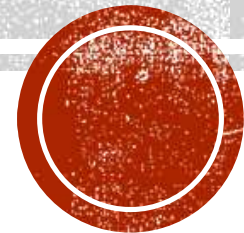


SHORT-TERM AND LONG-TERM MARKET REACTION TO M&A: EVIDENCE FROM INDIA

N. K. Chidambaran, Fordham University, New York
Dipali Krishnakumar, National Institute of Bank Management, Pune
Madhvi Sethi, Symbiosis Institute of Business Management Bangalore

January 2021



INTRODUCTION

- Examine the short-term and long-term performance of domestic and cross-border acquisition decision of Indian firms in the sixteen-year period from 2001 to 2016
- The period encompasses the early liberalization period in India, the years of the financial crisis, and a post crisis recovery period.
- The Indian market during the high growth decade of 2000s represents a period of increasing M&A activity.
- Data is from SDC Platinum and CMIE's Prowess database.
- 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.
- Examine two questions:
 - To gauge the market's reaction to transaction and infer how the market received the transaction (announcement effect) – CARs
 - If markets react positively, does it signal a euphoric response to the acquisition or does it signal an accurate valuation of expected positive synergies? -BHARs



- We find:
 - 3-Day CAR is positive and statistically significant for the full sample. The results hold for both Domestic and Crossborder acquisitions.
 - Clearly, the equity markets infer a positive valuation to M&A activity by Indian acquirers.
 - 24-month BHAR is also positive, but not significant.
 - We see that over a 24-month window there is no reversal of the initial positive market reaction.
 - As much as a measure of the value impact of the deal, the short-term and long-term market reactions suggest that the Indian capital markets are efficient in that there is no overshooting in the short-term with reversals in the long-term.
 - However, when we look at the long term reaction for different time periods, we find that 24-month and 36 month BHARs are negative and significant for all deals during 2008-2009.



- We also examine the impact of firm and governance characteristics on CARs.
 - Crossborder CARs are higher than Domestic CARs in our sample period.
 - We also find that firms with high leverage have higher CARs suggesting that debt in the capital structure could lead to better managerial decisions.
 - Cross-sectionally, BHARs do not differ for Domestic and Crossborder deals. BHARs are higher for smaller firms.
 - Firms that have better governance, as evidenced by their group membership and level of promoter holdings have positive and significant BHARs



LITERATURE

- **Reasons for doing mergers and acquisitions:**
 - Erel, Liao, & Weisbach (2012), Nicholson and Salaber (2013) and Deng and Yang (2015), Chidambaran, Krishnakumar and Sethi (2018)
- **Short term Performance Gains and Losses of acquisitions:**
 - Stock market event study based metrics to measure short term acquisition performance (King & Dalton, 2004; Krishnakumar & Sethi, 2012; Zollo & Meier, 2007)
 - 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)
- **Short term Performance of acquisitions in India**
 - Researchers have found that cross border acquisitions earn positive abnormal returns in the short run (Barai and Mohanty 2010; Chakrabarti, 2008; Gubbi et al., 2009; Kale & Khanna, 2009; Kohli & Mann, 2012)
 - 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 these returns become negative later.



LITERATURE

- Long term Performance Gains and Losses of acquisitions:
 - Loughran and Vihh (1997), Bouwman, Fuller, and Nain (2009), Andrade, Mitchell, and Stafford (2001)
- Long term Performance of acquisitions in India
 - Chakrabarti (2008) studies the long term stock market reaction for three years post acquisition for 24 acquisitions announced between 2000 and 2007. He finds that the long run performance is significantly positive, however when Industry adjustments are made the positive returns are not significant.
 - 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.
- Literature on the operating performance in the developed market have not been conclusive.
 - Healy et al., (1992); Guest et al., (2010), Zollo & Singh (2004)
- Methodological issues have been raised with respect to the process of determining long term abnormal return (Lyon, Barber, & Tsai, 1999; M. Mitchell & Stafford, 2000).



METHODOLOGY

Short-term market returns – Event Study Methodology using the market model

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

- 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



Long-term market returns

- We construct a reference portfolio following Loughran and Ritter, (2000) and Lyon et al., 1999). each acquiring firm is matched with an appropriate decile/quintile reference portfolio for computing abnormal returns.

The reference portfolio returns are computed as follows:

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

where,

R_{jt} - returns on firm j

n_s - 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,

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

R_{it} - month t return for firm i,

R_{pT} - reference portfolio re-turn as calculated in Equation

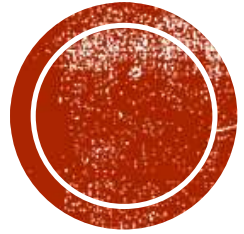
T - The horizon in months over which returns are calculated.



LONG TERM OPERATING RETURNS

- Return on Assets (ROA), is computed as Profit Before Depreciation Interest and Tax by the Average Total Assets for the year
- Acquiring firms are matched with a set of firms in the same industry that have a ROA in the range of 90% to 110% of the ROA ratio for the acquiring firm
- 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





DESCRIPTIVES



Deal Announcement Year	Domestic	Cross Border	Total
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

M&A DEALS BY YEAR



Industry Group	Domestic Deals		Cross Border Deals		Total
	Diversified	Focused	Diversified	Focused	
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

M&A DEALS BY INDUSTRY



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 Deals (676 deals)

VARIABLE	Mean	Median	Std Dev	Min	Max
LASSETS	9.166	9.095	2.003	3.804	15.448
CASHRATIO	0.073	0.040	0.085	0.000	0.538
LEVRATIO	0.299	0.305	0.178	0.000	0.814
HHI	0.115	0.073	0.119	0.013	0.920
AGE	32.262	24.000	22.555	3.000	143.000
INDADJQ	-0.025	-0.128	1.506	-11.405	10.696
PHLDG	51.575	52.480	16.599	-	89.970

Panel C
Crossborder Deals (439 deals)

VARIABLE	Mean	Median	Std Dev	Min	Max
LASSETS	9.651	9.437	1.918	4.475	14.913
CASHRATIO	0.096	0.060	0.103	0.001	0.795
LEVRATIO	0.267	0.260	0.172	0.000	0.745
HHI	0.112	0.076	0.123	0.012	0.990
AGE	31.859	24.000	21.283	3.000	108.000
INDADJQ	0.340	0.036	1.760	-7.817	23.034
PHLDG(%)	48.046	46.980	16.891	4.490	86.110

FIRM CHARACTERISTICS OF ACQUIRERS





RESULTS



Panel A All Deals

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

	#Obs	Mean	StdErr	t-val
3-Day CAR	1115	0.01***	0.002	5.800
11-Day CAR	1115	0.013***	0.003	4.650

Panel B Domestic Deals

T-test results Domestic Deals: H1: mean = 0

	#Obs	Mean	StdErr
3-Day CAR	676	0.007***	0.003
11-Day CAR	676	0.012***	0.004

Panel C Crossborder Deals

T-test results cross border Deals: H1: mean = 0

	#Obs	Mean	StdErr
3-Day CAR	439	0.014***	0.003
11-Day CAR	439	0.015***	0.004

SHORT-TERM MARKET REACTION



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

DETERMINANTS OF SHORT-TERM MARKET REACTION



Panel A All Deals

Bootstrapped T-test results All Deals 24 Month and 36 Month BHARs

	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

Panel B Domestic Deals

Bootstrapped T-test results All Deals 24 Month and 36 Month BHARs

	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

Panel C Crossborder Deals

Bootstrapped T-test results All Deals 24 Month and 36 Month BHARs

	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

LONG-TERM MARKET RETURNS



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

DETERMINANTS OF LONG-TERM MARKET REACTION



Panel A Full Sample

T-test results All Deals ROA Results: H1: mean = 0

	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

T-test results ROA Domestic Deals: H1: mean = 0

	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

T-test results ROA Cross Border Deals: H1: mean = 0

	obs	Mean	St_Err	t_value	p_value
Abnormal ROA2	362	0.713	0.957	0.750	0.457
Abnormal ROA3	342	2.270	2.434	1.350	0.170

LONG TERM OPERATING PERFORMANCE



DETERMINANTS OF LONG-TERM OPERATING PERFORMANCE

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



Panel A

T-test results Deals before 2008 - 3 day and 11 day CARS: H1: mean = 0

	obs	Mean	St_Err	t_value
3-Day CAR	385	0.018***	0.003	5.800
11-Day CAR	385	0.021***	0.005	4.300

T-test results cross border Deals: H1: mean = 0

	obs	Mean	St_Err	t_value
3-Day CAR	159	0.025***	0.004	5.550
11-Day CAR	159	0.028***	0.006	4.300

T-test results Domestic Deals: H1: mean = 0

	obs	Mean	St_Err	t_value
3-Day CAR	226	0.013***	0.004	3.050
11-Day CAR	226	0.016**	0.007	2.300

Panel B

T-test results Deals during 2008 and 2009 - 3 day and 11 day CARS: H1: mean = 0

	obs	Mean	St_Err	t_value
3-Day CAR	195	0.002	0.004	0.400
11-Day CAR	195	-0.001	0.007	-0.150

T-test results cross border Deals: H1: mean = 0

	obs	Mean	St_Err	t_value
3-Day CAR	72	-0.001	0.006	-0.050
11-Day CAR	72	-0.014	0.010	-1.350

T-test results Domestic Deals: H1: mean = 0

	obs	Mean	St_Err	t_value
3-Day CAR	123	0.003	0.005	0.550
11-Day CAR	123	0.006	0.009	0.700

SHORT-TERM MARKET REACTION BY SUB PERIODS

Panel C

T-test results Deals from 2010 to 2016 - 3 day and 11 day CARS: H1: mean = 0

	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

T-test results cross border Deals: H1: mean = 0

	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

T-test results Domestic Deals: H1: mean = 0

	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



LONG TERM MARKET REACTION BY SUB PERIODS

Panel A

Bootstrapped T-test results Deals before 2008; 24 Month and 36 Month BHARs

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

Panel B

Bootstrapped T-test results Deals during 2008 and 2009; 24 Month and 36 Month BHARs

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

T-test results cross border Deals: H1: mean = 0

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

Panel C

Bootstrapped T-test results Deals from 2010 to 2016 ; 24 Month and 36 Month BHARs

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



LONG-TERM OPERATING PERFORMANCE BY SUB-PERIODS

Panel A

T-test results All Deals ROA Results Deals before 2008: H1: mean = 0

	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

T-test results ROA Domestic Deals: H1: mean = 0

	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

T-test results ROA Cross Border Deals: H1: mean = 0

	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

Panel B

T-test results All Deals ROA Results Deals in 2008 and 2009 : H1: mean = 0

	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

T-test results ROA Domestic Deals: H1: mean = 0

	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

T-test results ROA Cross Border Deals: H1: mean = 0

	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

Panel C

T-test results All Deals ROA Results Deals after 2009 : H1: mean = 0

	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

T-test results ROA Domestic Deals: H1: mean = 0

	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

T-test results ROA Cross Border Deals: H1: mean = 0

	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



IMPACT OF FINANCIAL CRISIS

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



CONCLUSION

- Acquisitions by Indian firms result in positive cumulative abnormal returns for both domestic and cross-border deals.
- 24-month and 36-month returns are not significant suggesting there is no reversal of short-term value gains
- Long-term operating performance for acquirers do not exhibit any abnormal returns
- In contrast to transactions in developed capital markets, Indian acquirers are able to retain some of the synergy values.
- Results suggest that Indian markets are efficient and are accurately able to judge the benefits of M&A transactions without a subsequent market correction.

