Cross Listing and Value Creation: A Dis-Aggregative Study in Indian Context

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Abstract— **The study has examined abnormal returns and their plausible determinants for 146 instances of international cross listing done by Indian companies from 1997-2019, where firms have been segregated on the basis of age, size of total assets and industry. No significant results have been obtained for industry classification. On the basis of age, only growth companies have shown positive returns, expansion and mature companies have registered losses for shareholders. With respect to size of assets, large size companies have witnessed greater losses than smaller ones.**

Index Terms— **Cross listing; Global depository receipts; American depository receipts; Cumulative average abnormal returns**

I. INTRODUCTION

Depository Receipts (DRs) have been an increasing popular source to raise finance from international markets. While it enhances visibility for the company in foreign lands and help in rapid growth, they are inherent with concerns around increased cost, volatility effects, and differences in laws.

In the past, Indian companies across different age, asset size and industries have undertaken cross listing in international markets. The study aims to find out if companies of any particular age, asset size, and industry have witnessed any substantial gains associated with cross listing and identify these gains.

II. OBJECTIVE OF THE STUDY

To analyze impact of cross listing on shareholders' wealth and plausible determinants of the same by conducting a dis-aggregative analysis based on age, size and industry classification.

III. LITERATURE REVIEW

In an **IMF Working Paper (2009)** 48 companies in the sub-saharan African region were studied that have cross listed in the period 1992-2008. Using an event study methodology, the study observed that cross listing generated positive price reaction around the date of regional cross listing.

Abdallah and Ioannidis (2010) studied 1165 firms from 47 countries that cross listed on US equity exchanges in the period 1976-2007. They noted that firms cross listed at a time when they could take advantage of overvalued share prices in their domestic market. While abnormal returns existed at the time of cross listing, they subsequentlydeclined.

Dodd and Louca (2012) employed the event study methodology to evaluate the relationship between cross listing at an international location and shareholders' wealth. With a sample size of 254 cross listing instances over the period 1982-2007, the study concentrated on cross listing by European companies on US, UK and other European exchanges. The abnormal returns calculated in the event window of 10 days around the announcement date suggest that cross listing yields positive price reaction. However, in their research, this result holds true only for US and UK exchanges. For the other European exchanges, no such empirical affirmation has been obtained.

Ghadhab and Hellara (2016) used the event study methodology to find the impact first cross listing and subsequent cross listings have on firm value. Covering 303 firms from 33 countries, they studied an extensive sample of 499 foreign listings spread across 1980-2013. They focussed on cross listings on exchanges of US, UK, other major European markets, Tokyo and Australia. Using an event window of 60 months around the date of cross listing, they measured cumulative abnormal returns. Their findings suggest that only the first three listings helps to enhance firm value.

IV. RESEARCH GAPS

On the basis of the review of literature, the following gap has been identified:

1. In the sample, all the firms are treated as a group, irrespective of their differences in industry, scale of operation, number of years of operation etc. Segmentation has not been done to see differences in groups.

DATASET

The study involved 146 Indian companies, that have undertaken ADR/ GDR/ ADS/ GDS from April 1, 1992 to 31st October 2019. This data set consists of only those companies where data was available and the instance involved only the first international cross listing.

Data Source and Software

The list of Depository Receipt issues has been taken from PRIME Database. Event study metrics has been used to calculate the abnormal returns.

RESEARCH DESIGN

Event Study

An event study measures the impact of a specific event on the value of a firm using financial market data. Using this method, it can be assessed whether there is an abnormal stock price

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effect related to an unanticipated event. From this, the importance of the event can be assessed.

To assess the impact of cross-listing on value creation for shareholders, cumulative abnormal returns over multiple event windows around the date of announcement of cross listing have been calculated using the Market Model. In this study, semi-strong form of Efficient Market Hypothesis (EMH) is employed which states that any new information that is communicated to the public about the firms is immediately reflected in the stock prices. Hence the stock price will adjust quickly to indicate the change in the future expected discounted cash flow of the firm

Hypothesis Development

Null Hypothesis: Announcement of cross listing does not lead to abnormal returns; CAAR is statistically zero.

$H_0 = CAAR = 0$

Alternate Hypothesis: Announcement of cross listing does produce abnormal returns; CAAR is statistically different from zero.

$H_1 = CAAR \neq 0$

Estimation Window

An estimation window of 180 days has been considered to estimate the coefficients.

Event Window

Multiple event windows have been considered including (-5, +5), (-3, +3), (-1, +1), (0, 0), (-5, -1), (-3, -1), (1, 3) and (1, 5).

Abnormal returns are defined as per equation A.1 using the Market Model:

$AR_{it} = R_{it} - E(R_{it})$……. (A.1)

Where

AR_{it} = Abnormal returns of company i at time t $E(R_{it})$= Expected return on firm i at time t

$E(R_{it}) = \alpha_i + \beta_i (R_{mt}) + \varepsilon_{it}$……(A.2)

With $E(\varepsilon_{it} = 0)$ and var $(\varepsilon_{it}) = \sigma^2$

Where

$E(R_{it})$= Expected return on firm i at time t

α_i = Ordinary Least Square (OLS) estimate of the Intercept of straight line or alpha coefficient of security 'i'
β_i = Ordinary Least Square (OLS) estimate of the coefficient of BSE 200 R_{mt}= Actual return on the market index, BSE 200
ε_{it} = Error term with mean zero and constant variance at time t

Cumulative abnormal returns (CARs) are the summation of the abnormal returns generated by the stock over the event window and are determined as per equation 1.2

$CAR_i = \sum AR_{it}$ (A.3)

Where CAR_i is the cumulative abnormal return for firm i over the event window.

The returns are then averaged to obtain the Cumulative average abnormal returns (CAAR).

Regression Model

The regression model tests the various explanatory variables to explain significant influencers of wealth creation for shareholders at the time of value creation.

Null Hypothesis: There is no statistically significant influence of the independent variables on the CAAR

Alternate Hypothesis: There is a statistically significant influence of the independent variables on the CAAR
Table 1.1 provides a list of independent variables used in the study

Table 1.1: List of independent variables used for regression

Variable	Description	Source
Firm specific factors		
Sales growth	Three year growth rate of total sales of the company	ACE Equity
Market related factors		
Market capitalisation to GDP	Log of the absolute difference between home and host country ratios	Global Financial Development, World Bank
Macro-economic factors		
Political risk rating	Measuring perceptions of likelihood of political instability or politically motivated violence	World Governance Indicators
Financial Freedom	Measures banking efficiency and independence from government control and interference in the financial sector	Heritage Foundation
Business Freedom	Measures extent to which regulatory and infrastructure environments constrain the efficient operation of business	Heritage Foundation
Market timing		
Recession	December 2007 – June 2009; dummy variable	NBER's Business Cycle Dating Procedure
Proximity factors		
Cultural distance	Country scores for dimensions of culture	Hofstede's cultural dimensions
Geographical distance	Log of geographical distance between the home and host countries	CEPII database

Regression Equation

$$CAR_i = \alpha + \beta_1 (CAGR) + \beta_2 (Financial\ Leverage) + \beta_3 (Market\ cap\ to\ GDP) + \beta_4 (Political\ risk\ rating) + \beta_5 (Financial\ freedom) + \beta_6 (Business\ freedom) + \beta_7 (Recession) + \beta_8 (Culture) + \beta_9 (Geography) + \varepsilon_i \quad (A.4)$$

The regression equation used in the study is defined as per equation A.4

EMPIRICAL EVIDENCE

DIS-AGGREGATION OF DATA

The dataset covers 146 instances of international cross listing by Indian companies for the period 1992-2019. But these companies vary across industries, with different scale and scope of operations. Therefore, by analysing them as one group, the specific features about their group may not be captured. Thus, for better assessment, a dis-aggregative analysis has been undertaken by forming clusters based on three parameters, age, size of total assets and industry classification.

AGE

Companies pass through various stages in their business lifecycle. One way to identify the current stage of a company is based on its age. Consequently, the quartile function has been used to segregate the companies under study into 4 quartiles, Q1, Q2, Q3 and Q4.

The age profile of the companies under study ranges from 1 year to 102 years. According quartiles created are presented in Table 1.2.

Table 1.2 Age based segregation of 146 companies under study for the period 1997-2019

Classification	Age range (in years)	Quartiles	Number of companies
Growth	1-13	Q1	42
Expansion	14-23	Q2, Q3	68
Mature	24 and above	Q4	36

Quartile 1 consists of companies with an age range of 1-13 years. These are growth companies that are focussing on rapidly scaling up operations. Expansion companies have been identified as part of Quartile 2 (14-18 years) and Quartile 3 (19-23 years). These are companies that have set up a foundation for their businesses and are now looking at expansion activities. The age range for expansion companies is 14-23 years. Lastly, companies with age 24 years or more, falling under Quartile 4, are identified as Mature companies.

Table 1.3: Cumulative abnormal returns for 146 Indian firms, segregated on the basis of age, for the period 1997-2019

Event Window	CAAR		
	Growth	Expansion	Mature
(-5, +5)	0.0100	0.0181	-0.0160*
(-3, +3)	-0.0007	-0.0204*	-0.0085**
(-1, +1)	0.0148**	-0.0200*	-0.0066
(0, 0)	0.0076	0.0072	-0.0096*

* indicates significance at 5%; **indicates significance at 10%

Table 1.4: Regression results for Growth, Expansion and mature companies for the period 1997-2019

INDEPENDENT VARIABLE	EVENT WINDOW	(-5, +5)			(-3, +3)			(-1, +1)		
		Growth	Expansion	Mature	Growth	Expansion	Mature	Growth	Expansion	Mature
CAGR		0.106021	0.011568	-0.11403	-0.03351	0.031637	-0.07885	-0.07588	0.023438	-0.02851
Financial Leverage		0.015606	0.002905	-0.03552	0.001355	-0.02084	-0.02316	0.005749	-0.01622	-0.00714
Market cap to GDP		-0.24439	0.032853	0.018829	-0.04823	0.391626	0.170163	-0.06217	0.28771	-0.11833
Political risk rating		0.005709	-0.00096	0.003786	0.005659	-0.01892*	0.0001	0.00558**	-0.0183*	0.001655
Financial freedom		-0.01378	-0.00019	0.004646	-0.00243	0.005159	0.00305	-0.00183	0.00563	-0.00033
Business freedom		0.002195	-0.00171	-0.0006	0.002498	-0.00904*	0.0021	0.0029**	-0.0083*	0.0399
Recession		0	-0.01717	0.39756**	0.0256	0.12486	0.203575	0.00894	0.150907	0.019247
Culture		0.402494	-0.01047	-0.15117	0.132385	-0.73203**	-0.16444	0.182349	-0.824*	-0.01634
Geography		-1.85786**	-0.00763	1.07184	-0.42488	0.484941	0.74749	-0.11239	0.619032	0.071663

* indicates significance at 5%; **indicates significance at 10%

From the results, it can be observed that Growth firms have a significant positive abnormal return of 1.48% around the date of announcement of cross listing, whereas Expansion and Mature companies have witnessed negative returns of 2% and 1.6% respectively.

For growth companies, geographical proximity has a negative relation, whereas political risk rating and business freedom have a positive relation with abnormal returns. Abnormal returns of expansion companies is negatively impacted by political risk rating, business freedom and cultural proximity. A notable observation is that mature companies registered gains when cross listing was done during recession.

The significant finding is that only growth firms have abnormal gains; shareholders of expansion and mature companies have registered losses around the date of announcement of cross listing. A possible reason for this could be shareholders optimism about the long-run opportunities for growth companies. Expansion and mature companies, on the other hand, have already established a ground for themselves, thus long-run growth opportunities are not as many as for growth companies. Growth companies also do not suffer from organisational rigidities and inertia, thus making their future prospects bright.

In brief, findings suggest that wealth creation will vary depending upon the age of the company at the time of making the international cross listing issue.

SIZE OF TOTAL ASSETS

The firms under study have been clustered based on the size of total assets. The classification is based on the definition followed by NSE for Indian firms that groups NIFTY500 firms into large, mid and small-cap firms (as no global standard of value based classification is available). The top 20% of the firms by total assets are identified as large size firms, next 30% are categorised as Medium size firms, and the bottom 50% are designated as Small size firms. This categorisation is shown in Table 1.5

Table 1.5: Size based segregation of 146 companies under study for the period 1997-2019

Classification	Basis of classification	Asset size range (Crores)	Number of companies
Small size	Bottom 50% of the firms under study by size of assets	Asset size less than INR 523 crores	72
Medium size	Next 30% of the firms under study by size of assets	Asset size greater than INR 523 crores and less than 1835 crores	43
Large size	Top 20% of the firms under study by size of assets	Asset size greater than 1835 crores	25

Table 1.6 shows the CAAR for small, medium and large companies.

Table 1.6: CAAR for small, medium and large companies for different event windows for the period 1995-2019

Event Window	CAAR		
	Small	Medium	Large
(-5, +5)	0.0114	0.0257	-0.0366*
(-3, +3)	-0.0004	-0.0228**	-0.0264*
(-1, +1)	0.0098	-0.0261*	-0.0215*
(0, 0)	0.0034	0.0035	0.0023

* indicates significance at 5%; **indicates significance at 10%

Table 1.7: Regression results for small, medium and large size companies for the period 1997-2019

INDEPENDENT VARIABLE	EVENT WINDOW									
	(-5, +5)			(-3, +3)			(-1, +1)			
	Small	Medium	Large	Small	Mediu	Large	Small	Medium	Large	
CAGR	-0.01518	0.124746	0.039763	-0.0119	0.39670	-0.0064	-0.00889	0.371744	0.037617	
Financial Leverage	-0.02293	0.011614	-0.00203	-0.0276	-0.0391	-0.0009	-0.01265	-0.02484	-0.00031	
Market cap to GDP	-0.13309	0.139854	-0.54438	-0.0213	0.47055	-0.2706	-0.10483	0.415508	-0.27378	
Political risk taking	0.003775	0.00744	0.009172	0.0051	-0.0132	0.00450	0.006536	-0.01856*	0.00492	
Financial freedom	-0.00374	0.000238	-0.00516	-0.0023	0.00304	0.00019	-0.00151	0.003448	-0.00132	
Business freedom	0.002303	-0.00386	-0.00913	0.0026	-0.0110	-0.0027	0.002059	-0.01045*	-0.00377	
Recession	-0.0238	0	-0.3104	-0.0610	0.00167	-0.2457	-0.0463	0	-0.07303	
Culture	0.123517	0.597333	0.404291	0.2035	-0.4951	0.06953	0.198561	-0.87856	0.074137	
Geography	-0.16106	-0.47086	-0.89838	-0.5067	0.68299	-0.1957	-0.40069	1.122691	-0.12526	

* indicates significance at 5%; **indicates significance at 10%

Results show that while small size companies do not have any significant abnormal returns, medium size companies and large size companies have negative returns. Large size companies have losses as high as 3.66%, but no explanatory variable has been found that significantly impacts the abnormal returns. Medium size firms are

negatively related with political risk rating and business freedom, generating negative returns as high as 2.61%.

This result is in conformity with the theoretical size effect, a smaller firm outperforms a larger one. Relevant data shows that losses for any event window are higher for large size companies than for medium size companies.

INDUSTRY

The firms under study belong to different industries. Segregating them on the basis of their sector will enable better exposition of the abnormal returns generated. Table 1.8 shows the classification of industries under study

Table 1.8: Number of companies according to various industries

Classification	Number of companies
Consumer goods	34
IT and Telecom	36
Industrial and Manufacturing	47
Others	29

The present section focusses on the abnormal returns generated in 3 sectors - Consumer goods, IT and Telecom and Industrial and Manufacturing

Table 1.9: CAAR for Consumer goods, IT and Telecom and Industrial and Manufacturing for the period 1997-2019

Event Window	CAAR		
	Consumer Goods	IT and Telecom	Industrial and Manufacturing
(-5, +5)	0.0115	0.0253	0.0247
(-3, +3)	0.0044	0.0198	0.0017
(-1, +1)	0.0185	0.0138	0.0063
(0, 0)	0.0065	0.0132	0.0019

* indicates significance at 5%; **indicates significance at 10%

Table 1.10: Regression results according to different industries for the period 1997-2019

INDEPENDENT VARIABLE		EVENT WINDOW									
		(-5, +5)			(-3, +3)			(-1, +1)			
		Consumer goods	IT and Telecom	Industrial and Mfg	Consumer goods	IT and Telecom	Industrial and Mfg	Consumer goods	IT and Telecom	Industrial and Mfg
CAGR		0.139497	0.017697	0.120592	0.068162	0.002644	0.071597	0.045437	0.001358	0.047324
Financial Leverage		0.007049	-0.02556	0.009019	-0.01901	-0.0321	-0.021	-0.00555	0.039848	-0.00344
Market cap to GDP		0.114508	0.51747**	-0.06908	0.208936	0.3256**	0.189882	0.179786	0.047999	0.005146
Political risk rating		0.009648	-0.01001	0.008298	0.011635	-0.00388	0.000236	0.006456	0.004364	0.002931
Financial freedom		0.010881	0.01099**	-0.00871	0.011951	0.00694	-0.00368	0.010627*	0.001475	-0.00231
Business freedom		0.002417	0.00590**	0.000849	0.002699	0.007157*	-0.00122	0.002984	0.00534*	0.000774
Recession		-0.09192	0.066204	0.078769	-0.10294	0.055308	0.046193	-0.01636	0.019129	0.005455
Culture		0.842809	-0.30236	0.316317	0.865368	-0.20922	0.024664	0.526125	0.072689	0.126802
Geography		-2.68388	0.161073	0.483166	-3.0295**	0.232763	0.42202	-2.3463*	0.124937	0.263081

* indicates significance at 5%; **indicates significance at 10%

The study observes that for the three sectors considered, the returns are positive but not significant for any event window.

Summary

The dis-aggregative analysis has provided a better understanding of the abnormal returns generated by companies of different age, size and industry. No significant results have been obtained for industry-wise analysis. But segregation on the basis of age shows abnormal returns are positive for growth companies and negative for expansion and mature companies. Further, it is noted from size based segregation that larger companies generate higher abnormal losses.

CONCLUSION

For better exposition, the firms under study have been categorised based on age, size of total assets and industry. A surprising observation was that there are gains for cross listing by growth companies, but there are losses for cross listing by expansion and mature companies. Investors see mettle in growth companies as they are perceived to be having tremendous scope for growth and development. In terms of size of assets, the results are in conformity with the theoretical size effect. Large size companies have abnormal losses higher than the medium size companies. The results generated by small size companies are not significant. Three industries have been studied in detail – consumer goods, IT and Telecom and Industrial and Manufacturing. The results for no sector were noted to be significant. Category-wise analysis of the firms has helped in better understanding of the abnormal returns generated and the explanatory variables for the same.

Overall, results show that wealth effects of raising capital in international markets in the context of Indian companies is generally negative and it varies according to company specific factors.

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