. BHARs are higher for smaller firms, suggesting that the market reaction was not simply a Euphoric reaction. We find that firms with high leverage have higher CARs suggesting that debt in the capital structure could lead to better managerial decisions. We also find that firms that have better governance, as evidenced by their group membership and level of promoter holdings have positive and significant BHARs.

Investors perhaps need to make sure that the firm is adhering to its strategy and are reluctant to accrue all the value gains at the time of the deal announcement.

The rest of the paper is as follows. Section 2 presents a review of the relevant literature. Section 3 presents the data and methodology and Section 4 presents our empirical results. Section 5 concludes.

## 2. Literature Review

In this section, we present the relevant literature that has examined M&A activity in India and other emerging market countries and the literature on the short-term and long-term value impact of M&A in developed and emerging markets.

### 2.1 Domestic and Crossborder Acquisitions

Researchers have noted several reasons for firm engaging in a mergers or an Acquisitions. Managers often perceive synergistic gains arising from production efficiencies, enhanced market power, tax savings, or other agency considerations (Erel, Liao, & Weisbach (2012)). In emerging markets, strong economic growth conditions, structural reforms and buoyant capital markets can lead to increased deal activity. In such an environment, firms in emerging markets engage in domestic acquisitions is to gain access and control over a continuous supply of natural resources from the target company (see Nicholson and Salaber (2013) and Deng and Yang (2015)). Firms may also seek to consolidate their operations. In India several industrial sectors were also in a consolidation mode in the 2000<sup>1</sup> and corporations with stronger balance sheets saw an opportunity to consolidate market positions (see Goddard, Molyneux and Zhou (2012)).<sup>2</sup> A *crossborder* deal on the other hand, involves crossing national boundaries and is often seen as enhancing the prestige of an emerging market firm. Crossborder deals are especially scrutinized in the markets and in the media. In India, both domestic and crossborder deals increased post liberalization in the late 1990s. Chidambaran, Krishnakumar and Sethi (2018) document the trend in M&A activity post the liberalization phase in the Indian economy and show that both domestic and cross border acquisitions by Indian firms have increased over the period from 2000 to 2007. [\*\*\*\* Lit o Hubris Merger waves etc.\*\*\*]

### 2.2 Value and Performance Impact of Acquisitions

The value impact of acquisitions has been extensively studied in the literature by examining the gains and losses associated with acquisitions. The short-term impact of an acquisition is captured through event study based metrics, such as CARs, over a few days before and after the acquisition announcement (King & Dalton, 2004; Krishnakumar & Sethi, 2012; Zollo & Meier, 2007). Studies have typically found that acquisitions are value enhancing when computing combined CAR for acquirer and target firm shareholders.

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<sup>1</sup> In India, a report by PWC gives several examples, <https://www.pwc.in/assets/pdfs/trs/mergers-and-acquisitions-tax/mergers-and-acquisitions-the-evolving-indian-landscape.pdf>. The report show that firms in the renewable energy sector (Tata Power's acquisition of Welspun's assets in a deal valued at over 9,000 crore INR), the banking sector (Kotak Mahindra acquired ING VysyaBank in November 2014 in an all-stock deal valued at over 15,000 crore INR), and the telecom sector (Reliance Communications announced the acquisition of MTSIndia), consolidated their operations.

<sup>2</sup> (<https://www.livemint.com/Companies/gT7tWrZZGfbLzrm5OTvfLO/MA-activity-at-a-record-high-of-6975-billion.html>). "There is a strong self belief in India, and credit is more available than in the past," Matthew Hanning, joint head of investment banking for Asia at UBS in Hong Kong (<https://www.ft.com/content/7cc6916a-353b-11e0-aa6c-00144feabdc0>).

However, most of the value gain has been found to accrue to target shareholders. A large number of studies have found that acquisition announcements are either value destructive for acquirers or result in no significant gain for acquiring firms (Jensen & Ruback, 1983; Andrade et al., 2001). Jensen & Ruback (1983) and Jarrell, Brickley, and Netter (1988) provide a review of studies on abnormal returns to acquirers in tender offers and mergers. They observe that returns to bidders in mergers are close to zero on an average.

Eckbo and Thorburn (2000) find that the domestic acquisitions significantly outperform the foreign ones. They attribute lower wealth gains accruing to foreign acquirers to their larger size. Campa and Hernando (2004) suggest that cross border acquisitions generate lesser wealth gains as compared to domestic ones when such acquisitions are pursued in highly regulated industries. In lesser regulated industries, cross border acquisitions create higher returns than the domestic ones. Moeller and Schlingemann (2005) also find that cross border acquisitions significantly underperform the domestic acquisitions. Goergen and Renneboog (2004) find that cross border acquisitions create insignificant higher wealth than the domestic acquisitions. On the other hand, Chari, Ouimet, & Tesar (2009) find that firms from developed markets earn significant positive abnormal returns when they acquire majority stakes in targets from emerging markets. Mateev & Andonov (2018), in their study on European bidders in acquisitions, find evidence for shareholders in target firms earning substantially higher premiums when a deal is cross border compared to when it is a domestic deal.

Studies have also examined the longer-term impact of acquisitions by using long term stock market performance or long term operating performance. Studies on long term stock market returns have either reported significant losses to shareholders of acquiring firms or have reported insignificant underperformance. Firth (1980) in a study of acquisitions by UK acquirers during 1969 to 1975 report long term losses to bidders over a 36-month period. Agrawal et al., (1992) report a significant loss to bidders of merging firms for a period of 5 years post acquisition period on the basis of 937 mergers from 1995 to 1987 between US domestic firms. While they report that bidders in tender offers earn significantly positive abnormal returns of 5%. Loughran and Vijh (1997) observe insignificant negative abnormal returns of -6.5% by acquiring firm shareholders over a five-year time period. Bouwman, Fuller, and Nain (2009) find that overall acquiring firms earn significantly negative buy and hold returns of -7.22% over two years post acquisition. Andrade, Mitchell, and Stafford (2001) in their review of literature on long term post acquisition performance, conclude that most studies have reported long run underperformance of bidders, except in the case of tender offers, where they have received positive returns. Dutta and Jog (2009) find that when methodological issues are taken care of in computing returns, the results do not point to negative long term returns to acquirers.

Literature on the operating performance in the developed market have not been conclusive. Healy et al., (1992); Guest et al., (2010), find that operating performance has improved on the basis of the measures of performance that they have used in their analysis. Zollo & Singh (2004) observe that mean performance is not different from zero. Methodological issues have been raised with respect to the process of determining long term abnormal return (Lyon, Barber, & Tsai, 1999; M. Mitchell & Stafford, 2000). Lyon et al., (1999) list biases associated with commonly used methods that compare sample firm performance with an Index and have suggested mechanisms to deal with the biases.

### 2.3 Value Impact for India Acquirers

Researchers examining the performance of acquisitions in India have found that firms making crossborder acquisitions (henceforth cross border acquirers) have positive CARs. Cross border acquirers therefore earn positive abnormal returns, at least in the short run (Barai and Mohanty 2010; Gubbi et al., 2010; Kale & Khanna, 2009; Kohli & Mann, 2012). On the other hand, firms acquiring domestic firms (henceforth domestic acquirers), do not find any evidence of positive returns to shareholders (see Kohli & Mann (2012)). Consistent with these results, Gubbi et al., (2009) do not find any evidence of positive abnormal returns in domestic acquisitions. Banerjee et. al. (2014) find positive significant announcement returns for Indian acquirers over a period of 1995-2011. However, they also find that for both domestic and cross border deals, returns are positive initially and decline for later part of the sample period. They argue that the negative returns to large sized acquirers is consistent with managerial hubris.

A few researchers have examined long term stock market returns of Indian cross border acquisitions. Singh (2012) researched 91 deals between 2004 and 2009; and concludes that shareholders of cross border acquirers earn negative 12-month Buy and Hold returns. Mohanty and Mishra (2014) used a sample of Indian mergers and acquisitions in the period 1998-2010 and observed that acquirers had negative buy and hold returns while firms which that merged had positive returns.

In the emerging market context, Bertrand & Betschinger (2012) explore the operating performance of cross border acquisitions by firms from Russia and find that mergers and acquisitions destroy value. They attribute the poor performance of acquisition to lack experience and capability in cross border acquisitions. Long term operating performance of mergers and acquisitions in ASEAN countries was analyzed in a study by Rao & Salabar (2016) using data for the 2001-2012 time period. The study found a decline in performance of firms post acquisition. They also found that cross border deals underperformed compared to domestic deals during the financial crisis period 2007-08.

Saboo & Gopi (2009) examine a combined sample of 54 domestic and cross border deals that took place during 2001 to 2007 and find that there is an insignificant decline in operating performance of cross border acquirers. Shukla & Gekara (2010) used a case-based analysis to study the Tata Steel – Corus acquisition and found that there is an insignificant decline in accounting returns. Based on a sample of 15 cross border acquisitions by Indian firms between 2005 and 2008, Singla et al. (2012) observe that firms do not experience any significant change in financial performance as compared with their pre -acquisition performance. Studies on long term operating performance on Indian cross border acquisitions, thus, have either been case based or with limited sample sizes.

Our study examines the short-term market reaction, long-term stock performance and operating performance of Indian acquirers and augments the rather sparse literature on these topic. We also analyze the short-term and long-term performance of acquirers in subsamples of the data, e.g. for acquisitions after liberalization of the markets, during the financial crisis and the more mature post crisis period. We also do a cross sectional analysis to determine how deal, target and the economic cycle impact the performance of Indian acquirers.

### 3. Data and Methodology

In this section, we present details of our data sample and sources and our empirical methodology. Data on acquisitions by public Indian firms is obtained from the Thomson Internationals Securities Data Corporation's (SDC) Mergers and Acquisitions database. SDC sources its information on acquisitions from English and foreign language sources, statutory filings, trade publications, newswire reports and proprietary surveys. Data on stock returns for individual firms and the market and data on firm characteristics are obtained from the Center for Monitoring Indian Economy (CMIE) Prowess database.

#### 3.1 Deal Data and Dependent Variable

Our base data on acquisitions by Indian firms is the set of all completed deals, for both private and public target firms, where the *Ultimate Acquirer Nation* is Indian. We use the *Ultimate Acquirer Nation* to filter acquisitions by Indian firms, rather than when the *Immediate Acquirer Nation*, as Indian firms often use Special Purpose Vehicles established off shore when pursuing non-Indian targets. We start with all completed deals on SDC irrespective of the percentage stake acquired, as the focus of our paper is to analyze the acquisition decision of firms and we therefore examine all transactions irrespective of stake acquired. We supplement the acquisition data with financial information and firm characteristics from CMIE (Center for Monitoring Indian Economy) Prowess database, for all publicly listed Indian firms. We match the name of the *Ultimate Acquirer Parent* from SDC Platinum to the names of publicly listed firms in India in the CMIE Prowess database.

Our sample consists of completed deals over the sixteen-year period from 2001 to 2016. We extract data on completed merger and acquisition deals during the period January 2000 to December 2016 from SDC Platinum. The announcement date reported by SDC Platinum is used to define the year in which a deal is considered. The total number of deals in SDC Platinum by Indian acquirers for our data period is 3,889. Of these, 1,712 cases are where the target firm is non-Indian and the deal is classified as Crossborder deal and 2,162 are cases are where the target firm is an Indian firm and the deal is classified as Domestic deals.

We drop all cases where the acquirer is in the finance industry, which includes deals by firms in the following industry groups: Auto Finance Services, Banking Services, Housing Finance Services, Infrastructure Finance Services, Infrastructure Finance Services, Other asset financing services, Other fee based financial services, Other fund based financial services and securities broking. We also drop deals where the deal value is not disclosed. This brings our data set down to 3104 deals.

~~Further, we only consider deals where the percent stake acquired is more than 50%. [\*\*\* Is this correct?]~~ Further, we only consider deals where the postacquisition ownership stake of the acquirer is more than 50%. In case of firms with multiple deals in a year, the deal with the largest deal value is selected for our study. In case of multiple deals for the same acquirer and target pair in a year, we consider the first deal in the calendar year. Further in case of firms with multiple deals, we consider deals where the difference in announcement dates is more than 255 days.

For each acquisition, we retrieve data on stock returns and market returns needed for calculating the 3-day and 11-day cumulative abnormal returns and 24 months Buy and Hold Abnormal Returns from Prowess. Deals for which we do not have stock price



data 250 days before the deal announcement date and 5 days daily price data after the deal announcement date are dropped from the sample. We also drop deals for which stock price data is not available for 24 months after the month of deal announcement.

We next compute data on several sets of firm characteristics for a cross-sectional analysis of firm performance. We use the lagged variables of firm financials including log of total assets, Tobins Q, cash ratio, leverage, promoter holding, the Herfindahl-Hirschman index (HHI). All deals for which firm financials are not available on Prowess are dropped. Our final data set comprises 1,115 deals from January 2001 to December 2016.

Table 1 shows the distribution of domestic and cross-border acquisitions by year in our sample. As shown in the table, there are a total of 676 Domestic and 439 Crossborder acquisitions over our data period from 2001 to 2016. The pattern of transactions by year is also interesting. The number of M&A transactions increased from 14 transactions in 2001 to 109 transactions in 2008. The growth of acquisitions during this period that represents the years following liberalization, is consistent with Gubbi et al. (2010), who argue that firms from emerging markets are compelled to undertake cross-border acquisitions in order to survive the process of liberalization. Deals fell in 2009 and plateaued thereafter over the period from 2009 to 2016. The drop in deals is particularly sharp from 47 deals in 2008 to 25 deals in 2009 for Crossborder deals. The number of deals somewhat recovered in 2010, but then fell over the subsequent years. The trend reflects the crisis in global financial markets in 2008-2009, and the drop in M&A activity in 2009 through 2016 shows that the global financial market crisis had a permanent impact on M&A activity.

Table 2 shows the industry wise distribution of the acquiring firm for all the acquisitions. The industry classification is based on the Prowess Industry Group codes obtained from the CMIE Prowess database. The table also shows whether transactions were within the same industry (Focused) or across industries (Diversified), using the target and acquirer Industry Groups as reported by SDC Platinum. As shown in the table, the industries that account for the largest number of transactions are, Computer Software, Drugs & Pharmaceuticals, and Trading. The table also shows that we do more focused transactions as compared to diversifying transactions. Of the 676 domestic transactions, 375 are focused transactions and of the 439 Crossborder transactions, 240 are focused transactions. The remaining cases represent acquisitions with targets in different industries.

Table 3 shows firm characteristics of acquiring firms. As shown in the table, the median Indian acquirer making a Crossborder acquisition is larger, has more cash, is less levered, is in more competitive industries, has lower promoter holdings and is likely to be member of a business group [\*\*\* p-values for difference – replaced table3 to include p values]. The impact of industry-competitiveness measured using the lagged normalized HHI, as in Cremers, Nair and Peyer (2008) and Chidambaram, Krishnakumar, and Sethi (2018), is particularly interesting and suggests the competitiveness of the domestic industry has played a role in the M&A activity of Indian firms.

### **3.2 Empirical Methodology**

In this section, we describe the methodology we use to test for the magnitude and significance of the short-term and long-term performance of Indian acquirers.

### 3.2.1 Cumulative Abnormal Returns

Our measure of the short-term valuation impact of M&A activity is the 3-day and 11-day cumulative abnormal return. The event study method we implement is as described in Mackinlay (1997). The first step is to determine the sensitivity of a firm's stock price to the market using a market model.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad [1]$$

where,

$R_{it}$  is the expected return on the firm

$R_{mt}$  is the return on the market portfolio

$\alpha_i$  is the intercept term

$\beta_i$  is the sensitivity of the return on the firm to market returns

$\varepsilon_{it}$  is the zero mean disturbance term

We use an estimation window of -265 to -50 days before acquisition announcement date and event windows of 3 (-1 to +1) days window and 11 (-5 to + 5) days for computing abnormal returns.

### 3.2.2 Buy And Hold Returns

Our proxy for the long-term valuation impact of M&A transactions is the 24-month buy and hold returns representing stock performance in the 24 months following the month of the M&A announcement.

Long term abnormal returns are computed by calculating the difference between returns obtained by an investor in the acquiring firm vis-à-vis investing in a reference portfolio, with the reference portfolio used usually being the market index. Several methodological issues have been raised with respect to the process of determining long term abnormal return. (see e.g. Mitchell and Stafford, 2000; Lyon et al., 1999). Lyon et al., (1999) list three biases associated with commonly used methods that compare sample firm performance with an Index; these are the bias caused by inclusion of new firms in the index, rebalancing of the index and positive skewness in the long-run abnormal returns. Lyon et al., (1999) suggest two approaches for dealing with these biases, which we implement.

We construct the reference portfolio following Loughran and Ritter, (2000) and Lyon et al., 1999). We exclude all firms that have done a deal in the year of the event and in the previous year. We then calculate the market value of equity using market price data at the end of the financial year, i.e. on 31<sup>st</sup> March of each year. Firms are then divided into size deciles based on a ranking according to their market value of equity. Further each of the deciles is divided into quintiles on the basis of the firms' lagged book to market ratio. Each acquiring firm is then matched with the appropriate decile/quintile reference portfolio for computing the abnormal returns.

Compounded returns for the period of study (24 months) for all the firms in the reference portfolio are computed and then averaged across securities.

The reference portfolio returns are computed as follows:

$$R_{pT} = \sum_{j=1}^{ns} \left[ \frac{\prod_{t=s}^{s+T} (1+R_{jt})}{n_s} \right] - 1 \quad [2]$$

where,

$R_{jt}$  – returns on firm j

ns - number of securities traded in the month s

T – Investment horizon in months.

The BHAR for an acquiring firm is then computed as per the following equation,

$$BHAR_{it} = \prod_{t=s}^{s+T} (1 + R_{it}) - 1 - R_{pT} \quad [3]$$

$R_{it}$  – month t return for firm I,

$R_{pT}$  – reference portfolio re-turn as calculated in Equation (5)

T – The horizon in months over which returns are calculated.

We test for statistical significance using two approaches. The first uses the standard *p*-values following a normal distribution. In the second approach a skewness adjusted t statistic is computed using the following equation suggested by Lyon et al., (1999).

$$t = \sqrt{n} \left[ S + \frac{1}{3} \gamma S^2 + \frac{1}{6n} \gamma \right] \quad [4]$$

where,

$$S = \frac{\overline{BHAR}}{\sigma(BHAR)} \quad \text{And } \gamma = \frac{\sum_{i=1}^n (BHAR_i - \overline{BHAR})^3}{n\sigma(BHAR)^3}$$

The null hypothesis is that is no significant long term gains to shareholders of acquiring firms and the *t*-test and skewness adjusted *t*-statistic test whether the null hypothesis holds.

We also examine the long-term operating performance of the acquirers to test for synergy effects. Following Barber and Lyon (1996), we compute the industry-adjusted operating performance for determining the abnormal operating performance. Our metric for operating performance is Return-on-Assets (ROA), which is computed as Profit Before Depreciation Interest and Tax divided by the Average Total Assets for the year ((Beginning Assets + Ending Assets)/2). The benchmark performance, i.e. the expected ROA is determined by the change in the ROA for portfolio of matched firms. A match firm equivalent to a sample firm is determined as follows. Each match firm is in the same industry as a sample firm and has a ROA that is in a range of 90% to 110% of the ROA for the acquiring firm in the year the deal is announced. The expected level of ROA for the acquiring firms is defined as the Actual ROA in the deal year plus the change in performance for the matched set of firms in the industry two years after the deal announcement. The difference between actual ROA for the acquiring firm minus expected ROA is the abnormal return. We test for the significance of abnormal returns using a *t*-test and the non- parametric Wilcoxon signed rank test as suggested by Barber and Lyon (1996). Data for calculating the buy and hold returns and determining the operating performance is from CMIE Prowess database.

## 4. Empirical Results

The results for both tests do not show any significant improvement in performance, except in the case of second year after the deal.

### 4.1 Short term Market Reaction to M&A

Table 4 presents data on the 3-Day CAR and 11-Day CAR, for the sample of acquisitions by Indian firms. Panel A shows data for the full sample, Panel B shows the data for Domestic deals and Panel C shows data for the sample of crossborder deals. As shown in Panel A, the market reaction is positive and statistically significant at the 1% level for both the 3-day and 11-day CAR. Indian acquirers clearly benefit from the M&A transactions. Panel B and Panel C show that the 3-Day CAR and 11-Day CAR are also positive and significant for the sub-samples of domestic and crossborder deals.

### 4.2 Cross Sectional Analysis of CAR

Table 5 presents the results on the cross-sectional analysis of the 3-day CAR. Model 1 shows the results only comparing CARs for Domestic and Crossborder mergers. The coefficient on the dummy variable XBORDER is positive and significant, suggesting that the markets have responded more positively to crossborder deals.

Our results that cross border deals earn higher abnormal returns is consistent with literature showing that cross-border acquirers have significant positive returns. Studies focusing on within-country domestic acquisitions in mature economies find that acquirers do not earn significant positive abnormal returns while target shareholders enjoy positive abnormal returns (Andrade, Mitchell, and Stafford, 2001; Jarrell, Brickley, and Netter, 1988; Jensen and Ruback, 1983). In contrast, studies focusing on cross-border acquisitions, (Aybar and Ficici, 2009; Chari, Ouimet, and Tesar, 2010; Gubbi et al., 2010; Uddin and Boateng, 2009; Rao-Nicholson and Ayton, 2016) find that firms from developed markets earn significant positive abnormal returns. Our results are also consistent with literature showing that cross-border acquirers have significant positive returns (Bhagat, Malhotra and Zhu, 2011; Gubbi et al., 2010; Rani, Yadav and Jain, 2015). This perhaps represents the effect of liberalization when Indian firms were able to take advantage of synergetic possibilities in foreign markets for the first time. It is also plausible that the media attention on what may be perceived as high profile transaction leads to a euphoric reaction in Indian markets. Rao-Nicholson and Ayton (2016) argue that Indian firms establish legitimacy by engaging in cross-border acquisitions and attribute the positive abnormal returns to euphoria associated with establishing legitimacy.

Model 2 adds several firm characteristics as controls. The impact of XBORDER remains positive and statistically significant. The coefficient on LEVRATIO is also positive and significant establishing that high leveraged firms benefit from acquisitions. [\*\*\* Explain \*\*\*]

Model 3 adds governance variables as control variables. Firm governance as captured by membership in business groups and promoter holdings are also not significant in determining the value effects of an acquisition. We do find that LASSETS has a negative and marginally significant coefficient in Model 3 suggesting that acquisitions by smaller firms are value increasing.

Model 4 adds the variable FOCUSED and RELVAL. We find that whether a deal is diversifying or focused is not relevant for the market's reaction nor is the relative deal value of the acquisition.

The coefficient on other control variables are not significant suggesting that firm characteristics such as size domestic competition and liquidity are not important factors in determining the value impact of an acquisitions.

In summary, we find that small firms, high leveraged firms and firms that do crossborder deals benefit more from M&A activity.

### **4.3 Long term Market Reaction to M&A**

Table 6 presents the results of the 24-month and 36-month BHAR analysis of the deals. The BHAR for Indian acquirers is positive but is not statistically significant for Indian acquirers. In conjunction with the results on CAR, the results imply that Indian markets absorb the news and its value impact at announcement of the acquisition. And they do so accurately. There is no follow-on post announcement drift or correction for Indian acquirers.

Our results suggest that equity markets in India are able to understand the value impact of complicated corporate transactions and that prices quickly adjust to reflect the value content of the news. In spite of limited experience, limited by regulations in place that made corporate control transactions very rare, stock markets are able to fully incorporate the value of acquisitions made by Indian firms.

### **4.4 Cross Section Analysis of BHAR**

We next turn to a cross-section analysis of long term 24-month BHAR. While the overall sample BHAR is not significant, there may be cross-sectional variation. Table 7 reports results for four models. Model 1 compares the BHARs of Domestic and Crossborder transactions. The coefficient on XBORDER is insignificant, suggesting that domestic and crossborder transactions do not differ in their long-term value impact. These results also imply that the higher CAR we find for Crossborder transactions is not an anomaly as there is no reversal of value impact in the long-term.

Model 2 adds firm characteristics to the regression and Model 4 adds governance variables and relative deal value to the regression. We find that the coefficient on LASSETS is negative and significant, suggesting that smaller firms have more gains from acquisitions. We find that firms that have a larger PROMOTER\_HLDG<sup>3</sup> have higher BHARs. Firms that are better governed, as proxied by higher promoter holdings, are better able to realize synergy gains from M&A activities.

We note that the results in Table 5 show that promoter holdings and firm size are not significant in explaining the cross-sectional variation in CARs. This suggests that the short-term market reaction does not capture the gains that accrue to smaller firms and firms with larger promoter shareholding. One plausible explanation is that smaller firms and firms with a larger promoter shareholding have lower level of trades and it takes a longer-period for valuation effects to be reflected in stock prices.

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<sup>3</sup> PROMOTER\_HLDG is the percentage of shares held by the promoter of the firm. The promoter is usually the founder and often serves on the board of the firm .

#### **4.5 Operating performance**

We next examine the operating performance of Indian acquirers. Table 8 presents the operating performance of Indian acquirers for the two and three year periods (denoted by Abnormal ROA2 for years and Abnormal ROA3 for 3 years) following the acquisition. We find that the operating performance is not significantly abnormal over either the 24 month or 36 month time periods. In conjunction with the positive short-term market reactions and insignificant BHARs, we interpret these results as implying that acquisitions help Indian firms maintain operating performance.

Our results have important public policy implications. Acquisitions are essential for Indian firms to maintain their productivity. In the absence of acquisitions, firms will have reduced opportunities and face value losses. Regulators should, therefore, reduce barriers to mergers and acquisitions and support domestic firms in such transactions.

Table 9 reports the results for the cross-sectional analysis of the BHARs. The table presents four models. Model 1 compares BHAR for domestic and crossborder deals alone. Model 2 adds firm characteristics to the regression, Model 3 adds governance characteristics and Model 4 includes relative deal value.

We do not find any variable to be significant in explaining the cross-sectional variation in ROA. We conclude that there are no systematic factors that explain the variation in ROA. These results are consistent with our argument that acquisition activity by Indian firms serves to preserve operating performance.

#### **5. Effects of the Financial Crisis**

We extend our analysis by examining the short-term and long-term market reaction for sub-periods of our data sample. We divide our observations into three periods: a PRECRISIS period from 2000 to 2007, a CRISIS period 2008-2009, and a POSTCRISIS period from 2010 to 2016. We calculate each of the performance metrics by subsample. We also rerun our multivariate regressions with an additional PRECRISIS dummy.

Table 10 presents the results of CARs for each time period. Panel A of Table 10 provides the results of the deals in the PRECRISIS period. We find that 3-day and 11-day CARs are significant and positive for the PRECRISIS period for all deals. We also find that the value gain is more for cross border deals than the domestic deals. Panel B of the table provides the results for the CRISIS period. We find that the CARs are insignificant during this period for both domestic and crossborder acquisitions. Panel C of the table shows the CARs for the post crisis period. As the panel shows, both the 3-Day and 11-Day CARs are positive and significant in the post crisis period for the full sample and for the crossborder acquisitions. The 11-day CAR is significant for domestic acquisitions.

Table 11 presents the BHARs for Indian acquirers making by sub-period. While BHAR is insignificant for the PRECRISIS period (Panel A) and for the POSTCRISIS period (Panel C), we find that BHAR is negative and significant for deals during the CRISIS period for all deals and, specifically for domestic deals. Cross border BHARs are not significant for the full sample period and for the crisis period. This shows that the financial crisis had an impact on the long term performance of domestic M&A deals.

Table 12 provides the long term operating performance using 24-month and 36-month ROA for the three time periods. Our results somewhat mirror the result on the long-term BHARs. The abnormal operating performance is not significant in all periods

and for both domestic and crossborder deals. But the Abnormal ROAs for 24 month and 36 months are higher, and positive for most cases (except for 24-month Abnormal ROA), compared to the abnormal ROA in the crisis period when they are negative.

Table 13 presents the results of our cross-sectional regression analysis presented in Tables 5, 7 and 9, but now with an additional PRECRISIS dummy. We find that the PRECRISIS dummy is positive and significant for the short-term CARs. This result and our univariate comparisons suggests that the market for acquisitions by Indian firms has matured after the initial years of liberalization. Our other results largely remain the same. The XBORDER variable is positive and significant for CAR3 but not for BHAR24 and ROA24. For BHAR24, the coefficient on LASSETS is negative and significant and the coefficient on PHLDG is positive and significant. Additionally GROUP shows marginal significance at the 10% level. For BHAR24. For ROA24, the coefficient on LASSETS is marginally significant. None of the other variables are significant in determining CAR2, BHAR24 or ROA24.

Our results suggests that there are sub-samples of firms and/or time periods for which there is a discrepancy between the short-term and long-term market reactions. On the whole these confirm our overall results that Indian markets are able to gauge the value impact of M&A transactions.

## **6. Summary and Conclusions**

Indian firms have been active in the M&A market over our sample period from 2001 to 2016, making both domestic and cross-border acquisitions. Evaluating the value impact of acquisitions is inherently difficult as it involves both the level of synergistic and how these benefits are shared between the target and acquirer shareholders. In addition, in newly liberalized emerging markets such as India, market reactions can have a euphoric reaction to the relaxation of regulations. In this paper, we examine whether Indian markets were able to accurately gauge the value impact of acquisitions. We triangulate results for three metrics that measure the short-term and long-term performance to gauge the efficiency of Indian markets.

We find that acquisitions by Indian firms result in a positive cumulative abnormal return on the day of the announcement, for both domestic and cross-border deals. These results are consistent with either Indian acquirers being able to retain some of the upside generated by the transaction or an euphoric reaction to capital market activity in an emerging markets. To resolve this issue, we examine the long-term buy and hold returns following the announcement. We find that the 24-month and 36-month returns are not significant suggesting there is no reversal of short-term value gains. In contrast to transactions in developed capital markets, Indian acquirers are able to retain some of the synergy values. It is plausible that capital constraints faced by small firms in emerging markets such as in India reduce their bargaining power in the acquisition market.

We also check the returns to long-term operating performance for acquirers and find that there are largely no abnormal stock market and operating performance for the acquiring firms post acquisition. The absence of a post announcement drift has two implications. One, the short-term market reactions are accurate and Indian markets could correctly capture the value impact of acquisitions. Second, these results suggest that acquisitions are a way for Indian firms to keep up with their competitors. Indian firms were able to essentially match the performance of their peer firms by making strategic acquisitions.

Overall, our results indicate that Indian capital markets accurately value acquisitions by Indian firms and that acquisitions are an important way in which Indian firms are able to maintain their edge. Our results imply that emerging markets should continue the process of liberalization and relax regulations limiting corporate control transactions to help domestic firms to better perform in international capital markets.



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**Table 1: M&A Deals by Year**

This table shows the number of deal in the study by the year of M&A deal announcement. The table also shows the number of Domestic deals, where the acquiring firm and the target firm are both Indian, and Cross Border deals, where the acquiring firm is Indian, and the target firm is not an Indian firm.

<i>Deal Announcement Year</i>	<i>Domestic</i>	<i>Cross Border</i>	<i>Total</i>
2001	11	3	14
2002	19	4	23
2003	15	17	32
2004	22	17	39
2005	56	32	88
2006	53	37	90
2007	50	49	99
2008	62	47	109
2009	61	25	86
2010	60	52	112
2011	47	32	79
2012	56	23	79
2013	45	27	72
2014	40	20	60
2015	46	29	75
2016	33	25	58
Total	676	439	1115

**Table 2: M&A Deals by Industry**

This table lists the number of Domestic and Cross Border Deals by Prowess Industry Groups. Focused deals are deals where the industry as per SDC classification for the Acquirer and the Target is the same

<i>Industry Group</i>	<i>Domestic Deals</i>		<i>Cross Border Deals</i>		<i>Total</i>
	<i>Diversified</i>	<i>Focused</i>	<i>Diversified</i>	<i>Focused</i>	
Computer software	16	27	34	47	124
Drugs & pharmaceuticals	7	33	13	41	94
Trading	16	17	8	9	50
Other automobile ancillaries	8	8	16	13	45
Diversified	19	8	6	3	36
Steel	6	8	10	7	31
Other chemical products	8	11	4	6	29
Other construction & Allied Activities	12	14	1	0	27
Business services & consultancy	8	9	5	0	22
Other ferrous metal products	6	5	7	4	22
Other textiles	5	9	1	6	21
Sugar	6	14	1	0	21
Cosmetics, toiletries	3	8	6	3	20
Infrastructural construction	8	7	4	1	20
Telecommunication services	6	3	6	5	20
Others	167	194	77	95	533
Total	301	375	199	240	1115



**Table 3: Firm Characteristics of Acquirers**

This table shows the characteristics of Indian firms that have made any deal. Panel A provides characteristics with respect to all deals (1115 deals), Panel B provides characteristics of Domestic deals (676 deals) and a Crossborder Deals (439 deals)

**Panel A**

**All Deals (1115 deals)**

<i>VARIABLE</i>	<i>Mean</i>	<i>Median</i>	<i>Std Dev</i>	<i>Min</i>	<i>Max</i>
LASSETS	9.357	9.276	1.983	3.804	15.448
CASHRATIO	0.082	0.045	0.093	0.000	0.795
LEVRATIO	0.287	0.293	0.176	0.000	0.814
HHI	0.114	0.075	0.121	0.012	0.990
AGE	32.103	24.000	22.054	3.000	143.000
INDADJQ	0.119	-0.048	1.620	-11.405	23.034
PHLDG	50.186	50.880	16.796	-	89.970

**Panel B**

**Domestic Deal (676 Deals)**

**Crossborder Deals (439 Deals)**

<i>VARIABLE</i>	<i>Mean</i>	<i>Median</i>	<i>Std Dev</i>	<i>Mean</i>	<i>Median</i>	<i>Std Dev</i>	<i>p value@</i>
LASSETS	9.166	9.095	2.003	9.651	9.437	1.918	0.000***
CASHRATIO	0.073	0.040	0.085	0.096	0.060	0.103	0.000***
LEVRATIO	0.299	0.305	0.178	0.267	0.260	0.172	0.003***
HHI	0.115	0.073	0.119	0.112	0.076	0.123	0.6035
AGE	32.262	24.000	22.555	31.859	24.000	21.283	0.7657
INDADJQ	-0.025	-0.128	1.506	0.340	0.036	1.760	0.000***
PHLDG	51.575	52.480	16.599	48.046	46.980	16.891	0.000***

Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% level respectively.

@ p value for difference in means between Crossborder and Domestic Deals

**Table 4: Short-term Market reaction to M&A Activity**

This table shows the magnitude and significance of short term market impact measured by Cumulative Abnormal Returns(CARs) of M&A activity for Indian deal announcements in our full sample over the period from 2001-2016. Panel A (1115 deals), Domestic acquisitions (676 deals) in Panel B or a Crossborder Acquisition (439 deals in Panel C Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels respectively.

**Panel A All Deals**

**T-test results All Deals 3 day and 11 day CARS: H1: mean = 0**

	#Obs	Mean	StdErr	t-val	p-val
3-Day CAR	1115	0.01***	0.002	5.800	0.000
11-Day CAR	1115	0.013***	0.003	4.650	0.000
<b>Panel B Domestic Deals</b>					
<b>T-test results Domestic Deals: H1: mean = 0</b>					
	#Obs	Mean	StdErr	t-val	p-val
3-Day CAR	676	0.007***	0.003	3.150	0.002
11-Day CAR	676	0.012***	0.004	3.100	0.002
<b>Panel C Crossborder Deals</b>					
<b>T-test results cross border Deals: H1: mean = 0</b>					
	#Obs	Mean	StdErr	t-val	p-val
3-Day CAR	439	0.014***	0.003	5.650	0.000
11-Day CAR	439	0.015***	0.004	3.750	0.000

**Table 5: Determinants of Short-term Market Reaction**

This table shows the results of linear regression models for the 3-day CARs, i.e. the short-term market reaction. Model 1 shows the results only controlling for whether the deal is Domestic or Crossborder. Model 2 adds firm characteristics as control variables. Model 3 adds governance variables Group (1/0), percentage holding of promoters and percentage of independent directors. Model 4 adds deal characteristics on whether the deal is focused or diversified (1/0) and the relative deal value measured by deal value divided by Market Cap of the acquiring firm in USD values. NUM\_OBSERVATIONS reports the sample size for each regression. Standard errors are shown in parentheses. Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% level respectively.

<i>VARIABLES</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
XBORDER	0.007*	0.008**	0.009**	0.010***
	(0.004)	(0.004)	(0.004)	(0.004)
LASSETS		-0.001	-0.002*	-0.001
		(0.001)	(0.001)	(0.001)
CASHRATIO		0.009	0.012	0.007
		(0.020)	(0.020)	(0.021)
LEVRATIO		0.023**	0.024**	0.020*
		(0.011)	(0.011)	(0.011)
HHI		0.001	0.000	-0.003
		(0.015)	(0.015)	(0.015)
AGE		0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)
INDADJQ		-0.001	0.000	0.000
		(0.001)	(0.001)	(0.001)
GROUP			-0.003	-0.002
			(0.004)	(0.004)
PHLDG			0.000	0.000
			(0.000)	(0.000)
PCTINDP			0.018	0.015
			(0.017)	(0.017)
FOCUSED				0.004
				(0.004)
RELVAL				0.003
				(0.002)
Constant	0.007***	0.015*	0.008	0.001
	(0.002)	(0.009)	(0.014)	(0.014)
Observations	1,115	1115	1053	972
R-squared	0.003	0.011	0.017	0.02

**Table 6: Long-term Market reaction to M&A Activity**

This table displays the results of long term Buy and Hold Results for acquiring firms in comparison to a portfolio of matched firms for a period of 24 month and 36 months after the announcement month. Bootstrapped t values have been used in the analysis. Panel A displays the results for the full sample. Panel B displays the results for Domestic deals and Panel C for Cross Border deals. Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% level respectively.

<b>Panel A All Deals</b>					
<b>Bootstrapped T-test results All Deals 24 Month and 36 Month BHARs</b>					
	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	1115	0.638	0.994	0.640	0.521
36 Month BHAR	1115	1.010	0.912	1.110	0.268
<b>Panel B Domestic Deals</b>					
<b>Bootstrapped T-test results All Deals 24 Month and 36 Month BHARs</b>					
	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	676	0.530	1.035	0.510	0.608
36 Month BHAR	676	1.078	0.896	1.200	0.229
<b>Panel C Crossborder Deals</b>					
<b>Bootstrapped T-test results All Deals 24 Month and 36 Month BHARs</b>					
	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	439	0.355	0.993	0.360	0.720
36 Month BHAR	439	0.149	1.079	0.140	0.890

**Table 7: Determinants of Long-term Market Reaction**

This table shows the results of linear regression models for the 24-month BHAR, i.e. the long-term market reaction. Model 1 shows the results only controlling for whether the deal is Domestic or Cross border. Model 2 adds firm characteristics as control variables. Model 3 adds governance variables as control variables. Model 4 adds deal characteristics. NUM\_OBSERVATIONS reports the sample size for each regression. Standard errors are shown in parentheses. Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels respectively.

<i>VARIABLES</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
XBORDER	-0.008	0.032	0.144*	0.118
	(0.098)	(0.100)	(0.085)	(0.088)
LOG_ASSETS		-0.064**	-0.059**	-0.064**
		(0.026)	(0.024)	(0.025)
CASHRATIO		-0.293	0.024	0.148
		(0.550)	(0.465)	(0.484)
LEVRATIO		0.049	0.006	-0.058
		(0.292)	(0.245)	(0.256)
HHI		-0.241	-0.094	-0.177
		(0.412)	(0.351)	(0.357)
AGE		-0.001	-0.001	-0.002
		(0.002)	(0.002)	(0.002)
INDADJQ		-0.004	-0.012	-0.009
		(0.030)	(0.026)	(0.030)
GROUP			0.153	0.149
			(0.093)	(0.097)
PROMOTER_HLDG			0.008***	0.007***
			(0.002)	(0.003)
PCT_IND_DIRS			-0.601	-0.608
			(0.395)	(0.406)
FOCUSED				-0.080
				(0.085)
REL DEAL VAL				-0.039
				(0.051)
Constant	0.034	0.692***	0.329	0.532
	(0.061)	(0.238)	(0.319)	(0.332)
Observations	1,115	1115	1053	972
R-squared	0	0.009	0.021	0.022

**Table 8: Long-Term Operating Performance**

This table shows the magnitude and significance of the long-term operating performance of Indian firms making an acquisition in the period from 2001-2016. Panel A presents the data for the full sample, Panel B presents the data for firms making Domestic deals and Panel C presents the data for firms making Cross Border deals.

**Panel A Full Sample**

<b>T-test results All Deals ROA Results: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA2	896	0.140	0.404	0.350	0.729
Abnormal ROA3	845	1.275	0.990	1.300	0.198

**Panel B: Domestic Deals**

<b>T-test results ROA Domestic Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA2	534	-0.248	0.195	-1.250	0.203
Abnormal ROA3	503	-0.087	0.146	-0.600	0.550

**Panel C: Cross Border Deals**

<b>T-test results ROA Cross Border Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA2	362	0.713	0.957	0.750	0.457
Abnormal ROA3	342	3.279	2.434	1.350	0.179

**Table 9: Determinants of Long-term Operating Performance**

This table shows the results of linear regression models for the long term operating performance measured by abnormal return on assets as compared with a portfolio of firms matched by one year industry and performance before the deal year. Model 1 shows the results only controlling for whether the deal is Domestic or Cross border. Model 2 adds firm characteristics as control variables. Model 3 adds governance variables as control variables. Model 4 adds deal characteristics. NUM\_OBSERVATIONS reports the sample size for each regression. Standard errors are shown in parentheses. Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels respectively.

<i>VARIABLES</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
XBORDER	0.960	0.820	-0.106	0.022
	(0.822)	(0.846)	(0.296)	(0.285)
LASSETS		0.169	0.125	0.100
		(0.227)	(0.085)	(0.082)
CASHRATIO		2.643	-0.992	0.524
		(4.723)	(1.625)	(1.572)
LEVRATIO		-1.499	-0.606	-0.644
		(2.481)	(0.851)	(0.825)
HHI		-0.866	0.262	0.156
		(4.742)	(1.646)	(1.567)
AGE		-0.022	-0.005	-0.002
		(0.019)	(0.007)	(0.007)
INDADJQ		-0.134	0.069	0.045
		(0.265)	(0.093)	(0.102)
GROUP			-0.268	-0.141
			(0.321)	(0.307)
PHLDG			-0.005	-0.002
			(0.009)	(0.008)
PCTINDP			-1.767	-1.003
			(1.371)	(1.310)
FOCUSED				0.023
				(0.275)
RELVAL				0.049
				(0.147)
Constant	-0.248	-0.774	0.328	-0.245
	(0.523)	(2.079)	(1.137)	(1.104)
Observations	896	896	844	773
R-squared	0.002	0.004	0.007	0.005

**Table 10: Short-term Market reaction to M&A Activity by sub periods**

This table shows market impact of M&A activity for Indian firms in our sample broken up by sub periods. Panel A provides the CAR results for the period 2001 to 2008. Panel B provides the CAR results during the years 2008 and 2009. Panel C provides CAR results after 2010. Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels.

<b>Panel A</b>					
<b>T-test results Deals before 2008 - 3 day and 11 day CARS: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	385	0.018***	0.003	5.800	0.000
11-Day CAR	385	0.021***	0.005	4.300	0.000
<b>T-test results cross border Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	159	0.025***	0.004	5.550	0.000
11-Day CAR	159	0.028***	0.006	4.300	0.000
<b>T-test results Domestic Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	226	0.013***	0.004	3.050	0.003
11-Day CAR	226	0.016**	0.007	2.300	0.022
<b>Panel B</b>					
<b>T-test results Deals during 2008 and 2009 - 3 day and 11 day CARS: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	195	0.002	0.004	0.400	0.672
11-Day CAR	195	-0.001	0.007	-0.150	0.877
<b>T-test results cross border Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	72	-0.001	0.006	-0.050	0.952
11-Day CAR	72	-0.014	0.010	-1.350	0.187
<b>T-test results Domestic Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	123	0.003	0.005	0.550	0.580
11-Day CAR	123	0.006	0.009	0.700	0.499
<b>Panel C</b>					
<b>T-test results Deals from 2010 to 2016 - 3 day and 11 day CARS: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	535	0.007***	0.003	3.150	0.002
11-Day CAR	535	0.013***	0.004	3.200	0.002
<b>T-test results cross border Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	208	0.011***	0.003	3.350	0.001
11-Day CAR	208	0.015**	0.005	2.550	0.011
<b>T-test results Domestic Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
3-Day CAR	327	0.005	0.004	1.600	0.108
11-Day CAR	327	0.011**	0.005	2.100	0.037



**Table 11: Long term Market reaction to M&A Activity by sub period**

This table shows the long term Buy and Hold Results for acquiring firms for a period of 24 month and 36 months after the announcement month.

<b>Panel A</b>					
<b>Bootstrapped T-test results Deals before 2008; 24 Month and 36 Month BHARs</b>					
All Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	385	0.994	0.940	1.060	0.290
36 Month BHAR	385	1.050	0.886	1.190	0.236
Domestic Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	226	1.238	0.886	1.400	0.162
36 Month BHAR	226	1.530	0.760	2.010	0.044
Cross Border Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	159	-0.239	0.989	-0.240	0.809
36 Month BHAR	159	-0.992	1.082	-0.920	0.359
<b>Panel B</b>					
<b>Bootstrapped T-test results Deals during 2008 and 2009; 24 Month and 36 Month BHARs</b>					
All Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	195	-3.061***	1.121	-2.730	0.006
36 Month BHAR	195	-2.444***	1.201	-2.040	0.042
Domestic Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	123	-2.939***	1.206	-2.440	0.015
36 Month BHAR	123	-2.630***	1.313	-2.000	0.045
<b>T-test results cross border Deals: H1: mean = 0</b>					
Cross Border Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	72	-1.088	1.041	-1.040	0.296
36 Month BHAR	72	-0.488	1.122	-0.440	0.663
<b>Panel C</b>					
<b>Bootstrapped T-test results Deals from 2010 to 2016 ; 24 Month and 36 Month BHARs</b>					
All Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	535	0.930	0.944	0.990	0.324
36 Month BHAR	535	0.948	0.918	1.030	0.302
Domestic Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	327	0.324	0.990	0.330	0.744
36 Month BHAR	327	0.302	1.061	0.280	0.776
Cross Border Deals	obs	Mean	Std.Err.	t_value	p_value
24 Month BHAR	208	0.919	0.926	0.990	0.321
36 Month BHAR	208	1.070	0.945	1.130	0.257

**Table 12: Long term Operating Performance after deal announcement by sub period**

This table shows the long term operating performance for acquiring firms for a period of 24 month and 36 months after the announcement month.

<b>Panel A</b>					
<b>T-test results All Deals ROA Results Deals before 2008: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	303	1.030	1.128	0.900	0.362
Abnormal ROA35	298	1.897	2.023	0.950	0.349
<b>T-test results ROA Domestic Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	170	-0.178	0.186	-0.950	0.339
Abnormal ROA36	167	-0.199	0.265	-0.750	0.455
<b>T-test results ROA Cross Border Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	133	2.575	2.558	1.000	0.316
Abnormal ROA36	131	4.567	4.589	1.000	0.322
<b>Panel B</b>					
<b>T-test results All Deals ROA Results Deals in 2008 and 2009 : H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	163	-0.623	0.595	-1.050	0.297
Abnormal ROA36	159	-0.229	0.333	-0.700	0.493
<b>T-test results ROA Domestic Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	102	-1.124	0.937	-1.200	0.233
Abnormal ROA36	98	-0.547	0.513	-1.050	0.288
<b>T-test results ROA Cross Border Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	61	0.217	0.254	0.850	0.396
Abnormal ROA36	61	0.282	0.265	1.050	0.290
<b>Panel C</b>					
<b>T-test results All Deals ROA Results Deals after 2009 : H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	430	-0.198	0.155	-1.300	0.203
Abnormal ROA36	388	1.414	1.490	0.950	0.344
<b>T-test results ROA Domestic Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	262	0.048	0.100	0.500	0.630
Abnormal ROA36	238	0.179	0.128	1.400	0.161
<b>T-test results ROA Cross Border Deals: H1: mean = 0</b>					
	obs	Mean	St_Err	t_value	p_value
Abnormal ROA24	168	-0.582	0.364	-1.600	0.113
Abnormal ROA36	150	3.371	3.852	0.900	0.383

**Table 13: Determinants of Returns – Effect of Financial Crisis**

This table shows the impact of the financial crisis on the returns to acquiring firms. Model 1 uses the 3-day CAR as the dependent variable and deal and firm level control and governance characteristics as independent variables. A pre-crisis dummy variable is added as an independent variable and defined as 1/0 to indicate whether the deal was announced prior to 2008 or later. Model 2 uses 24 month BHAR as the dependent variable and Model 3 uses 24 month ROA as the dependent variable. Standard errors are shown in parentheses. Superscripts \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% level respectively.

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
VARIABLES	CAR3	BHAR24	ROA24
XBORDER	0.010***	0.124	-0.011
	(0.004)	(0.089)	(0.286)
PRE_CRISIS	0.011***	-0.096	0.473
	(0.004)	(0.098)	(0.319)
LASSETS	0.000	-0.073***	0.143*
	(0.001)	(0.027)	(0.087)
CASHRATIO	0.009	0.134	0.528
	(0.021)	(0.485)	(1.570)
LEVRATIO	0.017	-0.038	-0.774
	(0.011)	(0.257)	(0.830)
HHI	-0.005	-0.161	0.021
	(0.015)	(0.357)	(1.568)
AGE	0.000	-0.002	-0.002
	(0.000)	(0.002)	(0.007)
INDADJQ	-0.001	-0.004	0.019
	(0.001)	(0.030)	(0.104)
GROUP	-0.004	0.166*	-0.238
	(0.004)	(0.098)	(0.314)
PHLDG	0.000	0.007***	-0.002
	(0.000)	(0.003)	(0.008)
PCTINDP	0.012	-0.583	-1.112
	(0.017)	(0.407)	(1.311)
FOCUSED	0.004	-0.079	0.019
	(0.004)	(0.085)	(0.275)
RELVAL	0.004	-0.041	0.057
	(0.002)	(0.051)	(0.147)
Constant	-0.009	0.619*	-0.639
	(0.015)	(0.344)	(1.135)
Observations	972	972	773
R-squared	0.027	0.023	0.008

## Appendix 1 Variable Definitions

LASSETS	Lagged ratio of log of assets for the acquiring firm prior to deal announcement
CASHRATIO	Lagged ratio of cash and short term investments to total assets for the acquiring firm prior to deal announcement
LEVRATIO	Lagged ratio of Borrowings to total assets for the acquiring firm prior to deal announcement
HHI	Normalized HHI $H = \sum_{i=0}^n S_i^2$ <p>Where <math>S_i</math> the market share of the firm <math>i</math> in the market and <math>N</math> is the number of firms in the industry</p> $\text{Normalized HHI} = \frac{N*(H-1)}{N-1}$
AGE	Number of years since incorporation acquiring for firm until year of deal announcement
ROA	Lagged ratio of Profit Before Interest Tax and Depreciation to Total Assets prior to deal announcement
GROUP	1/0 to indicate if the firm belongs to an ownership group as defined in CMIE Prowess
PHLDG	Lagged percentage holding of promoters
PCTINDP	Lagged Percentage of Independent Directors in the total board
FOCUSED	1/0 to indicate if the acquirer and target firm belong to the same industry as defined by SDC
RELVAL	Ratio of Deal value in Rupees to Market Cap of Acquiring Firms in the year of announcement
INDADJQ	Industry Adjusted Tobins q for deal firm = ( Value of Equity + Book value of Total Borrowings) Divided by Total Assets Minus Average Tobins Q for the same Prowess Industry Group