Innovative capabilities of Indian companies in cross-border acquisitions

Abstract: In the conventional strategy approach to acquisitions by dragon MNEs it is understood that these companies, as newcomers or latecomers in the international arena in the position of acquirers rather than acquisition targets, are forced to expand in order to acquire new embedded resources and capabilities outside their home base in order for them to create a sustainable competitive advantage (Luo & Tung, 2007; Mathews, 2006). Gubbi et al. (2010) provide evidence that acquisitions by dragon MNEs from India create abnormal value if the targeted companies are operating in more advanced economies. They are able to attribute value creation by dragon MNEs to the institutional environment of the home base of the target company. Unlike their approach, this paper attempts to investigate the role of the acquirer in leveraging knowledge as a resource that can be acquired from a target by linking it with its own knowledge base. It analyzes the cumulative abnormal return of cross border acquisitions of Indian listed firms in Europe focusing on acquirer heterogeneity. The paper finds that innovative capabilities and absorptive capacity are not conducive to value creation, except when firms are part of a business group.

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Introduction

This article is about ownership strategies of emerging market firms (EMFs) acquiring firms in advanced economies. In particular, it examines the acquisition behavior of Indian firms in Europe. EMFs that acquire firms in advanced countries go against the grain of conventional wisdom of extant international business theory (Mathews, 2006). Ramamurti (20XX) remarks that emerging market firms supposedly internationalize in all the "wrong ways." They internationalize at the wrong speed, in the wrong countries, using the wrong entry modes. Firms from emerging economies do not seem to follow the path of incremental internationalization that was typical for firms from developed economies (Johansson & Vahlne 1977), but expand much faster. Not only do they expand much faster, they also increasingly do so in advanced economies by means of cross-border acquisitions (CBAs).

The chances of a European company being taken over by a multinational firm from emerging economies have subsequently highly increased. This resulted both in positive as well in negative reactions. On the positive side, acquisitions are praised as sources of capital (for companies lacking the sufficient means to invest) and ways to tap the home economies of the emerging multinationals. On the negative side, acquisitions are seen as threats or as competition from unexpected sources against which target company governments should act in a protectionist reflex. In the case of India, the more popular press sometimes sees the takeovers of European companies by Indian companies as a way for the former colonies to revenge against the former imperialist powers (Economist, 2007).

Most of the conclusions based on resource dependency explanations of value creation of acquisitions are based on empirical analysis of samples in developed economies. It is interesting to see whether they also apply to emerging economy MNEs. It might reflect that CBAs by firms from developing economies are accompanied by different shareholder expectations and management perspectives than for firms in developed economies. This paper will specifically analyze Indian acquisitions of European firms during the last decade. In particular, the absorptive capacity will be used as the main variable of interest to find out whether innovative capacity of the acquiring firms is a positive or negative influence on the value creation.

The paper contributes to the literature as it tries to compare and combine the resource based view of the firm with the theoretical perspectives of the learning-leveraging-linking model. It is suggested that the strategies of multinational enterprises from emerging economies differ from those from developed countries (Buckley, 2004). Multinationals from emerging economies invest overseas at a relatively earlier stage of their development than their counterparts from developed economies (WIR, 2006). To contribute to the understanding of the internationalization strategy of firms from emerging economies, it needs to be investigated whether factors determining CBAs by firms from emerging economies differ from those initiated by firms from developed economies. Differences might include international experience and exposure, corporate governance, cultural background, government regulation (Gubbi et al., 2010) and maturity of the domestic capital market (Peng, Bhagat, Chang, 2010, Gubbi et al., 2010).

Furthermore, while there have been several analyses of innovative and absorptive capacity in developing countries, only a few attempts have been made at the level of business groups' affiliated firms. This seems like a necessary trait for companies coming from emerging economies where business groups are a prevalent and continuing phenomenon of the business environment.

The paper will first establish the theoretical background and draw hypotheses to find out how important innovative capabilities of the investing firms are in the estimated value creation of Indian CBAs in Europe. The results will be based on data from the Zephyr database from the last decade, and will be discussed next before coming to some conclusions.

Literature and hypotheses

Resources and capabilities

It is generally accepted from a resource based view of the firm that acquirers who are better able to share and transfer complementary resources and capabilities between themselves and the acquired firms create more value (Gubbi, 2010; Uhlenbruck, Hitt & Semadeni, 2006). Several resources have been mentioned in this respect: R&D, manufacturing, marketing capabilities, financial, managerial resources, either as independent variables taken from company accounts in models explaining shareholder value creation or in survey data (Capron et al., 1998).

Absorptive capability refers to an organization's ability to acquire and assimilate information, as well as to the organization's ability to exploit it (Cohen & Levinthal, 1990). Previous studies of absorptive capacity have predominantly focused on large, high technology firms in the developed world, using R&D investments as a proxy for a firm's absorptive capacity. The idea is that R&D investments not

only increases the propensities of the firm to produce new ideas and products by themselves, but also that the presence of highly trained technological staff and advanced research facilities makes the firm better able to identify and utilize new technology from the external environment.

The above mentioned elements are also relevant to the concept of dynamic capabilities, which represents an evolution of the absorptive capacity framework. This approach emphasizes the capability of an organization to renew competences (Teece, Pisano & Shuen, 1997). Similar to the absorptive capacity framework, dynamic capabilities focuses on firm-specific resources, but emphasizes organizational structures and managerial processes which support adaption, integration, and reconfiguration of internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment.

Hypothesis 1a: Indian acquirers who possess more innovative resources and capabilities realize more abnormal value through their cross border acquisitions.

Contrary to the resource based view that emphasizes existing strengths of acquirers, Mathews (2006) argued that dragon multinationals, in their internationalization patterns, look for linkages with foreign businesses. Being relative latecomers and/or newcomers as acquirers, these multinationals are believed not to share and transfer their own existing resources and capabilities, but to acquire these externally from the target firms. It might pay off more to acquire research and development from external firms rather than to have to develop these through an organic mode (Vanhaverbeke, Duysters & Noorderhaven, 2002), particularly for a dragon MNE. New important brands can also be acquired and leveraged in the merged firm which gives rise to stock value creation (Capron et al., 1998).

EMFs supposedly use international expansion in advanced countries as a springboard to compensate for their competitive disadvantages. In order to compete internationally, they need to overcome their own weaknesses quickly. Therefore, they aim to acquire capabilities and technologies such that they do not need to develop the same internally. Previous studies (e.g., Luo & Tung, 2007) have already shown that when investing in developed countries, EMFs seek sophisticated technology or advanced manufacturing know-how by acquiring foreign companies. Namely, EMFs outward investments are triggered mainly by ‘pull’ factors, such as the desire to secure critical resources, acquire advanced technology, obtain managerial expertise, and gain access to consumers in key foreign markets, so that they can overcome their latecomer disadvantages (Mathews, 2006).

In general, EMFs are eager to acquire technology and brands through internationalization to fill their resource void. Foreign firms' willingness to sell or share their technology, know-how or brands due to financial exigency or restructuring needs makes it possible for EMFs to fulfill this need (Child & Rodrigues, 2005).

Hypothesis 1b: Indian acquirers who possess less innovative resources and capabilities themselves realize more abnormal value through their cross border acquisitions.

Business groups

Several theories highlight the potential competitive advantages business groups can provide through compensating for institutional voids (Castellacci, 2012; Khanna & Yafeh, 2007; Mahmood & Mitchell, 2004; Amsden & Hikino, 1994; Guillén, 2000; Kock & Guillén, 2001). According to Xavier et al. (2013a), this resilient behaviour in emerging economies indicates the need to resort to market and non-market strategies to explain the phenomenon.

On the one hand, institutional theory highlights BGs' ability to overcome underdeveloped or lacking market support institutions, which are often referred to as market voids (Xavier et al., 2013). Institutional theory is rooted in transaction cost economics (Coase, 1937; Williamson, 1979), which has been used to explain BGs' ubiquitous presence in emerging economies. Leff (1978) attributes BG creation, to some extent, to market failures and entrepreneurship. According to this line of thought, BGs are viewed as markets' answer to imperfections not just in capital markets, but also in labour and product markets (Khanna & Palepu, 2000). Capital market limitations are central to this approach, as one of BGs' main attributes is their ability to foster efficient internal capital markets to serve their affiliates, whenever liquidity and long term financing are not available (Almeida & Wolfezon, 2006).

On the other hand, the political economy approach focuses on BGs' ability to interact with the government - a major and active player in emerging economies. One of the non-market strategies that may affect BGs is related to political capabilities (Schneider, 2009). Guillén (2000) considers that valuable political capabilities may also lead to diversification and growth when there are foreign capital flow asymmetries. BGs may acquire and sustain institutional power through influential political contacts (Dieleman & Sachs, 2008) not only when the government is a minority shareholder, but also through other types of connections (Xavier, 2013).

Hypothesis 2a: Indian acquirers that are part of a business group realize more abnormal value through their cross border acquisitions.

In countries with a less developed innovation systems, business groups can facilitate innovation by providing institutional infrastructure (Mahmood & Mitchell, 2004). With the absence of functional institutions, transaction costs in acquiring inputs such as technology, finance and personnel increases. When these factors are hard to attain in the open market, business groups can substitute for these deficiencies by creating their own internal markets (Gubbi, et al., 2010). Consequently, business groups may overcome the institutional voids at country level by constructing their own, internal innovation systems. Through mechanisms like intra-group training programs, transfer of skilled personnel, reallocation of funding, and intra-group knowledge sharing, business groups are able to improve the innovation capabilities and economic performance of the business group.

It is also possible that business groups have a better potential for developing absorptive and dynamic capabilities than firms operating independently in the same business environment. In an economy where access to capital is limited, business groups can not only be supportive to innovation processes by providing internal capital; affiliation may also be beneficial in regards to attract capital from external sources. Training of personnel and researchers, the building of research facilities and institutions, and supply of infrastructure are other central elements of a developed innovation system that a business groups can support in a country where this is not forthcoming.

Hypothesis 2b: Indian acquirers who possess more resources and capabilities themselves realize more abnormal value through their cross border acquisitions if they are part of a business group.

Data and methodology

We use completed cross-border acquisitions by publicly traded Indian firms in Europe for the period between 2000 and 2011 reported in the Zephyr database (Bureau Van Dijk). There were hardly any acquisitions before 2000, which makes sure that the database we obtain is a proxy of the whole population. In several cases, acquisitions appeared several times, but with other financial data such as target operating revenue being twice cited for the same company. We checked in order to take the appropriate financial data.

The Zephyr database contains the name of the acquirer, the name of the target, the target country, the announced date of the acquisition, the completed date of the acquisition, the deal type, the US SIC codes of company activity and other variables such as size and financial information. Deal method and deal value data were often incomplete. We tried to fill these gaps using newspaper

sources related to the announced acquisitions. Subsequently, we merged this database with additional acquirer company data from Prowess (Center for Monitoring of the Indian Economy). In total the dataset contained 320 acquisitions.

Many acquisitions are undertaken in consecutive steps. Because we use event study methodology, we only take the 'abnormal' stock price effect of the first announcement of the acquisition into account and not the possible later capital increases.

To calculate the cumulative abnormal return, stock return data were collected from the Bombay Stock Exchange. This is the major stock exchange in India and the fifth in terms of number of transactions in the world. A shortcoming of this approach is that non-listed firms and privately held firms that acquired other companies are not included as well as firms that were only listed after the acquisition announcement. If the stock returns data were not available, we had to drop the acquisition. These restrictions leave 149 acquirers in our dataset, out of which 6 are minority acquisitions and 143 majority acquisitions (more than 50% ownership).

Table 1. Geographical and industrial distribution of European target and Indian bidding firms

Country distribution European target firms	**Amount**	**Industry distribution of European target firms**	**Amount**	**Industry distribution of Indian bidding firms**	**Amount**
United Kingdom	49	Pharmaceuticals	35	Pharmaceuticals	35
Germany	24	IT-services & consultancy	18	Automotive	22
Italy	14	Automotive	14	IT services & consultancy	15
France	10	Manufacturing of machinery	12	Textiles	14
Spain	9	Chemicals	10	Electrical equipment	10
Netherlands	7	Textiles	9	Steel	9
Czech Republic	5	Steel	8	Manufacturing of machinery	9
Belgium	4	Electrical equipment	8	Chemicals	5
Sweden	4	Plastics	6	Plastics	5
Switzerland	4	Metals	3	Pesticides	3
Hungary	3	Pesticides	3	Oil and gas	3
Romania	3	Beverages	3	Beverages	3
Poland	3	Wholesale of clothing	3	Cosmetics, toiletries and detergents	3
Austria	2	Construction and engineering	2	Construction and engineering	2
Ireland	2	Packaging	2	Packaging	2
Bulgaria	1	Cosmetics, toiletries and detergents	2	Others (b)	9
Cyprus	1	Others (a)	11	**Industry relatedness**	**Amount**
Denmark	1	**Type of acquisition**	**Amount**	Non-related	33
Norway	1	Majority stake*	93,20%	Related	114
Portugal	1	Minority stake**	6,80%		
Slovenia	1				

(a) Others include: financial services, jewellery, luggage, oil and gas, paints and varnishes, publishing of books, retail, storage tanks, telecommunications, transport and wind power

(b) Others include: consumer electronics, financial services, food, jewellery, luggage, paints and varnishes, publishing of books, telecommunications and wind power.

*majority stake: ≥50% stake

**minority stake: <50% stake

Source: own research; based on Zephyr database

Dependent variable

The success of cross-border acquisitions is traditionally measured in various ways (Schoenberg, 2006; Shimizou et al., 2004). There are mainly two very distinct ways. A first, more subjective, way is through surveys among managers involved in the CBAs or among external expert informants. Alternatively, and more objectively, the post-acquisition stock market assessment of acquisition performance is used. The wealth change for shareholders reflected in the stock price movement as a result of the announcement of the acquisition has been used extensively both by finance researchers and researchers in strategic management (Markides & Ittner, 1994; Moeller, Schlingemann & Stulz, 2005; Bouwman, Fuller & Nain, 2009; Gubbi et al., 2010). The timescale for assessing wealth increase is an important consideration. It depends on one's view of the efficiency of the capital markets. If they are informationally efficient, they foresee all the future benefits and costs of an acquisition, and factor them into stock prices at the time of the acquisition. A short event window places great reliance on a prescient capital market that can fairly quickly impound the full ramifications of the acquisition as well as the probability of realizing the acquisition benefits in the stock prices. One could argue that the market takes time to digest information and at the same time awaits more information to assess the extent of the benefits and the probability of their realization. Lengthening the event window to several years (mostly 3 to 5 years in the literature) instead creates other problems, however. First, the longer the event window, the greater are the chances that other events such as strategic, operational and financial policy changes of the acquirer firms will impact on their valuation. Second, the long windows raise questions about the efficacy of statistical test procedures, and reduce the reliability of test results (Sudarsanam, 2010). Moreover, the ex-ante measurement of performance is proven to correlate quite well to ex-post performance, demonstrating the predictive validity of short term performance for longer term performance (Kale, Dyer & Singh, 2002; Halebian, Kim & Rajagopalan, 2006). Finally, stock market performance measures assessed in event study methodologies are relatively unbiased compared with other measures, and invariant to differences in accounting policies across nations and firms (Cording, Christmann & King, 2008).

For all these reasons we believe it is justified to use cumulative abnormal returns to shareholders. In the appendix we report the methodology for the calculation of the cumulative abnormal return that we adopted.

Explanatory variables

Our variable of interest is the innovative resources and capabilities of the Indian acquiring firms, which we will measure through the research and development (R&D) intensity. This is expenditures on R&D divided by sales in order to measure the relative importance of R&D for the acquiring company. Although not all R&D is productive, there is a clear link between innovative inputs, innovative capabilities and innovative outputs. Mairesse and Mohnen (2002) decompose firm-level innovative output differences over time into differences in R&D effort and differences in a number of other firm-and industry-level determinants of innovation using a framework that draws on the traditional production function literature. Their results suggest that differences in innovative inputs (R&D activities) account for a sizeable share of the differences in innovative output. Similarly, Criscuolo et al. (2010) compare innovation processes to traditional production processes and relate innovative output to innovative inputs in what they call an "innovation production function". Rather than calculating the contribution of different effects using decomposition as in Mairesse and Mohnen (2002), they apply their model in a regression context to a sample of UK firms, using two consecutive waves of the CIS data. The dependent variables are four innovation output variables (innovation dummy, share of new products in sales, patent protection dummy and number of patents) and the independent variables include an innovation input measure (R&D personnel or an R&D dummy) and a number of control variables. Their results suggest a significantly positive impact of firm-level innovative effort on its product innovation and product renewal behavior. Moreover, as argued by Tallman et al. (2004), investment in R&D activities additionally acts as a firm-level measure of absorptive capacity, since it (indirectly) facilitates knowledge transfers from other firms.

Hypothesis 1a, on the one hand, expects a positive impact of firm-level R&D intensity on its value-enhancing potential through acquisitions. Hypothesis 1b, on the other hand, expects a negative impact as the less research capable firms have more to gain from developed market acquisitions.

We also research what the impact is of acquisitions of high-tech target firms. The results could again be hypothesized to go both ways. The RBV point of view would argue the positive impact of R&D intensity of the acquiring firm, while the LLL framework would expect a less technology-intensive firm to benefit more from the high-tech acquisition.

In order to measure the impact of business group membership, we include a dummy variable for firms that are part of an Indian business group. In line with hypothesis 2a, business group membership is expected to bring more value creating potential for acquiring firms. The mediating role of R&D intensity for these group networked firms is expected to be positive as well. This will be

measured through an interaction variable between R&D intensity and the group membership dummy.

Apart from these R&D-related variables, we include a number of additional control variables. First, the model attempts to take account of how good a deal it was. This is measured by dividing the value of the target firm by the deal value (targetsize* acquired_stake/dealvalue). It is obviously expected that the lower the price the higher the value creating possibilities.

Second, the size of the deal might matter. Gubbi et al. (2010) found a positive impact while Lee & Caves (1998) found a negative impact. Although economically, it should not make a difference; larger deals might have a more positive impact on expected value creation. This is measured by dividing the size of the target by the size of the acquiring firm. The larger the relative size, the higher the expected response on the stock market.

Third, the performance of the target firm might also be pertinent to the value creating potential. The higher the previous performance of the target firm, the higher the expected return from this investment.

Finally, we include a dummy to account for full acquisitions. The degree of ownership and control that foreign MNEs maintain on the local target firm is a crucial dimension (Brown et al., 2003; Shrader, 2001). Transaction cost economics is among the theories most widely used to study foreign subsidiary ownership policy (Makino & Neupert, 2000; Yiu & Makino, 2002; Zhao et al., 2004). It argues that the choice between partial and full ownership depends on the net benefits of sharing equity relative to those retaining full ownership. Hennart (1991) argues that investing firms tend to choose joint ownership with a local partner over full ownership when they need continuous access to local firms' resources of, for example, knowledge and know-how, which are subject to high market transaction costs (Makino & Neupert, 2002). Empirical studies suggest that these arguments hold not only for greenfield joint ventures (Brouthers, 2002; Dikova & Van Witteloostuijn, 2007), but also for partial ownership acquisitions (Chiao et al., 2010; Lopez-Duarte & Garcia-Canal, 2002; Fatica, 2010).

Partial acquisitions allow residual ownership by some important existing shareholders who can continue to provide much needed resources and know-how to the ongoing concern. For example, they might have unique strategic planning and governance know-how related to building and maintaining the technological capabilities of their companies (Baysinger et al., 1991). In particular, local knowledge is highly embodied in local human resources (Chen, Li & Shapiro, 2011), the management practices of which are by and large shaped by strong local forces. As such, a full or

majority owned takeover could have ruinous effects on the original coalition of resource providers when the main aim of the acquiring firm is exploration and learning. The targeted knowledge is largely tacit in nature and hence difficult to assess and access. It is challenging to identify and collect promising sources of knowledge, put them into an adequate context and act accordingly, if linguistic, cultural and social barriers cause misinterpretations, mistakes and delays. These obstacles are especially pronounced when foreign firms search for valuable sources of innovation abroad (Al-Laham & Amburgey, 2005). When MNEs invest in foreign markets not to capitalize on existing competitive advantages but to create assets, failures in input factor markets in the host country may lead MNEs to form joint ventures with local firms. As such, it is suggested that firms that are more interested in exploring new technologies will be more inclined to have partial ownership. Instead, firms more interested in exploiting existing capabilities will be more likely to prefer majority control. Therefore, Indian firms that take over all the shares of the European target firms are expected to realize lower abnormal returns.

We test our hypotheses using an event study methodology. The acquisition performance is first calculated using the event study methodology. The calculated stock price effect of each acquisition is then regressed on the independent variables and control variables in an orderly least squares regression.

Results

The results from the regressions indicate clearly that R&D intensity of the acquiring firm has a negative coefficient and therefore deemed to be a barrier to value creation. The results suggest that investors find asset seeking behavior of firms that lack proper innovative capacity more productive than firms that have built up their own innovative capacity. This, in turn, suggests that the LLL framework seems more useful in explaining EMF behavior than the RBV of the firm.

This result is further confirmed by the positive coefficient for the high-tech dummy of the target company, yet the insignificant importance of the R&D intensity of the acquiring firm of these targets. Investors prefer high-tech targets, yet seem indifferent to the absorptive capacity of acquiring firms when buying high-tech targets.

Business group membership is clearly conducive to value creation given the positive and significant result. Furthermore, the positive significant result for the interaction variable of business group membership and research intensity seems to corroborate the mediating effect of business group membership in taking advantage of innovative capabilities in target firms. Investors seem to find

business group membership as necessary to really be able to take advantage of the acquisitions given the market and non-market imperfections in the emerging home markets.

Table 1. Regression results on CAR of Indian acquisition deals in Europe

Variable	Coefficient	Std. Err.	t	P>|t|
R&D intensity	-7.545844	2.53085	-2.98	0.005
Business Group	0.2212418	0.0614551	3.60	0.001
Business Group R&D intensity	4.364145	2.473219	1.76	0.085
Target High Tech	0.1081345	0.0604094	1.79	0.080
Target High Tech R&D Intensity	2.376565	2.276866	1.04	0.302
Good Deal	0.0000776	0.0000996	0.78	0.440
Deal Size	0.1605897	0.1130577	1.42	0.163
Target profitability	0.327544	0.1545945	2.12	0.040
Full ownership	-0.0814514	0.0477562	-1.71	0.095
Constant	-0.1376693	0.068352	-2.01	0.050

R^2=0.5030, R^2adjusted=0.4013

The results furthermore indicate that deal size and efficacy are not significant factors in determining value creation given that both variables Good Deal and Deal Size are insignificant. Paying a premium does not seem to offset expectations.

Target profitability actually does positively affect the results, while full ownership negatively and significantly impacts value creation. Acquiring a target on your own is not received well, given that you might have a hard time maintaining innovative capabilities without a local partner.

The results from the regressions, regardless of the addition of other control variables –which have not been reported here-, are quite robust.

Conclusion

This paper set out to find out whether innovative capabilities by Indian firms that acquired a European company were conducive to value creation or not. The RBV of the firm would lead us to hypothesize that innovative capabilities matter as absorptive capacity of the acquiring firm. The LLL framework goes against the grain of traditional theory and hypothesizes that laggard firms try to upgrade their lacking innovative capabilities through acquisitions. The results, by and large, find support for asset-seeking behavior of firms given that those firms with lower research intensity are believed to benefit more from these deals. This is particularly the case in acquisitions in high-tech industries.

The results, however, also indicate that R&D intensity and absorptive capacity do have a positive impact, when the acquiring Indian firms are part of a business group and have higher innovative capabilities. Business groups clearly act as a platform through which these acquiring firms can better take advantage of these asset-augmenting deals.

An interesting control variable is the fact whether the acquisitions are full takeovers or not. The results strongly indicate that investors appreciate a local partner in order to try to maintain the competitive posture and embeddedness of the acquired target.

This research has some clear limitations. First, since the sample is only from one emerging country, i.c. India, the generalizability is by definition limited. It would be interesting to extend the research to other emerging economies.

Furthermore, it must be realized that in general it is not obvious for acquisitions to create value, as only 1 out of three is able to do so. Hence, the question about the determinants of value creation is more relevant if formulated as an inquiry into the determinants of value creation or destruction (King et al., 2004). One of the limitations to this approach is that although evidence is given that knowledge as measured by research and development intensity of the acquirer may lead to value creation in a CBA, it is not clear how this knowledge is actually leveraged or combined. To do this it needs to be measured to what an extent there is an opportunity to share knowledge, a motivation to share knowledge and an ability to do so. If there is no complementary knowledge between acquirer and target, there is not even an opportunity to share it. Willingness to share knowledge cannot be judged upon using ex post measurements of firm resources. The ability to share knowledge can be investigated using a behavioral methodology and survey evidence. One of the challenges in the strategic literature on the determinants of value creation through CBAs is a

measurement issue to specify better the resources and capabilities that are transferred through a CBA.

Some technical issues are also important. The appropriate benchmark return adopted is the one obtained from the SENSEX, the benchmark index of the Bombay Stock Exchange. Alternatives would be the BSE 100, the BSE 500, the BSE industrial index, etc. Sensitivity analysis can also be more elaborated upon using still more alternative windows for events. We used the 21-day window, but some studies use an 11-day window. Finally, other events can interfere in the period following the announcement of the acquisition or in the clean period we used to estimate our 'normal' performance parameter estimates. These can be announcements in the industry or other events by the same company.

Appendix on the calculation of the cumulative abnormal return

The actual return for the shares of the 149 acquiring Indian companies and the SENSEX Index is calculated by dividing the share value of the current day over the share value of the previous trading minus 1 for each firm j in the clean period and event period. In a second step, the *predicted return* is calculated for each day t in the event period and for each firm j, as shown by the following formula.

$$\mathrm{R_{jt}} = \alpha_j + \beta_\mathrm{j}\mathrm{R_{mt}}$$

The parameters α_j and β_j are estimated by regressing the excess stock returns on the excess market return for the estimated period.

The predicted return R_{jt} is the return you would expect when the event (the acquisition) would not occur. The benchmark model we used was the market model to calculate this return. It is the most widely used method and takes into account the riskiness of the firm with respect to the market. The calculations involved a clean period of 101 trading days prior to the announcement day and the procedure involved a regression of the firm's return series against the market index SENSEX of the Bombay Stock Exchange. The clean period of 101 days includes all the days on which no information related to the event is announced. The regression of the firms against the actual return of the market index SENSEX for the period -111 to -10 (clean period) produces the α and β to calculate the predicted return. The α measures the mean return over the period not explained by the market, while the β measures the sensitivity of the firm j to the market and is therefore a measure of risk. The R is the return on the market index for the actual day in the event period.

Next, the *residual or abnormal return* for each day t and each firm j is calculated, defined as the actual return for that day for the firm minus the predicted return:

$$r_{jt} = R_{jt} - R_{jt}$$

Where R_{jt} is the actual return and R_{jt} is the expected return on the stock. For each day, these residual returns were then averaged across all the companies in order to produce the average residual for that day, AR(t) (= abnormal return), with the following formula:

$$\mathrm{AR_t} = \frac{\mathrm{_j\,R_{jt}}}{\mathrm{N}}$$

With R being the residual of the bidder firms and N the amount of bidders. When the outcome is positive, the market feels on average that there is value creation. In case of a negative abnormal return, there is a negative effect of the market on the event.

During the last step, the average residual for each day over the entire window period of 21 days (-10 days, day 0 (= announcement day), +10 days) is calculated, this in order to produce the CAR, the cumulated average residual or return for each Indian company. This represents the average total effect of the event for every firm over a specified time interval with the AR being the abnormal return of the bidder firms.

$$\mathrm{CAR} = \sum_{t=-10}^{10} \mathrm{AR}_t$$

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