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Going Global: Evidence from India

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Going Global: Evidence from India

ABSTRACT

American Depository Receipts (ADRs) and Global Depository Receipts (GDRs) remain one of the predominant routes used by firms in emerging economies to list overseas. However, the aftermarket performance of ADR/GDR issuances is not widely researched amongst emerging economies. Using an Indian sample of ADR and GDR issues, we analyse the short and long-term performance of these firms. We adopt an event study methodology to assess the short-term performance and Lyon *et al,* (1999)'s approach to examine the long-term performance. We also examine the changes in firms' operating performance following ADR/GDR issuances. The results show that the short-term buy and hold abnormal returns for ADRs are relatively better than GDRs and in the long run yield positive abnormal returns. These firms also have better operating performance post their overseas issuance in the American stock markets and finally the results also show that ADR issues is a key driver in firm performance.

1. Introduction

The importance of raising capital through issuance of equity/debt in international capital markets is well recognised, especially amongst firms based in emerging markets (Temouri, Driffield and Bhaumik, 2016). American Depositary Receipts (ADRs, hereafter) have been the prevalent route to access US capital markets for non-US firms for a long time (Foerster and Karolyi, 1999). ADRs are defined by the Securities and Exchange Commission (SEC) as securities that represent shares in non-US companies held by a US depositary bank outside the United States (SEC, 2012). ADRs provide non-US companies easier access than IPOs to the liquid US secondary equity market and US investors to diversify their portfolios by investing in non-US companies. Likewise, Global Depository Receipts (GDRs, hereafter) allow firms to list in non-US overseas markets such as the Luxembourg and United Kingdom stock exchanges among others. However, academic research on overseas listing using the ADR and GDR routes in developing economies is sparse.

India, the world's largest democracy, is one of the leading emerging markets globally (Sivaprasad and Dadhaniya, 2020; Rao and Charles, 2020). In 2021, Indian stock exchanges, in terms of IPOs, ranked 12th in the world (EY Global Trends Report, 2021). A recent IMF report predicts that following the second wave of the pandemic, more reforms will help the Indian economy to rebound (IMF, 2021). With the continuing liberalisation reforms that started in the early 1990s Indian firms are increasingly tapping into the overseas markets for financing. These reforms have facilitated the access to larger and more diversified sources of capital and so reduced the cost of raising external funds for many Indian firms. Additionally, overseas listings help firms to gain a strategic competitive advantage, brand awareness and visibility in international markets as well as a diversified investor base.

Previous studies examine the after-market performance of depository receipts using a shorter event window (Chatturvadaal, 2018; Kumar et al., 2001). We argue that in order to assess or gauge the performance of cross-listed firms, it is imperative that we examine both the short and long-term after-market performance of firms. To our knowledge, no studies examine the long-term market performance and changes in operating performance, if any, post issuance. This study attempts to fill this gap.

Moreover, this study also examines relative importance of ADR versus GDR issuances in driving firm performance. As US markets are more established, have a larger investor base and hence have greater liquidity, investor protection and reduced information asymmetries, we hypothesize that firms that issue ADRs perform relatively better. This is not necessarily the case for GDR issues.

Figure 1 shows the volume of ADR/GDR issued by Indian corporates over the period 1992 to 2019. The ADR/GDR issues reached a peak of nearly $9 billion before the 2008 global financial crisis.

Figure 1 – Volume of ADRs/GDRs issued by Indian corporates
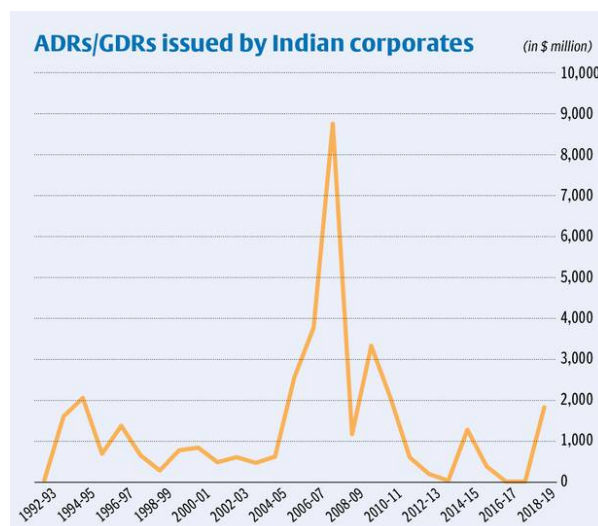
Source: (BusinessLine, 2020)

Previous studies document the dominance of emerging market firms in raising capital overseas through ADRs and GDRs (Chaturvedula, 2018; Gupta *et al*., 2016; Pinegar and Ravichandran, 2010; Aggarwal *et al.,* 2007). Several studies focus on short-term performance and testing market efficiency of depositary receipts (Chaturvedula, 2018; Sakr and Halaby, 2015; Bhattacharjee *et al.* 2014; Kumar *et al.,* 2011; Kadapakkam *et al.,* 2003); liquidity (Kumar *et al.,* 2001); arbitrage opportunities (Kadapakkam *et al.,* 2003) and price premia (Bantwa,2020). We extend the findings from previous studies of Chaturvedula (2018) and Kumar et al., (2001), among others, by using an extended sample period spanning eighteen years. One key difference between our study and those of Chaturvedula (2018) and Kumar *et al.,* (2001), is that we use the announcement date as the event date similar to studies by Flammer (2021) and Krueger (2015). Flammer (2021) contends that the announcement date is the relevant event as it is the day that the information is released to the market. On the other hand, the listing day does not convey new information to the market. Secondly, this study investigates the long-term performance of ADR/GDR firms as well as the change in operating performance of these firms over the event period. Finally, the paper also examines whether ADR/GDR issuances is a key driver in explaining firm performance.

Given India's importance in the global markets and its evolving institutional framework, this analysis provides an appropriate setting for investigating ADR and GDR issuances. As Indian firms cannot list overseas directly, the ADR and GDR routes are popular and key tools to access foreign capital markets for Indian firms. We identify Indian firms that have chosen overseas listing via ADR or GDR during the period 2000-2018, the announcement data was gathered from Bloomberg and daily returns were obtained from DataStream. The resulting sample consists of 85 ADRs and 39 GDRs. We collect firm annual accounting data from Bloomberg.

Overall, the results show that the short-term buy and hold abnormal returns for ADRs are relatively better than GDRs and in the long run yield positive abnormal returns. These firms also have better operating performance post their overseas issuance in the American stock markets and finally the results also show that ADR issues is a key driver in firm performance.

Our findings contribute to the fields of international business and finance in several ways. Firstly, using a larger sample of 124 depository receipts extending over a period of eighteen years, this study analyses both the short and long-term performance of ADR/GDR issuances in an emerging market context. Secondly, we investigate any changes in operating performance of the firms before and after one year, two years and three years post issuance. Thirdly, we investigate whether ADR/GDR issuances is a key driver in firm performance. Finally, we believe that our findings will provide firms, practitioners, and policy makers with a better understanding of accessing overseas markets and its implications.

The paper is organised as follows: section two provides the research background and reviews the literature; section three presents the hypothesis development; section four describes the research design study and section five discusses the findings while section six concludes.

2. Background

More than thirty years ago, the Indian government introduced sweeping liberalisation reforms which permitted foreign investors to invest in Indian securities and enable Indian investors to transact in foreign securities. Along with globalisation and a bid to obtain a competitive edge in the global markets, several Indian firms have been expanding their operations either through listing overseas via ADR or GDR or cross border acquisitions (Kale, 2009; Nicholson and Salaber, 2013).

The liberalisation reforms paved the way and provided means for Indian firms to tap into overseas markets for external finance using GDRs or ADRs. These are financial tools that allow foreign firms to list their shares in the United States or other global markets (Kadapakkam, Misra and Tse, 2003) and by doing so increase their shareholder base, which can lead to better share valuation, value creation for shareholders and lower cost of capital (Li *et al.,* 2019).

From 1992, since the Securities Exchange of Board of India (SEBI) replaced the Controller of Capital Issues (CCI) as the new Indian financial regulator (Clarke *et al*., 2016), only listed firms have been allowed to use ADR/GDR to access foreign markets. From 2014 onwards, unlisted Indian companies were also permitted to use depositary receipts. Indian firms can also access foreign capital markets by listing their debt securities on international exchanges (Masala Bonds) or by incorporating and then listing overseas. Firms such as Infosys Ltd., Wipro Ltd. and ICICI Bank Ltd have issued ADRs while others such as Make My Trip Ltd. chose to incorporate overseas (in Mauritius) and then list on the Nasdaq (Jain, 2020). The liberalisation reforms introduced in India allow firms to tap into global finance by listing overseas, particularly through ADRs/GDRs thus facilitating access to more diversified sources of capital.

To enhance competitiveness of Indian firms, SEBI plans to amend the Companies Act of 2013 which would permit Indian firms to list directly on some of the most liquid foreign stock exchanges such as US, China, Japan, South Korea, the UK, Hong Kong, France, Germany, Canada and Switzerland (Khetan and Surana, 2020). However, till such amendments are approved, ADR/GDR issues remain the principal route for Indian firms to access global capital.

2.1 Literature Review

International listing establishes the name of the firm in international markets and thus increases the visibility of the firm (Baker *et al.,* 2002). Much of the existing academic literature focuses on ADRs, some of which focuses on factors that influence ADR performance while others examine operating performance or returns. Fang and Loo (2002) and Aquino and Poshakwale (2006) find that local market and industry factors affect the performance of ADRs rather than by U.S. market movements. Disclosure of R&D information in the home stock market can reduce uncertainty and reduce the cost of external financing (Aquino and Poshakwale, 2006; Ely and Salehiadeh, 2001; Alaganar and Bhar, 2001; Gordon *et al.*, 2020) and influence ADR stock performance.

Charitou and Louca (2009) find that ADR firms have better operating performance after listing, they argue that cross-listing improves both the magnitude of growth opportunities and the ability of the firm to exploit its growth opportunities. Bae *et al*., (2008) examine a cross-country sample of ADRs and find mixed evidence that ADR returns are significantly and positively related to returns of both the local market and the US market, though the link to local market returns appears stronger. On the other hand, Abdallah and Ioannidis (2010) find that firms usually try to cross-list in a period of good performance to take advantage of the overvaluation of share prices in their local market, only to find that the returns decline significantly after cross-listing. These results are similar to that of Chaturvedula (2018) who find that the returns decline for both ADR and GDR firms soon after the cross listing. Ely and Salehiadeh (2001) show that in the long-term, ADRs become co-integrated with other shares in the host market, which supports the argument that going global leads to market integration.

The literature on GDRs is relatively sparse, with only a limited number of notable studies, mostly focussing on markets information efficiency for GDRs firms based in

emerging markets (see Madhavan and Ray, 2019; Sakr and Halaby, 2015; Pinegar and Ravichandran, 2002). Chugh *et al*., (2014) provide key evidence on the factors influencing firms' decisions to issue GDRs rather than ADRs. They suggest that home country's trade ties with markets other than the US, as well as higher levels of regulation and governance requirements, with corresponding higher costs of issue in the US are decisive factors when issuing GDRs. The adoption of different accounting standards is also crucial when opting for GDR rather than ADRs, the authors' empirical evidence suggests that GDRs tend to use IFRS and that many emerging markets firms may be dissuaded from issuing ADRs owing to the high cost of reconciling with US GAAP.

Pinegar and Ravichandran (2010), in their sample from 1990 to 2005, find that GDRs are issued predominantly by firms in emerging markets, while ADRs are issued mostly by firms in developed markets. They note that ADR issuers are larger and they employ more reputable underwriters than GDR issuers. They do not find a significant difference in their performance other than the fact that the dividend pay-out is higher for GDR issuers.

3. Hypothesis development

3.1 Market performance of ADR versus GDR

The liberalisation of regulations in emerging markets allows firms to cross-list in overseas exchanges via the ADR/GDRs routes and this allows firms to break down barriers in terms of access to overseas capital with consequent reduction of risk due to geographical diversification (Bekaert *et al.,* 2003; Mihov and Naranjo, 2019). Market segmentation hypothesis argues that there is a gradual diffusion of information among investors for cross-listing firms that are based in more segmented markets (for example emerging markets such as India) away from the global/US markets (Menzly and Ozbas, 2010), resulting in reduction in information asymmetry and improved investor confidence.

Li *et al*. (2019) and Errunza and Miller (2000) confirm the market segmentation hypothesis which proposes that liberalisation leads to higher valuation through the break down in investment barriers. Greater disclosure is required for firms that cross list due to regulations (Coffee, 2002) leading to investor confidence (Errunza, 2001). Foerster and Karolyi (1999) hypothesize that firms that access the market via instruments such as ADR reduce their cost of capital and information asymmetry. Furthermore, La Porta *et al.,* (1998) argue that greater investor protection increases investors' willingness to provide financing, which is reflected in lower cost of capital and greater availability of external funds to propel growth.

The US capital markets is one of the most established stock markets in the world with the largest shareholder base and remains an attractive destination for many firms to list (Baker *et al.,* 2002; Ghosh and He, 2015). This can lead to higher demand and improved share value for ADR firms at the time of issue announcement. Errunza and Miller (2000) find that at the announcement period equity valuations increase dramatically. Their reasoning is that equity valuations adjust upwards as the cost of capital falls. Studies by Coffee (1999, 2002) and Stulz (1999) find that cross-listing on US exchanges enhances foreign firms' value. They attribute the increase in value to the "bonding hypothesis" which posits that by listing on a US stock exchange, overseas firms can overcome domestic countries' weak legal and regulatory framework. The cross-listing also benefits from the US stock markets' superior corporate governance and investor protection regulations. Doidge, Karolyi, and Stulz (2004) report value premiums for firms cross-listed on US exchanges and they argue that this is because disclosure requirements and associated monitoring are most stringent in these markets. Abdallah and Ioannidis (2010) find that ADR firms take advantage of the period when the firm is performing well, when it is overvalued, to cross-list, leading to higher ADR share price at the time of issue announcement. This overvaluation leads to negative abnormal

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returns in the short and long term. On the other hand, Pinegar and Ravichandran (2010) find that GDR firms have governance issues such as inability to correct wrongs in the firm due to weak home market legal regime and difficulty in enforcing minority shareholders rights. This may result in a lower demand and hence lower stock price at the time of announcement. Therefore, we argue that firms that choose ADRs benefit in the form of greater liquidity, investor protection and reduced information asymmetries and so would experience a more favourable reaction to their stock price at the time of listing than GDR firms.

Hypothesis 1: The short term and long-term market performance of firms that choose ADR is better relative to GDR firms.

3.2 Long run operating performance

Merton (1987) developed an investor recognition hypothesis, where he argues that investors who do not have equal information will invest only in those securities of which they are well-informed. The investor recognition hypothesis suggests that expanding the investor base leads to changes in the demand of shares, increases liquidity and lower cost of capital. In an early study, Choi and Stonehill (1982) find that corporate prestige and visibility were the most common reasons for listing on a foreign exchange. Foerster and Karolyi (1999) test the investor recognition hypothesis using a sample of ADR firms to find that the number of shareholders increases after overseas listing and is associated with lower returns. Chaturvedula (2018) states that cross listing by firms is likely to affect their stock returns. He attributes the impact of cross-listing on returns to various reasons such as expansion in investor base, trading volumes and size, international arbitragers, increased monitoring and visibility, and finally, greater protection for minority shareholders and access to new capital at lower cost.

Baker *et al.,* (2002) provide evidence that a cross-listing in the US is associated with greater visibility since they found significant increases in the number of media 'hits'. The

impact of increased monitoring and visibility will positively affect the information flow between the firm and the markets (Chaturvedula, 2018). Other studies find that listing in the US leads to greater analysts' coverage, accurate earning predictions and improved corporate governance reducing information asymmetry (Lang et al., 2003; Huijgen and Lubberink, 2005; and Charitou et al., 2007). For GDR firms, the disclosure requirements are not as demanding as those imposed by US markets on ADR firms (Ghosh and He, 2015; Pinegar and Ravichandran, 2002; Kumar *et al.,* 2001), raising the possibility of greater information asymmetry and therefore higher cost of capital for GDR firms. Kumar *et al.,* (2001) contend that Indian firms that cross-list on the US exchanges using the ADR route require more disclosure and transparency of information and this leads to enhanced efficiency of these firms. Enhanced efficiency would lead to better operating performance for firms that list using the ADR route. Furthermore, since US markets are the most active, mature, and demanding in terms of information, investors will invest only in those securities of which they are well-informed. This argument is line with the investor recognition hypothesis.

Internationalisation provides firms with opportunities to expand in overseas markets and this will have significant and positive effects on firm value (Errunza and Senbet, 1981). Such effects reflect in the form of enhanced operational performance of firms after the expansion. This is because in a world with segmented and imperfect financial markets, going global would provide these firms with ample opportunities in terms of reduced cost and reduced risk through diversification. These benefits would be reflected in firms' operational performance. Charitou and Louca (2009) find cross-listing ADR firms have improved firm operating performance. Based on this discussion, we propose the following hypothesis:

Hypothesis 2: Indian firms that choose ADR route experience better post operating performance than those firms that issue GDRs.

4. Research Design

4.1 Data

We identify Indian firms that had ADR and GDR issuances during the period 2000-2018. The data source for ADR and GDR issues is Bloomberg and Bank of New York. We begin with an initial sample of 183 ADR/GDR firms, we exclude 29 firms due to the unavailability of issuance data. We further drop 14 firms with incomplete return data and subscription price, duplicates issuance and 16 that were terminated. The final sample consists of 124 firms of which are 85 ADR and 39 GDR issues. Our sample includes multiple issuances of ADR and GDR and does not suffer from survivorship bias. Therefore, our sample differs from previous studies (Chaturvedula,2018). We retrieve information on daily returns for each company from DataStream. We collect firm annual accounting data at the balance sheet date, immediately prior to the issue announcement, from Bloomberg and DataStream.

4.2 Methods

We use the event study methodology to examine the short-term market performance. We compute buy and hold abnormal returns (BHAR) as the sum of the differences between a firm's monthly raw return and the monthly return for the corresponding benchmark portfolio that it belongs to. We estimate the returns over the short-term windows (-1 to +1 day, -3 to +3 days, and -10 to +10 days) and long-term period (0-100 days, 100-200 days and 200-300 days) after the overseas issue announcements. The aftermarket performance of the firms engaged in ADR and GDR issues is computed using:

$$BHAR_i = \prod_{t=1}^{T}(1 + R_{it}) - \prod_{t=1}^{T}(1 + R_{benchmarkt})$$

(1)

where R_{it} and $R_{benchmark}$ are the raw returns following ADR/GDR issues for firm i and the selected benchmark is BSE500 at event month t.

For the long-term market performance, we follow Lyon *et al.,* (1999)'s approach and construct size and book-to-market reference portfolios. We require that the market value data from DataStream are available at the end of financial year preceding the overseas issuance date for the calculation of size and the Book to Market (BM) ratio, respectively. The portfolios are based on a double-sort on each firm's size (market capitalization) and BM ratio. The formation of portfolios is implemented for every year (calendar year t). On each overseas issuance date, all firms are ranked and formed into 10 decile size ranking portfolios based on the firm's market value at the end of year before the overseas issuance date. All firms are then placed in the appropriate size portfolios based on firms' breakpoints. The smallest size decile is further partitioned into 5 groups based on the size ranking of all firms. In total 25 size ranking portfolios are constructed. The firms are then further sorted into 10 groups according to their BM ratio, measured as the book-value of the equity reported on the firm's balance sheet in calendar year *t-1* divided by the market-value of equity at the end of December in calendar year *t-1*. Finally, we compute buy and hold abnormal returns (BHAR) for the three hundred days period after the overseas issue announcements as the sum of the differences between a firm's monthly raw return and the monthly return for the corresponding benchmark portfolio it belongs to.

Next, we use the following baseline model to examine the impact of ADR/GDR on firm performance as measured by BHARs:

$BHAR_i = \alpha + \beta_1 ADR + \beta_2 LNTA_{i,t} + \beta_3 AGE + \beta_4\ TDRATIO + \beta_5 ROA_{i,t} + \beta_6 BENOWN +$

$\beta_7 PBA1YR + \beta_8 OPTOMV + \beta_9 RUNUP + Year\ Effect + Industry\ effect + \varepsilon_{i,t}$ (2)

Where $BHAR_i$ the dependent variable, is defined as the buy and hold abnormal return for firm i and is calculated as the difference between firms' monthly raw returns and the monthly returns for the corresponding benchmark portfolio, over a period of three hundred days after the overseas announcement of issuance. The choice of using BHARs over CARs in our analysis was made on the basis that buy and hold returns are less likely to suffer from measurement errors in the same way CARs do. Cumulative abnormal returns process true returns as well as upward bias in single period returns which can be affected by measurement errors as indicated by Barber and Lyon (1997).

Several firms' characteristics were used as control variables following previous studies (see Charitou and Louca, 2009; Hatem, 2014). Firstly, we control for type of listing by including a dummy variable (ADR_i), that takes the value of one if the firm is listed as ADR, zero if the firm is listed as GDR; we include firm size (TA), which we measure using the natural logarithm of total assets of each firm i at time t, as in Hatem (2014) and expect it to have a positive effect on performance. Existing literature further suggests that the firm age (AGE) may hold a positive impact on its performance and growth (Burger *et al*., 2017), we therefore add age in years of each firm at the time of overseas listing to our model. We include leverage (TDRATIO) to assess the effect of financial risk (Temouri *et al.* 2016), which we measure as the ratio of total debt to the book value of total assets. Although the relevance of leverage in firm performance is well established, the direction of its effect is not always straightforward. We control for profitability as the ratio of net income before extraordinary items to total assets (ROA) for the year prior to ADR/GDR issue, while BENOWN represents the proportion of shares owned by beneficial owners, those who ultimately control and profit from the firm and expect both variables to have a positive effect on returns. To account for information asymmetry, we use the logarithm of average proportionate bid-ask spread for one year period prior to the announcement of ADR/GDR

offering (PBA1YR), while we control for relative size by using offer proceeds relative to market value (OPTOMV) where offer proceeds equals the offer price times the number of shares offered (Bray and Peterson, 2009). We also include raw return (RUNUP) to control for the stock price appreciations (declines) in the prior year to the issue. Raw returns are returns unadjusted for risk over the period of 260 days to 2 days prior to issuance announcement date of firms.

Table 1 provides a summary composition of our sample. Panel A shows the year-by-year ADR and GDR distribution, Panel B displays a categorization of ADR and GDR firms by industry sectors. Several features in Table 1 are noteworthy, most of the listings occurs between the years 2005 and 2007, and this may be due the boom in the global financial markets just before the global financial crisis. Offerings are predominantly from the manufacturing industry with 28 ADR observations (approximately 32 percent of the sample) and 10 GDR observations (around 25 percent of the sample), also, 69 percent of the sample consists of ADRs compared with 31 percent of GDR firms.

[Insert Table 1 about here]

4.3 Descriptive statistics

Table 2 presents the descriptive characteristics of our sample of firms (mean, median and Mann Whitney test) prior to issuance. We find that firms that issue ADR are larger with a mean of $396.37 million market value, compared to GDR firms with a mean of $75.56 million; ADR firms are also more profitable ($97.1 million) than GDR firms ($27.72 million); further, ADR firms have higher leverage (36.76% compared to 16.19% for GDRs) and they are younger, with a mean of 9.72 years, compared to GDR firms with a mean of 12.94 years. The liquidity of firms as measured by bid to ask spread is higher for ADR compared to GDR firms, we also find that beneficial owners (shareholders who own 25% or more) of the firm are higher in firms that issue ADRs (38.85%) compared to firms that issue

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GDRs (31.51%).

[Insert Table 2 about here]

5. Findings and Discussion

5.1 Short-term performance

In this section we examine and discuss the short-term market performance for Indian firms around the time of issuing ADRs or GDRs using an event study approach. A standard event study framework is used to examine the impact of going global issuance announcement on share prices: (a) one day before and after the announcement date (AD-1 to AD +1); (b) three days before and after announcement date (AD-3 to AD+3); (c) 10 days prior to and after the announcement date (AD-10 to AD+10). The market model is used to estimate abnormal returns. We use a standardized residual test statistic to identify the significance levels.

[Insert Table 3 about here]

Panel A of Table 3 shows the short-term market performance of ADR and GDR issuances around announcement date. We compare the BHARs between the ADR and GDR subgroups around the announcement dates for the overall sample. The average market reaction over the 1-day announcement period for both categories is significantly negative at -0.6384 percent and -0.8815 percent for ADR and GDR offerings, respectively. The announcement period reaction is significantly different for ADRs and GDRs. Further, we find that the market reaction over the 3-day announcement period is significantly negative for both, however it is considerably more negative for GDR (-3.825 percent) compared to ADRs (-0.4048 percent), while the market performance over the 10-day period is significant and positive for both the ADRs and GDRs, but ADRs are considerably more positive with 1.5646 percent, compared to 0.137 percent for GDRs. The negative returns experienced in the immediate days around the announcement period are indicative of a price over-reaction that occurs at the time leading up to the listing announcement. The negative market performance

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is consistently more prominent for GDRs than for ADRs, for which greater information is provided to market participants. These results are in line with Chaturvedula (2018).

Further, in Panel B of Table 3 we examine the differential market impact to ADR and GDR listing announcement by splitting the sample into financial and non-financial firms. This is to consider the different operating characteristics of financial firms compared to the non-financial firms. We find that the average market performance around the initial announcement date is significantly negative for non-financial firms at -0.4391 percent, and even more so for financial firms at -0.9163 percent. The average market performance over the 3-day announcement period is significantly negative for non-financial industry at -0.4563 percent as well as for financial industry at -0.6832 percent. They are also statistically significantly different from each other. During the 10-day period, the market reacts positively to non-financial industry's issues at 4.0643 percent, while it reacts less positively to financial industry's issues, at 0.1493 percent. The market performance for the 10-day announcement period is significantly different across all combinations at 1 percent level. The positive return over the 10-day period can be explained by market participants mitigating the unfavourable price reaction to the ADR offer announcement. The findings of better ADR performance compared to GDRs from the time of announcement of issuance, can be explained by the greater levels of investors' protection, liquidity as well as the reduced information asymmetries and larger investor base that characterize US markets. Our results confirm Pinegar and Ravichandran's (2010) who suggest that weaker home market legal, disclosure and monitoring regimes negatively affects GDRs value, this would explain why firms that issue ADRs perform better than GDR firms. Next, we discuss the long-term market performance.

5.2 Long-term performance

We examine the long-term stock market performance using the reference portfolio approaches of Lyon *et al.* (1999).

[Insert Table 4 about here]

Table 4 shows that BHARs are significantly negative for all the periods after issuance. We find significantly negative BHARs for firms issuing GDRs in the post announcement period at the 1% significance level, BHARs for post announcement periods for firms issuing ADRs are also significantly negative at the 10% significance level. Overall, firms issuing ADRs perform better compared to GDRs in both the short and long-run. These findings are consistent with the completion of ADRs, providing a positive certification to the market about firm quality. This provides supporting evidence that listing on US markets benefit Indian firms more than listing in other overseas markets and is consistent with results shown by Pinegar and Ravichandran (2010). Overall, our findings on short and long-term market performance of ADR and GDR issuances supports our first hypothesis.

5.3 Changes in operating performance

Table 5 presents the change in operating performance of ADR firms versus GDR firms separately over the period of 1 year before issuance and 1 to 3 years after issuance.

[Insert Table 5 about here]

It reports the mean and median of the cumulative change in each firm operating characteristic for ADR and GDR firms. In the first year after listing, ADR firms show higher value of assets, sales, profit, cash retained earnings, capital expenditure, and net pay out. In the second and third year after listing, ADR firms continue to show higher operating characteristics than GDR firms. A key observation to note is that in terms of leverage, ADR firms experience significant reduction in their level of leverage after ADR issues. This could

possibly be due to greater access to capital in the American markets which would provide opportunities to these firms to obtain varied financing choices, resulting in reduction in firm leverage. Our findings support our second hypothesis where we argue that Indian firms that choose ADR issuance experience better post operating performance than firms that issue via GDRs. This could be explained with the greater visibility and exposure that American stock exchanges offer to Indian firms that issue ADRs.

5.4 Cross-sectional regression analysis

In this section, we undertake further analysis on how ADR issuances impact firm performance. We analyse the factors that influence the firm performance (measured using abnormal returns), and our key independent variable is the dummy variable indicating ADR/GDR issuance.

[Insert Table 6 about here]

In Table 6, we present the cross-sectional regression analysis. We use the bid-ask spread (PB1YR) as a control for information asymmetry in this estimation, along with other control variables. We use bootstrap method (statistical methodology using sub-samples for better estimation) to test the significance level of buy and hold abnormal returns (BHARs). We bootstrap 500 times to obtain consistent standard errors. The estimated coefficient on the ADR issuance announcement has the expected positive sign and statistically significant at the 1 percent level. This finding indicates that the issuance of ADRs results in a positive impact on firm performance and is consistent with the earlier findings of Callaghan *et al.,* (1999). The results are confirmed when we run the model using industry and year effects (shown in column 2), and again using firm and year effects (shown in column 3).

5.4.1 Robustness test

We further confirm the results of our analysis of ADR issuances by undertaking robustness test as shown in Table 7.

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[Insert Table 7 about here]

We use the number of analysts following the cross-listing process as an alternate variable to bid-ask spread as an indicator of information asymmetry. We find that ADR issuance has a positive and significant impact on firm performance. Our results remain consistent when we use 'analyst following' as a control variable for information asymmetry. Our results are consistent across all estimation models.

Overall, our results suggest that in the short-term, firms that issue ADRs have a better market performance in the short-term period after announcement. In the long run these firms continue to perform better compared to GDRs. Our findings show that there is credence to the investor recognition hypothesis which argues that expanding the investor base leads to changes in the demand of shares and increases liquidity (Merton, 1987). Our results also support Errunza (2001)'s argument that strict securities regulations and information disclosure requirements such as that in the US, reduces information asymmetries and can increase investors' confidence in shares. Moreover, firms' international listing establishes the name of the firm in global markets increasing the visibility of the firm (Baker *et al.,* 2002; Choi and Stonehill, 1982), and this is more pronounced for Indian firms that issue ADR.

6. Conclusion

In recent decades, India has made remarkable economic strides which identifies it as one of the fastest growing economies in the world. With the on-going liberalisation reforms initially introduced in 1992, Indian firms seek finance by listing overseas through the ADR and GDR routes. This study analyses a critical, pertinent and important topic in an emerging market such as India.

Using a sample of ADR (85 issues) and GDR (39) issues by Indian firms, we examine the short and long-term performance of these firms as well as changes in their operating characteristics. The results of our preliminary univariate analysis show a significant and

positive performance of ADRs relative to GDRs on announcement dates. Next, we examine the long-term performance of the ADRs and GDRs by using the buy and hold abnormal returns (BHARs) and find that the BHARs are positive and significant for ADRs. Following ADR and GDR issuance, we find positive changes in the operating performance of firms. We find that the changes in assets, sales, profit, cash retained earnings, capital expenditure, and net pay-out between one year before the issuance and one year to three years after issuance are all positive. ADR firms perform marginally better than GDR firms, moreover, our findings show that ADR firms have reduced leverage across the periods compared to GDR firms. This maybe because ADR issues provide firms with greater access to capital. Finally, the stock price reaction following ADR and GDR issues show that ADR issues have a significant positive effect on the stock price.

Prior studies mainly examine the short-run performance of depository receipts (Chatturvadaal, 2018; Kumar *et al.,* 2001). In order to assess the performance of cross-listed firms, it is imperative that both the short and long-term after-market performance of firms is examined. To the best of our knowledge, none of the previous studies examine the long-term performance and changes in operating performance, if any, post issuance. This study attempts to fill this gap.

Given that currently the regulations do not permit direct overseas listing, ADRs and GDRs are the more likely routes adopted by Indian firms to list overseas, so it is important that performance of both routes are examined simultaneously and compared. The empirical evidence provided in this paper on the short and long-term performance of these issues, as well as their impact on operating performance of firms will help to inform firms and policy makers.

Our paper is not without some limitations, summarized below along with some suggestions for future research. The main limitation that posed a challenge to this study was

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the small sample. As observed, the current stringent regulatory framework in India means that this study had to deal with small samples of ADR and GDR issues. Future scope of research may examine the performance of ADR and GDR issues by making a distinction between issues by listed and unlisted firms. Next, if the regulatory reforms that permit firms to list overseas directly are approved, future research could investigate empirical evidence on all the available routes to list overseas by Indian firms. Nevertheless, the findings of this study do have important implications and contribute to the existing literature on overseas listings of emerging markets firms.

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Table 1: Distribution of American depositary receipts (ADRs) and Global depositary receipts (GDRs) across years and industry sectors

This table reports distribution of American depositary receipts (ADR) and Global depositary receipts (GDR) for the period 2000-2018. We classify firms according to the Global Industries Classification Standard (GICS) codes.

Panel A: Year-wise distribution		
Year	**ADRs**	**GDRs**
2000	3	1
2001	1	1
2002	4	2
2003	6	3
2004	5	1
2005	16	6
2006	5	2
2007	11	7
2008	2	1
2009	9	4
2010	4	2
2011	1	1
2012	3	1
2013	2	1
2014	3	1
2015	1	1
2016	2	1
2017	3	1
2018	4	2
Total	85	39

Panel B: Industry sector wise distribution				
	ADR		**GDR**	
	Number	**Freq (%)**	**Number**	**Freq (%)**
Agriculture	6	7.06	3	7.69
Construction	13	15.29	4	10.26
Manufacturing	28	32.94	10	25.64
Transportation	10	11.76	5	12.82
Wholesale	9	10.59	2	5.13
Retail	6	7.06	4	10.26
Finance	7	8.24	8	20.51
Service	4	4.71	2	5.13
Public Administration	2	2.35	1	2.56

Table 2: Descriptive statistics

This table provides firm characteristics of our sample, partitioning on ADR versus GDR. The table also provides nonparametric test statistics Mann Whitney (MW) for the differences in median values between two sub-groups. Details of variable definitions are in Appendix A. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

		ADR	GDR	MW test
MV	Mean	396.37	75.56	3.95***
	Median	94.64	30.51	
BM	Mean	0.73	0.75	1.25
	Median	0.80	0.81	
OP	Mean	97.10	27.72	4.73***
	Median	32.04	8.12	
TDRATIO	Mean (%)	30.76	16.91	4.07***
	Median (%)	25.73	9.34	
OPTOMV	Mean (%)	44.21	44.93	0.69
	Median (%)	25.73	22.74	
BENOWN	Mean (%)	38.85	31.51	2.06**
	Median (%)	38.18	26.80	
TA	Mean	1428.37	576.28	2.30**
	Median	321.03	147.26	
AGE	Mean	9.72	12.94	2.80***
	Median	7.43	11.58	
RUNUP	Mean (%)	4.96	9.35	0.75
	Median (%)	-8.72	3.25	
PBA1YR	Mean (%)	3.72	5.20	2.05**
	Median (%)	2.49	3.25	
ANALT	Mean	8.00	6.34	3.45***
	Median	6.53	4.58	
Sample size		85	39	

Table 3: Short term performance of ADR and GDR

This table reports mean and median abnormal returns and the standardised residual t-tests (SRT) employing the market model for ADR and GDR announcements for the periods one day before and after the announcement (AD-1 to AD 1), the period three day before the announcement to three-day after (AD -3 to AD 3); and 10 days before announcement to the 10 days after (AD -10 to AD 10). Panel A reports price reaction results for tradable versus non-tradable issues. Panel B presents the results based on Financial Vs Non-Financial industries. We use standardised residual t-test to report whether average abnormal return is significantly different from zero. This table also provides t-test statistics for the difference in mean abnormal returns across the different groupings. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Short-term performance of ADR and GDR issuances around announcement date			
Days		**ADR**	**GDR**	**T-test**
	Mean (%)	-0.6384	-0.8815	
AD -1 to AD 1	Median (%)	-0.3813	-1.3515	
	SRT	(-2.98)***	(-3.67)***	2.45***
	Mean (%)	-0.4048	-3.825	
AD -3 to AD 3	Median (%)	-0.4472	-2.4395	
	SRT	(-2.67)**	(-4.10)***	3.45***
	Mean (%)	4.5816	0.044	
	Median (%)	1.5656	0.137	
AD -10 to AD 10	SRT	(-2.13)**	(-2.08)**	4.50***
	Sample	85	39	

Panel B: Short-term performance of ADR and GDR issuances around announcement date for Financial Vs Non-Financial Industries			
Days		**Non-Financial**	**Financial**	**T-test**
AD -1 to AD 1	Mean (%)	-0.4391	-0.9163	
	Median (%)	-0.2593	-1.2125	
	SRT	(-3.11)***	(-1.67)*	4.87***
AD -3 to AD 3	Mean (%)	-0.4563	-0.6832	
	Median (%)	-0.3674	-0.6743	
	SRT	(-5.36)***	(-3.95)***	5.98***
AD -10 to AD 10	Median (%)	1.4273	0.0932	
	SRT	(-1.92)*	(-1.11)	3.92***
	Sample	109	15	

Table 4: Long term performance

This table reports mean and median buy-and-hold abnormal returns using matching reference portfolio approaches of Lyon, Barber and Tsai (1999). We provide bootstrap test statistics to test the significance level of buy and hold abnormal returns. The superscripts ***, **, and * indicate significance level at the 1%, 5%, and 10%, respectively

BHAR	Day 0		1 to 100		101 to 200		201 to 300	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ADR	-0.018	-0.013	-0.015	-0.011	-0.008	-0.007	0.011	0.0010
GDR	-0.027	-0.019	-0.022	-0.016	-0.010	-0.009	0.002	0.0008
Bootstrap Test	(2.89)***	(2.54)**	(1.91)	(2.04)*	(3.56)***	(2.89)***	(2.78)**	(2.97)**

Table 5: Change in operating performance of ADR/GDR Firms

This table reports the change in operating performance of firms that issue ADRs or GDRs over the period of 1 year before issuance and 1 to 3 years after issuance. It reports the mean and median of the cumulative change in each firm operating characteristic for ADR and GDR firms. We provide the significance levels for the mean and median of change in operating performance variables using the t-test and the Mann-Whitney (MW) U test respectively. The superscripts ***, **, and * indicate significance level at the 1%, 5%, and 10%, respectively. Detailed definitions of the variables are provided in Appendix 1.

| | T-1 to T+1 | | | | | | T-1 to T+2 | | | | | |
| | ADR | | GDR | | ADR Vs GDR | ADR Vs GDR | ADR | | GDR | | ADR Vs GDR | ADR Vs GDR |
	Mean	Median	Mean	Median	T-test	MW-test	Mean	Median	Mean	Median	T-test	MW-test
Δ Asset	0.061	0.020	0.047	0.016	8.70***	2.96***	0.062	0.021	0.048	0.016	8.94***	3.98***
Δ Sales	0.020	0.010	0.016	0.008	7.94***	3.02***	0.021	0.010	0.016	0.008	7.47***	3.12***
Δ EBIT	0.010	0.010	0.008	0.008	9.47***	2.79***	0.010	0.010	0.008	0.008	9.35***	2.83***
Δ GP	0.010	0.010	0.008	0.008	4.78***	2.89***	0.010	0.010	0.008	0.008	4.27***	3.00***
Δ LEV	-0.031	0.010	-0.024	0.008	8.40***	3.13***	-0.031	0.010	-0.024	0.008	8.94***	3.17***
Δ Cash	0.041	0.020	0.032	0.016	8.87***	4.56***	0.041	0.021	0.032	0.016	8.75***	4.75***
Δ REV	0.031	0.020	0.024	0.016	7.89***	2.87***	0.031	0.021	0.024	0.016	7.97***	3.38***
Δ CAPX	0.010	0.010	0.008	0.008	6.58***	2.75***	0.010	0.010	0.008	0.008	6.84***	2.94***
Δ PAYOUT	0.020	0.020	0.016	0.016	8.23***	4.29***	0.021	0.021	0.016	0.016	8.12***	4.47***

| | T-1 to T+3 | | | | | |
| | ADR | | GDR | | ADR Vs GDR | ADR Vs GDR |
	Mean	Median	Mean	Median	T-test	MW-test
Δ Asset	0.062	0.021	0.048	0.016	9.34***	4.03***
Δ Sales	0.021	0.010	0.016	0.008	8.60***	3.16***
Δ EBIT	0.010	0.010	0.008	0.008	10.64***	2.84***
Δ GP	0.010	0.010	0.008	0.008	5.80***	3.08***
Δ LEV	-0.031	0.010	-0.024	0.008	9.10***	3.23***
Δ Cash	0.041	0.021	0.032	0.016	9.14***	3.43***
Δ REV	0.031	0.021	0.024	0.016	8.55***	2.96***
Δ CAPX	0.010	0.010	0.008	0.008	7.30***	3.25***
Δ PAYOUT	0.021	0.021	0.016	0.016	8.92***	4.48***

Table 6: ADR issuance and stock market performance

This table provides cross-sectional regression results explaining the market response to overseas listing during the announcement period. The dependent variable is the BHAR. ADR is a dummy variable which takes the value 1 and 0 for GDR issuance. We use PBA1YR which is the bid-ask spread to control for information asymmetry between ADR and GDR issuance. Details of variable definitions are in Appendix 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Column 1 estimates the model using Bootstrap 500, column 2 uses industry and year effects, column 3 uses firm and year effects.

Variables	(1)	(2)	(3)
ADR	2.0453	2.0042	2.0845
	(7.56) ***	(7.41)***	(7.72)***
PBA1YR	0.6789	0.6655	0.6920
	(10.83)***	(10.62)***	(11.04)***
LNTA	0.0037	0.0035	0.0037
	(1.87)*	(1.83)*	(1.90)*
AGE	0.0051	0.0050	0.0050
	(1.76)*	(1.73)*	(1.75)*
TDRATIO	-0.1437	-0.1409	-0.1469
	(-0.60)	(-0.60)	(-0.63)
ROA	0.4502	0.4413	0.4589
	(3.60)***	(3.51)***	(3.63)***
BENOWN	0.5416	0.5305	0.5520
	(6.61)***	(6.76)***	(6.69)***
OPTOMV	0.0037	0.0033	0.0032
	(1.87)*	(1.81)*	(1.76)*
RUNUP	0.0051	0.0050	0.0047
	(6.80)***	(6.67)***	(5.98)***
CONSTANT	6.4784	6.3493	6.6021
	(10.32)***	(10.12)***	(10.54)***
Bootstrap 500	YI	No	No
Industry & Year Effects	No	YI	No
Firm & Year Effects	No	No	YI
Adj R2	0.1758	0.1759	0.2675
Sample	124	124	124

Table 7: Robustness test - ADR issuance and stock market performance

This table presents the robustness test results where we use number of analysts following to capture information asymmetry. We undertake cross-sectional regressions to analyse the impact of ADR issuances in the announcement period. The dependent variable is the BHAR. ADR is a dummy variable which takes the value 1 for ADR and 0 for GDR issuance. This regression uses LNANALT (number of analysts following the issuance) as control variable as robustness test to confirm the results from Table 6. Details of variable definitions are in Appendix 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Column 1 estimates the model using Bootstrap 500, column 2 uses industry and year effects, column 3 uses firm and year effects.

Variables	(1)	(2)	(3)
ADR	1.9552	1.9342	1.9970
	(7.23)***	(7.14)***	(7.39)***
LNANALT	0.0157	0.0138	0.0155
	(2.06)**	(1.92)*	(2.00)**
LNTA	0.0036	0.0035	0.0036
	(1.83)*	(1.76)*	(1.82)*
AGE	0.0051	0.0048	0.0050
	(1.69)*	(1.60)	(1.71)*
TDRATIO	-0.1383	-0.1359	-0.1403
	(-0.66)	(-0.59)	(-0.54)
ROA	0.4334	0.4258	0.4395
	(3.38)***	(3.36)***	(3.48)***
BENOWN	0.5207	0.5122	0.5288
	(6.30)***	(6.54)***	(6.49)***
OPTOMV	0.0041	0.0035	0.0036
	(1.92)*	(1.79)*	(1.82)*
RUNUP	0.0046	0.0048	0.0050
	(6.49)***	(6.42)***	(6.65)***
CONSTANT	6.3051	6.1266	6.3255
	(9.84)***	(9.72)***	(10.05)***
Bootstrap 500	YI	No	No
Industry & Year Effects	No	YI	No
Firm & Year Effects	No	No	YI
Adj R2	0.1753	0.1758	0.2675
Sample	124	124	124

Appendix 1: Variable definitions

Variable Name	Definition
AGE	The age of the firm in years
BENOWN	The proportion of shares owned by beneficial owners
BM	Total Assets/(Total assets - book value of equity + market value of equity)
ANALT	The maximum number of analysts making annual earnings forecasts in any month over the last 12-month period.
MV	The market value of the company one month prior to the announcement
OP	The ADR/GDR issue size measured by offering size
PBA1YR	Average proportionate Bid and Ask spread for one year period prior to the announcement date
RUNUP	Raw return over the period from -260 day to -2 day relative to the announcement date
TA	Total Assets at the balance sheet date
TDRATIO	The ratio of total debt to total assets
ROA	The ratio of net income before extraordinary items to total assets
OPTOMV	Offer proceeds relative to Market Value
Δ Asset	The change in the level of total assets
Δ Sales	The change in the level of sales
Δ EBIT	The change in the level of earnings before interest and tax
Δ GP	The change in the level of gross profit
Δ LEV	The change in the level of leverage. We calculate LEV as the ratio of total debt to total assets
Δ Cash	The change in the level of cash balance
Δ REV	The change in the level of retained earnings
Δ CAPX	The change in the level of capital expenditure
Δ PAYOUT	The change in the level of capital expenditure. We calculate PAYOUT as ratio of total dividend paid divided by cash flow times 100.