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International Capital Flow and Portfolio Diversification through Depository Receipts

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Abstract. Capital markets across the world are getting increasingly interconnected. Many companies are tapping international equity market through DRs(Depository Receipts) route. This paper analyses different aspects of DR issues so as to understand various dimensions and test whether Infosys ADR and the underlying shares price provide for arbitrage opportunity or law of one price(LOOP) holds true.

Keywords: Depository Receipts, Portfolio Diversification, Arbitrage Opportunity.

1. Introduction

Capital markets across the world are getting increasingly interconnected. Not only multinational companies access global capital market, there is an increasing trend among not-so-big companies from emerging economies to tap international capital market to raise debt and equity capital. While debt capital in terms of Foreign bonds, Eurobonds, FCCBs (Foreign Currency Convertible Bonds) etc have dominated the scene, equity fund raising has come through Depository Receipts (DRs). American Depository Receipts (ADRs) and Global depository Receipts (GDRs) are two categories of DRs. The size of the DR market can be judged from the fact that during 1983 to 2010, 3274 companies have issued DRs both in sponsored and unsponsored form representing wide array of industries from countries like Romania, Ukraine and Nigeria, Hong Kong, Vienna and Lisbon etc.

ADRs are issued when a foreign company issue shares and convert these into DRs and list these DRs in any American exchange, either in NASDAQ, NYSE or in OTC. GDRs are listed and traded in London, Luxembourg, Frankfurt and Singapore Exchange. DRs (both ADRs and GDRS) can be sponsored or unsponsored. In a sponsored DR program, the foreign company in collaboration with the depository bank/ financial institution issues the DRs.

Both sponsored as well as unsponsored ADRs can be categorized as *Level I, II, III or Rule 144A type*. In Level I ADRs, the foreign company actively solicits the help of depository bank to list its ADRs. Level I ADRs are the easiest one to issue and SEC of USA does not require full SEC registration, disclosure and reporting requirement and thy trade in the OTC market. In Level II ADR program, SEC imposes stricter listing, disclosure and reporting requirement. Level II ADR programs can be listed and traded in NYSE, NASDAQ. In a level III ADRs, the foreign company raises capital from the general public and has to abide by the most stringent form listing, disclosure and reporting standards. In Rule 144A ADR, foreign companies are allowed to issue ADRs and raise capital from restricted entities like QIBs (Qualified Institutional Buyers) on private placement basis. GDRs are issued either as Rule 144A or as REG(S). GDRs are normally issued to institutional investors on private placement basis either as Rule 144A or as REG(S) securities. If GDRs are issued to non-US investors, then these are known as REG(S) securities based on Regulation (S) Securities act of 1933. If GDRs are issued to US investors, these are known as Rule 144A like Rule 144A ADR programs.

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A host of intermediaries help a company to issue these DRs. Brokers, Depository, Custodian are the intermediaries which help a company to issue DRs with depositories taking a major chunk of responsibilities.

With the DR listing, the shares of a given company trade simultaneously in two different markets giving rise to arbitrage opportunity. If the international capital market is efficient, this arbitrage opportunity should not persist for long as LOOP should hold true. Many research studies have been undertaken to analyze the whether traders are able to take advantage of this arbitrage opportunity. Park & Tavakkol(1994), Kleidon & Werner(1996), Shleifer & Vishney (1997), Jithendranathan et al (2000), Lowengrub & Melvin(2002) and Suarez(2004), Hunter(2006) tested whether the dual listing of shares gives rise to arbitrage opportunity and how integrated the foreign market and domestic markets are. Kleidon & Werner(1996) compared British dual listed companies with non cross listed companies and find a total lack of integration among markets. Shleifer & Vishney (1997) also find that arbitrage opportunities is not exploited and opined that capital for undertaking arbitrage may not readily available. Suarez (2002) analyzed the price discrepancy between ADRs and underlying shares using French and American stocks. They find that, even though infrequently, both markets show large deviations from LOOP giving rise to arbitrage profit. Hence they classified these markets as disintegrated and not fully efficient. Hunter (2006) examined whether equity markets of Argentina, Chile and Mexico have become integrated with the international capital market by analyzing ADRs issues from these countries. He finds that these markets are not integrated.

India has been a major player in the DR market. In fact, Indian companies have issued the maximum number of DRs, though majority of these DRs are GDRs. Infosys Ltd. is the first company to issue ADR and is considered as torch bearer in making Indian information technology industry's presence felt in global market. All most all Indian mutual funds have Infosys shares in their portfolio. Infosys result announcement is waited in bated breaths as its performance not only indicates the fortune of Indian IT industry but also the performance of major stock indices in India.

In light of these above discussions, the objective of this paper is to (*1): To analyze different aspects of DR issues so as to understand various dimension DRs (2) To test whether Infosys ADR and the underlying shares price provide for arbitrage opportunity or law of one price holds true*.

2. ADR-GDR Scorecard:

In this section, we analyze the DRs from various dimensions. The data for this analysis have been downloaded from JP Morgan and CMIE Data base. Categorization of DRs is done based on:

- Sponsored Vs. Unsponsored DRs.
- ADRs. vs. GDRs
- Industry wise and year wise ADR/GDR distribution.

2.1. Sponsored Vs. Unsponsored DRs:

Out of the 3274 DR programs, 2163 are sponsored programs representing 67% of total number issues. This indicates that foreign companies actively solicit their presence in the international capital market, thus issue sponsored DRs. Out of 2163 sponsored issues, 1172 are ADRs while 991 are GDR issues.

Out of 1111 unsponsored issues, 1083 issues ADRs while a negligible 29 Unsponsored DRs are GDR issues. Unsponsored DRs are issued by a Depository without any active participation of the foreign company. For example, suppose a depository in USA feels that there is good appetite for shares a foreign company from India among US investors – let us say the company is Hindustan Copper Ltd(HCL). whose shares are listed and traded at NSE and BSE. The US based depository buys shares of HCL. from Indian market, deposits these shares with a custodian and issues ADRs. HCL has no role to play in this process. It may so happen that a company may not be aware that its ADRs are being traded in the US market! Substantial higher portion of unsponsored DRs being issued in the American market indicates that there is greater interest among American investors to diversify their portfolio and hold shares of foreign companies.

All 3274 DRs are associated with 4 depository banks. These are Bank of New York (BNY), Citibank (CIT), Deutsche Bank (DB) and JPMorgan (JPM). It is to be noted here that one unsponsored DRs can have more than one, even 3 to 4 depository banks. Out of 3274 DRs, 2637 DRs are issued by single depository bank. Remaining DRs have been issued by more than one depository banks. *Figure 1* shows the distribution of DRs by single depository banks. Bank of New York (BNY) is associated with 1701 DRs while JPM is associated with 249 DRs.

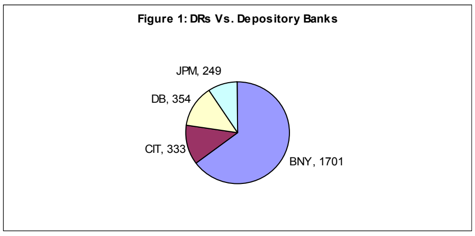

Figure 1: DRs. Vs. Depository Banks

2.2. ADRs Vs. GDRs

Out of 3274 DR programs, 2255 are ADRs issues while the remaining 1019 issues are GDR issues. Higher number of ADR issues compared to GDRs indicates that foreign companies prefer USA to London or Luxembourg. It is well accepted fact that presence in US market adds to a foreign company's reputation due to stringent nature of SEC of USA requirement. Out of 2255 ADR issues, 1837, 157, 214 and 47 issues are Level I, Level II, Level III and Rule 144A respectively. Predominance of Level I ADRs indicate that many companies have listed ADRs as it is the easiest way for a foreign companies to list and trade its shares in USA. Out of 1019 GDRs, 379 issues are of Rule 144a category, 640 GDRs are issued as REG(S) securities and 5 have been simultaneously issued as REG(S) and Rule 144A securities.

Companies from 74 countries have issued these 3274 DRs. Maximum number of DRs has been issued by Indian, Japanese firms followed by British and Chinese firms. India ranks 29 among 74 countries if only ADR issues are considered. However it ranks number 1 when both ADR sand GDRs are considered. India has only 19 ADRs compared to 260 ADRs from Japan. Major country wise DRs are given in Figure 2.

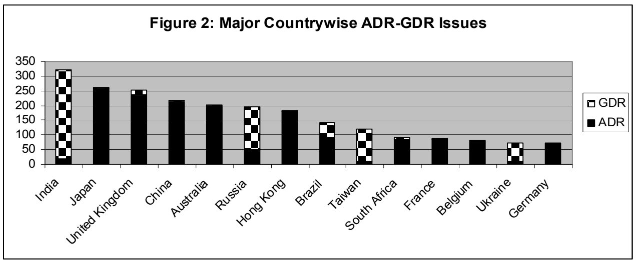

Figure 2: Major Country wise ADR-GDR issues

Out of 3274 DRs, 610 DRs have raised capital while the rest are issued as Level I or II categories. These 610 issues cumulatively raised a whopping USD 183.8 bn. Out of these 610 issues 268 are ADR and have raised USD 104.3 bn. In other words, 342 GDR raised all together USD79.5 bn. This also indicates that US investors have been the largest contributors. Another interesting fact emerges when we analyze the amount of capital raised by foreign companies belonging to different countries. Figure 3 highlight the same.

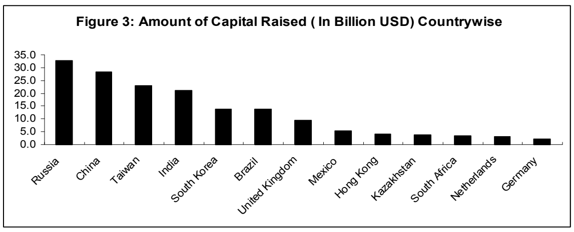

Figure 3: Country Wise Amount of Capital Raised

Figure 3 indicates that Russia raised the maximum amount of funds. India ranks 4th even though it has the maximum number of DRs (Figure 2). Even though Japan and UK rank 2nd and 3rd respectively in terms number of DR program (Figure 2), these two countries do not feature among the top DR fund raisers. In fact, Japanese firms have raised a meagre USD 0.47 bn even though 260 Japanese ADRs are traded in US market. So is the case for Australia. This clearly shows that majority of DRs from these two countries are unsponsored ones. This clearly indicates these DR programs have come into existence more form the portfolio diversification requirements of international investors rather than companies wanting to diversify capital sourcing from foreign countries.

2.3. Industry wise and year wise ADR/GDR distribution:

These 3274 DRS have come from a wide array of industries – ranging from waste water management to shipping, foods, consumer goods. *Table 1* shows the five industry sectors which have contributed to maximum number of DRs. Maximum numbers of DRs have been issued from Banking sector, followed by Oil & Gas, Health care, Retail and Real estate.

The earliest DR in the data base was issued in the year 1956. Over the years the number of DR issues have increased manifold. The following figure, *Figure 4* shows the year wise break-up of DR issues from 1985 till 2010.

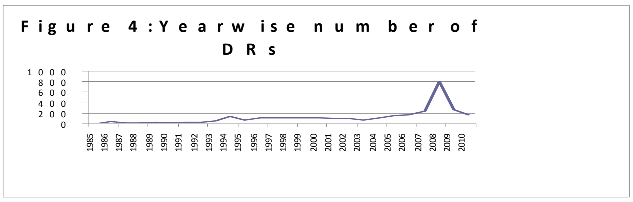

Figure 4: Year wise Number of DRs Issued

DRs issuance activities started picking up in the year 1994 with 134 issues. During 1995-2007, number of DRs issued per year ranged 70 to 250. There was sudden jump in DR issuance in 2008. During 2008, total 800 DRs were issued compared to 237 issues in 2007 – a 400% jump. 2008 being a year plagued sub prime crisis, global capital market meltdown, 800 DRs being issued in that year seems to be quite contradictory.

Probing further we find that during October 2008, SEC of US relaxed certain provisions for unsponsored Level I DRs. As per the changed provisions, a depository can issue unsponsored ADRs when the foreign company's shares are listed in any foreign country and the foreign company publishes its annual reports in English that conforms the disclosure requirement of the regulator where the company is incorporated. As many foreign companies met these criteria, depository banks went ahead and created 800 DR. Analyzing further we find that out of these 800 DRs, 140 issues were sponsored DRs while the rest 660 are unsponsored DRs. However the euphoria seems to have died down in 2009 as only 262 DRs have been issued.

3. Arbitrage Opportunity between Infosys ADR and Infosys Share price:

Daily closing prices form January 2001 to October 2010 of Infosys ADRs and Infosys share prices have been downloaded from NASDAQ and NSE websites respectively. INR/USD exchange rate is from RBI website. The ADR and share prices were adjusted for split. As Indian market and US market follow different holidays, both price series were matched for any missing quotations and finally we get 2311 daily quotations. As arbitrage opportunity involves simultaneous buying and selling in two separate markets, the transactions cost have to be factored in. We have used 0.0035% as the security transaction tax (STT) being charged for every buy and sell. Brokerage fee varies from broker to broker as well as different brokerage fee is charged depending on the volume of transaction of a client. We have used 0.05% as the brokerage fee which is charged on retail trades. This rate is high from for institutional traders. However even with this high brokerage fee, if the arbitrage opportunity persists, this will clearly show that even higher profit can be earned by institutional traders. For ADR price series, a brokerage fee of 13.3 basis points as used by Suarez (2004)

Figure 5 indicates that there exists substantial price difference between Infosys share price and Infosys ADR price in INR terms. From 2001 till 2007, the Infosys share prices were substantially lesser than ADR price in INR terms. From 2007 onwards, the price difference has gone down alternates between positive and negative. T-test for paired two-sample means as well as t-Test for two-sample assuming equal variances indicates that both price series are statistically different. This clearly shows that for Infosys the ADR and the underlying share market is not integrated. However the degree in non-integration seems to reduce when 2010 price difference is compared to some earlier years in our data period.

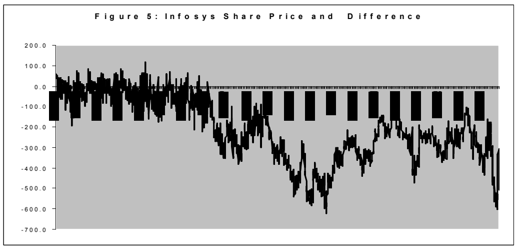

Figure 5: Difference in Infosys ADR and GDR Prices

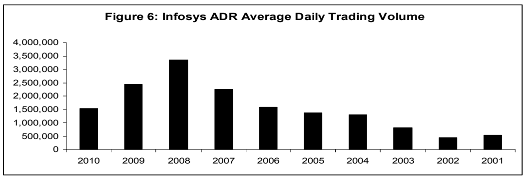

Figure 6: Average Trading Volume of Infosys ADR

Significant price difference between ADR prices and Infosys share price, at least during earlier part of the study period can be due to the fact that Indian DRs did not offer two-way fungibility. The government of India permitted *two-way fungibility* in 2001-2002 union budget. Two-way fungibility allows investors both FIIs as well as domestic, to freely convert DRs into underlying shares and also reconvert back the domestic shares into DRs. Two-way fungibility is an important requirement for LOOP to hold true. In one-way fungibility, DR investors could convert these to underlying shares but can not reconvert back to DRs thus affecting the liquidity in DR market. To check whether liquidity has been a factor affecting higher ADR price, we plot the year wise average daily trading volume as given in Figure 6. Only during 2001-2003, the average daily trading volume is lesser compared to other years. Hence significant price difference during 2003-2007 is not due to the low liquidity in the ADR market.

To conclude, DR issuance activity peaked in 2008 with 800 issues. Unsponsored DRs have dominated the DR market indicating that DRs are primarily issued for portfolio diversification rather than foreign company wanting to diversify their fund raising operations. Though India, Japan and UK are the largest issuers of the DRs, Russian company have raised maximum amount of capital through DRs. Analysis Infosys ADR and underlying domestic price shows that significant price difference exists between these two price series clearly indicating that these two markets are not integrated. Similar tests for more number of Indian DRs should be done to come to meaningful conclusion.

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