

A look at the liquidity of single versus dual-listed ADRs

Javier Rodríguez

Professor of Finance
Graduate School of Business Administration
University of Puerto Rico
Río Piedras Campus
PO Box 23332
San Juan, PR 00931
Tel. 787.764.000, Ext. 87118, 87129

javier.rodriiguez19@upr.edu

A look at the liquidity of single versus dual-listed ADRs

Abstract

In this study we examine the daily stock market liquidity of single-listed American Depositary Receipts (ADRs) with that of traditional ADRs. Single-listed ADRs trade in US exchanges however their underlying stock is not listed in their home market. In the case that single-listed ADR program closes, investors are left with illiquid unlisted ordinary shares. This is a significant difference between traditional and single-listed ADRs which might bring about a difference in the liquidity of their corresponding ADR shares. We use three measure of market liquidity. We find no statistical difference between the daily average liquidity of single-listed and that of traditional ADRs. This result holds regardless of the measure of liquidity used and if ADRs are matched by geographical region or by country.

Keywords: ADRs; single-listed; market liquidity

Introduction

In this study we examine and compare the stock market liquidity of single-listed American Depositary Receipts (ADRs) with that of traditional (dual-listed) ADRs. Single-listed ADRs trade in US exchanges, however their underlying stock is not listed in their home market. In the case that a single-listed ADR program closes, investors are left with illiquid unlisted ordinary shares. This is an important difference between traditional and single-listed ADRs which might bring about a difference in the liquidity of their corresponding ADR shares.

Since single-listed ADRs underlying stock is not listed on an exchange, we can't examine the relation between the liquidity of ADR shares in US exchanges, and the liquidity of the underlying stock in the home market¹. Consequently, our focus is only on ADRs market liquidity. Clarke and Shastri (2001) find that insider trading enforcement have no effect on ADRs liquidity. Huang and Stoll (2001) examine the effect of exchange rate volatility on ADRs liquidity around two major events. The withdrawal of the United Kingdom from the European Exchange Rate Mechanism in 1992, and the Mexican devaluation of 1994. They conclude that exchange rate volatility does not affect stock prices by its impact on market liquidity. Chung (2006) use ADRs to study the link between liquidity and investors protection levels. The author examines 2004 ADRs from 29 countries, and report that ADRs of firms operating in good investors' protection environments tend to have higher liquidity. The author also finds that liquidity costs from poor investors' protection are higher during financial crises. Silvia and Chávez (2008) find significant differences in liquidity costs between ADRs and stocks from four Latin American countries. More

¹ There is an extensive list of studies that looks at the impact on the liquidity of the firms that cross-list in the US by issuing ADRs. Examples of this literature include Karolyi (2006), Bris et al. (2007), and Berkman and Nguyen (2010).

recently, Dey and Wang (2012) look at the liquidity of fifteen Chinese ADRs with underlying H-shares listed on the Stock Exchange of Hong Kong. They report that trading volume and turnover are consistent determinants of the return spread between the ADRs and its underlying stock.

Few papers examine single-listed ADRs or acknowledge their existence (Brockman 2011). For example, Bae and Wang (2012) include 13 single-listed Chinese ADRs in their sample of Chinese firms. They study the effect on firm valuation of having the word “China” included in the company name of Chinese stocks listed on US exchanges, and report that after controlling for risk and liquidity, China-name firms outperform non-China-name stocks. Luo, Fang, and Esqueda (2012) examine the aftermarket performance of Chinese ADRs. They include 59 single-listed and 14 cross-listed Chinese ADRs, and provide evidence of outperformance by the sample of cross-listed ADRs. Finally, He and Yang (2012) examine day and night returns of Chinese ADRs by comparing single-listed ADRs to home-based or traditional ADRs. The authors find that single-listed ADRs are more affected by the US market than by their home market. We believe that this study nicely fits into this new line of research on single-listed ADRs within the more broad ADRs literature, and to the best of our knowledge, this is the first study that compares the liquidity of these two types of ADRs.

Data

The sample includes single-listed and traditional ADRs as identified in the Bank of New York Mellon ADRs directory². To be included in the sample, the ADR must have daily open and closing prices, bid and ask values as well as volume and return data available from the Center for Research in Security Prices (CRSP). Questionable data points will be verified in Bloomberg. For

²The list of single-listed ADRs verified with the data provided by www.adr.com.

each new single-listed ADRs included in the sample, we also include an active traditional ADRs from the same geographical region. We follow each single-listed ADRs from the first date it began trading until the end of December 2013. The sample includes 154 ADRs (77 ADRs of each type). Panel A of Table 1 shows the distribution of the ADRs in the sample by geographical region. Most of the ADRs in the sample come from Asia (138), follow by Europe (14), and Latin America (2). Panel B of Table 1 present the distribution of the ADRs by country. It is evident that vast majority of single-listed ADRs come from China (64 or 83 percent of the sample). Countries with 2 single-listed ADRs in the sample are France, India, and Ireland. Traditional ADRs come from a more diverse group of countries. The countries with the most traditional ADRs in the sample are: China (24), Japan (13), India (9), Australia (8), and Korea (7).

Single-listed ADRs in the sample are evenly distributed it terms of where their shares are traded. A total of 37 single-listed ADRs listed in the NYSE, while 40 are listed in NASDAQ. On the other hand, the majority of the traditional ADRs are listed in the NYSE and only 12 in NASDAQ. Although not reported in tables, single-listed ADRs come from many different industries. However, a good number of single-listed ADRs come from the software and computer services, alternative energy, and general retailers. Traditional ADRs also belong to a wider set of industries. A good number of traditional ADRs are banks, and many also come from the technology hardware and equipment industry.

Methodology

Similar to Cannon and Cole (2011), we compute three different measures of liquidity. The first measure is the *Percentage Bid-Ask Spread*. This is one of the most widely used measures of liquidity. This metric is computed as:

$$\text{Percentage Spread}_{i,t} = (\text{Ask}_{i,t} - \text{Bid}_{i,t}) / [(\text{Bid}_{i,t} + \text{Ask}_{i,t}) / 2] \quad (1)$$

Lower values indicate greater liquidity.

The second measure we estimate is the *Dollar Volume*. *Dollar Volume* is calculated as:

$$\text{Dollar Volume}_{i,t} = \text{Volume}_{i,t} \times \text{Price}_{i,t} \quad (2)$$

The higher the value of the dollar volume the greater the liquidity is.

The third and final metric I plan to use is the *Price Impact*. The *Price Impact* for stock *i* on day *t* is calculated as:

$$\text{Price Impact}_{i,t} = \text{ABS}(\text{Return}_{i,t}) / \text{Dollar Volume}_{i,t} \quad (3)$$

Where *ABS* indicates the absolute value, *Return*_{*i,t*} is the daily return on stock *i* for day *t*; and *Dollar Volume*_{*i,t*} is as define above. Lower values of *Price Impact* indicate more depth and liquidity.

These liquidity measures are also used by Amihud et al. (1997), Berkman and Eleswarapu (2001), Benveniste, Capozza, and Seguin (2001), and Amihud (2002).

For the results presented in the next section, we use daily values of ask, bid, price, and volume from CRSP. We compute the average of each liquidity measure for each ADR in the sample from the first data point until the end of 2013. Finally, we test for the differences in means between single-listed and traditional ADRs.

Empirical Results

In Table 3 we report our first set of results. The results in Table 3 are for the full sample of ADRs, that is, 77 single-listed ADRs and 77 traditional ADRs matched by geographical region. In the next discussion of the results, we report the average daily measure of liquidity of single-listed ADRs followed by the value for traditional ADRs in parenthesis. The average daily percentage spread for single-listed (traditional ADRs) is 0.009423 (0.008199). The average dollar volume is 18804520.79 (22611721.82). Finally, the average price impact is 0.000004 (0.000003). Based only on the direction of the results, traditional ADRs tend to be more liquid than single-listed ADRs. Traditional ADRs' average percentage spread is lower than that of single-listed ADRs, average dollar volume is higher, and average price impact is lower. However, as reported in Table 3, none of the difference in means are statistically significant. Meaning that there is no significant difference between the liquidity of single-listed and traditional ADRs from the same geographical region.

The results in Table 3 are based on the full sample of ADRs, which are matched by geographical region. In Table 4 we report the results for a sub-sample of single-listed and traditional ADRs matched by country. The sample include 64 ADRs (32 of each type). The countries represented in the sample are: China, France, Hong Kong, India, Taiwan and the United Kingdom. The results in Table 4 are similar in magnitude to those in Table 3, The average daily percentage spread for single-listed (traditional ADRs) is 0.008929 (0.006409). The average dollar volume is 33642147.48 (22138122.35), and the average price impact is 0.000001 (0.000001). We also find no statistical differences in all the liquidity measures. We can reach at the conclusion, that there is no statistical difference between the liquidity of single-listed ADRs, and traditional ADRs form the same country.

As mentioned before, the vast majority of single-listed ADRs come from China. In Table 5 we report the liquidity tests only for Chinese ADRs. The sample includes a total of 48 ADRs. The results in Table 5 coincide to those reported so far. The average daily percentage spread for single-listed (traditional ADRs) is 0.008912 (0.007681). The average dollar volume is 42031178.41 (16711679.20), and the average price impact is 0.000001 (0.000001). Regardless of the measure of liquidity used, we find no difference between the daily average liquidity of Chinese single-listed ADRs and traditional ADRs.

Conclusion

The underlying stock of single-listed ADRs is not traded in their home market, in the case of termination of the ADR program, investors are left with unlisted and illiquid shares. Given this fact, we hypothesize that the liquidity of single-listed ADRs might significant different to that of traditional ADRs. To test this hypothesis, we use three liquidity measure: percentage spread, dollar volume, and price impact. We match single-listed ADRs and traditional ADRs by geographical region. Our evidence suggest that there is no statistical difference between the daily liquidity of single-listed and traditional ADRs. This result also hold if we match the samples of ADRs by country.

References

- Amihud, Yakov. "Illiquidity and stock returns: cross-section and time-series effects." *Journal of Financial Markets* 5.1 (2002): 31-56.
- Bae, Kee-Hong, and Wei Wang. "What's in a "China" name? A test of investor attention hypothesis." *Financial Management* 41.2 (2012): 429-455.
- Benveniste, Lawrence, Dennis R. Capozza, and Paul J. Seguin. "The value of liquidity." *Real Estate Economics* 29.4 (2001): 633-660.
- Berkman, Henk, and Venkat R. Eleswarapu. "Short-term traders and liquidity: a test using Bombay Stock Exchange data." *Journal of Financial Economics* 47.3 (1998): 339-355.
- Bris, Arturo, Salvatore Cantale, and George P. Nishiotis. "A Breakdown of the Valuation Effects of International Cross-listing*." *European Financial Management* 13.3 (2007): 498-530.
- Brockman, Paul. "Short Selling and Price Discovery: Evidence from American Depository Receipts." *Journal of Financial Research* 34.4 (2011): 569-588.
- Clarke, Jonathan, and Kuldeep Shastri. "On the market microstructure of American Depository Receipts." *Unpublished paper, University of Pittsburgh* (2001).
- Cannon, Susanne E., and Rebel A. Cole. "Changes in REIT liquidity 1988–2007: evidence from daily data." *The Journal of Real Estate Finance and Economics* 43.1-2 (2011): 258-280.
- Chung, Huimin. "Investor protection and the liquidity of cross-listed securities: Evidence from the ADR market." *Journal of Banking & Finance* 30.5 (2006): 1485-1505.
- Dey, Malay K., and Chaoyan Wang. "Return spread and liquidity: Evidence from Hong Kong ADRs." *Research in International Business and Finance* 26.2 (2012): 164-180.
- He, Hui, and Jiawen Yang. "Day and night returns of Chinese ADRs." *Journal of Banking & Finance* 36.10 (2012): 2795-2803.

Huang, Roger D., and Hans R. Stoll. "Exchange rates and firms' liquidity: evidence from ADRs." *Journal of International Money and Finance* 20.3 (2001): 297-325.

Karolyi, G. Andrew. "The world of cross-listings and cross-listings of the world: Challenging conventional wisdom." *Review of Finance* 10.1 (2006): 99-152.

Luo, Yongli, Fang Fang, and Omar A. Esqueda. "The overseas listing puzzle: Post-IPO performance of Chinese stocks and ADRs in the US market." *Journal of Multinational Financial Management* 22.5 (2012): 193-211.

Silva, Ana Cristina, and Gonzalo A. Chávez. "Cross-listing and liquidity in emerging market stocks." *Journal of Banking & Finance* 32.3 (2008): 420-433.

Table 1: Distribution of ADRs by geographical region

	Single	Traditional	Total
Panel A: By Region			
Asia	69	69	138
Europe	7	7	14
Latin America	1	1	2
Panel B: By Country			
Argentina	1	0	1
Australia	0	8	8
Chile	0	1	1
China	64	24	88
France	2	2	4
Germany	0	2	2
Hong Kong	1	1	2
India	2	9	11
Indonesia	0	2	2
Ireland	2	0	2
Italy	1	0	1
Japan	0	13	13
Korea	1	7	8
Netherlands	1	0	1
Philippines	0	0	0
Spain	0	1	1
Taiwan	1	5	6
United Kingdom	1	2	3

This table shows the distribution of the sample of single-listed and traditional ADRs by geographical region (Panel A) and by country (Panel B).

Table 2: Distribution of ADRs by exchange

Exchange	Single	Traditional	Total
NYSE	37	65	102
NASDAQ	40	12	52

This table shows the distribution of the sample of single-listed and traditional ADRs by stock exchange.

Table 3 Liquidity tests full sample

Measure	Single	Traditional	Estimate for difference	p-value
Percentage Spread	0.009423	0.008199	0.00122	0.601
Dollar Volume	18804520.79	22611721.82	-3807201	0.741
Price Impact	0.000004	0.000003	0.000001	0.705

The table shows, for the full sample of ADRs (single-listed and traditional) the daily average of three measures of stock market liquidity: percentage spread, dollar volume, and price impact. The table also report the results of a tests of difference in each of the three measures of liquidity.

Table 4 Liquidity tests ADRs from same country

Measure	Single	Traditional	Estimate for difference	p-value
Percentage Spread	0.008929	0.006409	0.00252	0.252
Dollar Volume	33642147.48	22138122.35	11504025	0.66
Price Impact	0.000001	0.000000	0.000001	0.354

The table shows, for the sample of ADRs (single-listed and traditional) from the same country the daily average of three measures of stock market liquidity: percentage spread, dollar volume, and price impact. The table also report the results of a tests of difference in each of the three measures of liquidity.

Table 5 Liquidity tests ADRs for ADRs from China

Measure	Single	Traditional	Estimate for difference	p-value
Percentage Spread	0.008812	0.007681	0.00122	0.673
Dollar Volume	42031178.41	16711679.20	-3807201	0.464
Price Impact	0.000001	0.000001	0.000001	0.931

The table shows, for the sample of Chinese ADRs (single-listed and traditional) the daily average of three measures of stock market liquidity: percentage spread, dollar volume, and price impact. The table also report the results of a tests of difference in each of the three measures of liquidity.