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LONG TERM ADR PERFORMANCE: HOW DO REGIONAL ISSUES LISTED ON THE NYSE COMPARE TO US AND REGIONAL INDEX RETURNS?

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ABSTRACT

This study examines the long-term performance of Asia Pacific, European, and Latin American ADRs versus the S&P500 and their respective regional indexes from 1990-2010. The sample was divided by stable markets (1990s) and volatile markets (2000s). We find that, when analyzed in total, regional indexes perform similarly to the S&P500. However, the Asia Pacific and Latin America regions do offer diversification benefits individually. Furthermore, the ADRs from each region underperform in stable markets (1990s) and outperform in volatile markets (2000s) leading to great diversification benefits.

JEL: G11, G15

KEYWORDS: American Depository Receipts, Regional Indexes, Emerging Markets

INTRODUCTION

In 1927, during an incredible bull market, the firm of J.P. Morgan wanted to provide their clients with a way to invest in foreign firms traded on foreign exchanges. To achieve this goal, they created the American Depository Receipt (ADR), which, despite its longevity, remains among the most popular ways for US investors to diversify internationally.

Many studies have examined ADRs and the ability to reduce overall portfolio risk as well as compete with domestic stock performance. Early studies on the subject presented mixed results with some suggesting ADRs underperformed when compared to a US benchmark (see Foerster and Karolyi, 2000 and Schaub, 2003) and others showing ADRs outperformed the domestic market index (for example, see Callaghan, Kleiman and Sahu, 1999). Schaub (2004) found that the timing of the issue played an important role in whether the ADR outperformed or underperformed the US index.

Because ADRs are created using the stock of foreign firms, one would believe that their returns would track different from the US market index due to country risk and exchange rate differences. Therefore, an examination of ADR performance differences relative to respective regional indexes should provide useful information for the international investor. For that reason, we examine the month by month excess returns of ADRs issued by Latin American, Asia Pacific and European firms using both the relevant US market index and respective regional indexes in order to close the gaps in the literature that ignore relative performance versus both indexes. We additionally capture the market-timing effects prevalent in a series of studies by Schaub (2013, 2014a, 2014b).

In the remainder of this study, we present background information and a review of relevant literature in the next section. Next, the methodology section explains utilized methods and provides an understanding of

computations, statistical testing and sample composition. Section 4 discusses the results we obtained and the final section concludes the study.

LITERATURE REVIEW

The ADR creation process carried out by large US banks provides investors with the convenience of purchasing foreign equities without having to deal with foreign equity markets or foreign exchange transactions. The goal initially is to get the ADR value into a relevant price range that the US banks believe investors prefer. Therefore, shares are bundled accordingly. For example, if an ADR should initially trade for \$20 then a foreign stock with a translated dollar value of \$1 per share would require the ADR to be backed by 20 shares. Also, a foreign stock with a dollar value (after translating from the foreign currency) of \$200 per share would require the ADR be backed by one-tenth of a share to get to \$20 per ADR. Thus, ADRs may be backed by many shares or fractions of a share depending on the starting dollar per ADR trading value the creating bank desires.

ADRs normally are created at the request of the foreign firm; however, there are some instances when the US bank creates ADRs from companies that have not sought to raise equity capital in the United States. The former ADRs are therefore called sponsored issues while the latter are unsponsored. In addition, ADRs may differ in information requirements. Normally the most information is required of Level III ADRs that tend to be sold to raise capital on an exchange in the US. Lower level ADRs require less information and may be sold over the counter or via direct placement (called SEC Rule 144A offerings). Seeing our purposes are to isolate differences in index tracking, we use ADRs listed on the New York Stock Exchange to control for information and firm size.

A couple of papers written by Karolyi (1998, 2004) suggest that ADRs have played a major role in the global economy. Karolyi (1998) finds that the shares tend to react favorably to cross-border listing in the first month of trading with mixed results after a year. However, Karolyi (2004) contends that as cross-border listings from emerging market firms increased in the 1990s, the more developed those markets became. Hence, the ability for emerging market firms to cross-list their equities via ADRs has actually allowed emerging markets to become more stable.

The ADR literature has several studies that show international diversification benefits US investors. These include Jiang (1998), Officer and Hoffmeister (1988), and Schaub (2004). While Jiang (1998) emphasizes reduction in portfolio variation, Schaub (2004) emphasizes a market timing issue where ADRs outperform the US index when the US market is doing poor but may underperform when the US market is doing well (the main purpose of a defensive diversification instrument).

Because ADRs are originally denominated in the currency of the issuing firm and then translated into dollars, the ADR investor is exposed to currency risk. De Santis and Gerard (1998) found that the market indexes of four different countries were affected by exchange rate changes when translating returns into dollars, while Griffin and Stulz (2001) found that exchange rate shock effects actually differed by industry. Of further interest, Phylaktis and Ravazzolo (2005) suggest that the US stock market prices can have long-run and short-run effects on foreign exchange markets based on their examination of Pacific Basin countries from 1980 through 1998.

In looking at how exchange rate risk specifically affects ADRs, Liang and Mougoue (1996) found ADRs exposed U.S. investors to foreign exchange risk (most of which could be diversified away). Likewise, Kim, Szakmary and Mathur (2000) found exchange rates affect ADR values, although the bulk of the returns to ADRs were based on the price of the underlying shares. Bae, Kwon and Li (2008), in their examination of the exchange rate exposure of ADRs, suggest that exchange rate changes negatively affect the value of underlying shares in the local country but positively affect the ADR returns in the US market for 623 ADRs

listed in the US from 1998 through 2001. Furthermore, Esqueda and Jackson (2012), in their examination of the effects of the currency crises in Latin American countries, found the ADRs associated with the countries experiencing the crisis experienced significant losses due to translation exposure.

Callaghan, Kleiman and Sahu (1999) did an important study that finds ADRs outperform the domestic benchmark. Although looking at only 66 ADRs issued from 1986 through 1993, they found that in the first year of trading the cumulative excess returns for ADRs were positive and significant relative to the US benchmark. They also found the result to be true regardless of whether they broke the sample into IPOs and SEOs or emerging and developed market issues. Similarly, Surz (2007) finds that ADRs outperform the S&P 500 Index by 16 percent in the long term while Sundaram and Logue (1996) suggest ADRs outperform the US market index in short-term trading.

In contrast, Foerster and Karolyi (2000) investigated 333 ADRs, which significantly underperformed the domestic market index (datastream). In their study, both emerging and developed market ADRs underperformed the market index, as well as IPOs and SEOs over a 36-month period after date of listing. A major difference between their study and others was the inclusion of Rule 144A private placement issues. These tend to have more informational asymmetry since they are not scrutinized as much as ADRs traded on exchanges or even in the over the counter market.

Schaub (2003) investigated the excess performance of 179 NYSE-listed ADRs listed from 1987 through 1998. Findings show these significantly underperformed the S&P 500 during the initial three-year trading period. No matter how the sample was sliced (emerging versus developed issues, IPOs versus SEOs, Latin American, European and Asia Pacific issues), the ADR portfolios consistently underperformed the US market index. Since previous examinations offered differing conclusions, Schaub (2004) examined for differences in ADR excess performance based on timing an issue to trade predominantly through a US bear market versus through a US bull market. In doing this the study found a sample of Asia Pacific ADRs trading through a bear market outperformed those trading through a bull market. Even though a conclusive timing effect was not found for European issues, this study opened up the possibility that ADRs may truly perform a function as defensive investments.

A more relevant series of studies by Schaub (2013, 2014a, 2014b) provides insights into market timing and its impact on the three-year excess performance of regional issues. The author mostly emphasized regional samples broken down into SEOs and IPOs. Based on these segments the studies determined that large-firm ADRs performed very differently relative to the US market index during the 1990s when the US market was stable and the 2000s when the US market suffered extreme volatility. These studies completely ignored how the ADRs tracked with respective regional indexes, however, and emphasized performance solely compared with the US market. Those studies provide a framework for this study that compares 1990s issues and 2000s issues based on region of firm domicile and appropriate regional index comparisons to determine whether those issues truly do track closer to home market equities than US market equities. If ADR performance is very similar to the respective regional index performance, then an investor may more reasonably just purchase the easily obtainable regional index. However, if not, ADR investing may provide some additional benefits that make owning them more attractive than index investing.

DATA AND METHODOLOGY

The purpose of this study is to identify tracking patterns of ADRs with regional indexes as compared to the US market index. To fulfill that goal, we examine regional ADR issues listed on the New York Stock Exchange in order to hold risks associated with firm size and informational asymmetry as constant as possible. Our sample contains 353 ADRs listed on the NYSE from January 1990 through December 2009. This timing allows for the comparison of issues listed in the 1990s with those from the 2000s to isolate market-timing differences in ADR excess performance. In Table 1, our sample breakdown is illustrated by

region and date of issue. The S&P 500 index represents the US market returns because it is a very popular, very achievable, and consists of large firms traded predominantly on the NYSE (see Schaub, 2004). For the European region index returns, we use the Morgan Stanley Capital International Index for Europe (MSCI Europe Index). Likewise, for the Asia Pacific and Latin American Indexes we use the MSCI Latin America Index and the MSCI Asia Pacific Index respectively.

Table 1: Sample Description by Region and Date

Region of Issue	Number of Observations	Date of Issue	
		Before 1/1/2000	After 1/1/2000
Asia Pacific	90	31	59
Europe	145	90	55
Latin America	118	88	30
Totals	353	209	144

As in other ADR studies (see Schaub, 2003), standard ADR and IPO methodology is used to compute and test average excess returns. Excess returns are computed for each ADR to determine the performance relative to both market indexes (US and regional). These excess returns are averaged for each month and then added up each month for statistical testing. This process follows the series of equations below. First, in Equation 1, the excess return for security *i* during month *t* (xr_{it}) is the difference between the return of the security in month *t* (r_{it}) and the return of the respective market index in month *t* (r_{mt}).

$$xr_{it} = r_{it} - r_{mt} \tag{1}$$

Once excess returns are computed each month for each ADR, Equation 2 is used to compute the average excess return for each sample during month *t* (XR_t). This is done by dividing the sum of the excess returns by the number (*n*) of securities in the sample.

$$XR_t = \frac{1}{n} \sum_{i=1}^n xr_{it} \tag{2}$$

Then average excess returns are cumulated month by month as shown in Equation 3. Here the cumulative excess returns (CXR) as of month *s* is the sum of the average excess returns starting at month 1 until month *s*. Since the study examines returns for three years, *s* ends at month 36.

$$CXR_{1,s} = \sum_{t=1}^s xr_t \tag{3}$$

The computed monthly average excess returns and cumulative excess returns are tested each month to determine significance. Respective P-values for these tests are reported and are used to indicate whether monthly and/or cumulative average excess returns are significantly different from 0 with an alpha level of 0.10.

RESULTS AND DISCUSSION

The cumulative excess returns for our entire sample and regional samples are provided in Tables 2 through 9. Each table calculates the CXR using both the S&P500 and the appropriate Morgan Stanley Capital Intl (MSCI) regional index for each ADR. Furthermore, the final section of each table is the difference between the CXRs using the S&P500 and the MSCI regional index.

As seen in Table 2, the 3-year CXR by month for NYSE ADRs for January 1990 through December 2009, the CXR for the entire sample versus the U.S. index was 6.72% while the CXR for the entire sample versus their respective regional index was 9.41% after the 36-month period. The sample included 353 observations and the difference between the regional index and the U.S. index was -2.70%. The results suggest that the three regional indexes that were used in this study (Asia Pacific, Europe, and Latin America) can be combined to closely mirror the S&P500.

Table 2: 3-Year Performance by Month for NYSE-Listed ADRs US versus Regional Indexes (1990 – 2009)^a

Month	Entire Sample Versus US Index				Entire Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.73%	0.19	0.73%	0.19	1.10%	0.10	1.10%	0.10	-0.37%	0.09	-0.37%	0.09
+ 2	1.70%	0.02	2.43%	0.02	1.88%	0.02	2.98%	0.01	-0.18%	0.28	-0.55%	0.09
+ 3	-0.22%	0.38	2.21%	0.06	-0.50%	0.27	2.48%	0.05	0.28%	0.19	-0.27%	0.31
+ 4	1.35%	0.04	3.56%	0.01	1.35%	0.06	3.83%	0.01	0.00%	0.50	-0.27%	0.33
+ 5	1.29%	0.05	4.85%	0.00	1.92%	0.02	5.75%	0.00	-0.63%	0.04	-0.90%	0.10
+ 6	-0.83%	0.13	4.01%	0.02	-0.60%	0.24	5.14%	0.01	-0.23%	0.23	-1.13%	0.07
+ 7	-0.04%	0.48	3.97%	0.03	0.11%	0.45	5.25%	0.01	-0.15%	0.29	-1.28%	0.06
+ 8	-1.14%	0.05	2.83%	0.10	-0.96%	0.11	4.29%	0.04	-0.18%	0.28	-1.45%	0.05
+ 9	-1.47%	0.01	1.36%	0.27	-1.74%	0.01	2.55%	0.16	0.27%	0.19	-1.19%	0.10
+10	-0.04%	0.48	1.33%	0.29	-0.14%	0.43	2.41%	0.18	0.10%	0.37	-1.08%	0.13
+11	-0.70%	0.11	0.63%	0.40	-0.63%	0.18	1.78%	0.26	-0.07%	0.40	-1.16%	0.13
+12	0.17%	0.41	0.79%	0.38	0.34%	0.34	2.12%	0.23	-0.17%	0.26	-1.33%	0.10
+13	0.34%	0.33	1.13%	0.34	0.43%	0.31	2.55%	0.20	-0.09%	0.37	-1.42%	0.10
+14	0.63%	0.19	1.77%	0.26	0.72%	0.18	3.28%	0.14	-0.09%	0.38	-1.51%	0.09
+15	1.01%	0.10	2.78%	0.17	0.74%	0.19	4.02%	0.10	0.28%	0.18	-1.24%	0.15
+16	-0.22%	0.39	2.56%	0.19	-0.23%	0.40	3.79%	0.13	0.01%	0.49	-1.23%	0.16
+17	-0.03%	0.48	2.53%	0.20	-0.09%	0.45	3.69%	0.14	0.06%	0.41	-1.16%	0.18
+18	0.19%	0.40	2.72%	0.19	-0.24%	0.39	3.46%	0.16	0.43%	0.07	-0.74%	0.28
+19	0.43%	0.28	3.15%	0.16	0.20%	0.40	3.66%	0.15	0.23%	0.20	-0.50%	0.35
+20	1.32%	0.06	4.48%	0.09	1.49%	0.05	5.14%	0.08	-0.16%	0.29	-0.67%	0.31
+21	-0.81%	0.17	3.67%	0.14	-1.35%	0.06	3.79%	0.16	-0.54%	0.03	-0.13%	0.46
+22	0.02%	0.49	3.68%	0.15	0.21%	0.39	4.00%	0.15	-0.20%	0.25	-0.32%	0.41
+23	-0.07%	0.46	3.62%	0.16	0.12%	0.43	4.13%	0.15	-0.19%	0.25	-0.51%	0.36
+24	0.54%	0.21	4.16%	0.13	0.85%	0.12	4.97%	0.11	-0.30%	0.13	-0.81%	0.29
+30	0.68%	0.14	8.05%	0.02	0.51%	0.24	9.97%	0.01	0.18%	0.23	-1.92%	0.11
+36	1.19%	0.04	6.72%	0.06	1.29%	0.04	9.41%	0.02	-0.10%	0.33	-2.70%	0.06

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

Table 3 Panel A subdivides that entire sample into those ADRs that were issued in the 1990s. For this comparison, the sample included 209 observations and CXR for the entire sample versus the U.S. index was -11.84% after 36 months. The CXR for the entire sample versus the regional index was -6.27% and the difference is -5.57%. This would seem to indicate that during stable markets (1990s), ADRs tend to underperform both the S&P500 and their regional indexes.

Table 3 Panel B shows a comparison of the NYSE-listed ADRs versus the domestic and regional indexes for the 2000s issues and has a sample of 144 observations. The CXR for the sample versus the U.S. index was 34.76% while it is 32.54% for the sample versus the regional index in month 36. This shows a difference of only 2.23%. The over performance of ADRs during volatile times (2000s) reinforce their diversification benefits (recall the 1990s ADRs underperformed the market indexes).

Table 4 shows a comparison of the Asia Pacific ADRs for January 1990 through December 2009. The sample includes 90 observations and shows a CXR of 13.22% in month 36 for the Asia Pacific sample versus the U.S. index. It also shows a CXR of 23.50% for the Asia Pacific sample versus the regional index, which gives a difference of -10.28% between the regional index and the U.S. index.

Table 3: 3-Year Performance by Month for NYSE-Listed ADRs US versus Regional Indexes^a

Month	Entire Sample Versus US Index				Entire Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	-0.10%	0.46	-0.10%	0.46	0.44%	0.34	0.44%	0.34	-0.54%	0.10	-0.54%	0.10
+ 2	0.70%	0.26	0.60%	0.34	0.61%	0.32	1.06%	0.26	0.08%	0.43	-0.46%	0.23
+ 3	-0.27%	0.39	0.33%	0.42	-0.61%	0.29	0.45%	0.41	0.34%	0.24	-0.12%	0.44
+ 4	0.42%	0.33	0.75%	0.35	0.59%	0.29	1.04%	0.32	-0.17%	0.36	-0.29%	0.38
+ 5	1.71%	0.06	2.46%	0.14	3.01%	0.01	4.04%	0.06	-1.30%	0.01	-1.58%	0.07
+ 6	-0.64%	0.25	1.82%	0.23	-0.22%	0.43	3.83%	0.09	-0.42%	0.18	-2.01%	0.04
+ 7	-1.69%	0.03	0.13%	0.48	-1.60%	0.07	2.23%	0.23	-0.09%	0.41	-2.10%	0.04
+ 8	-1.49%	0.05	-1.36%	0.31	-1.61%	0.07	0.62%	0.43	0.12%	0.39	-1.98%	0.06
+ 9	-0.93%	0.11	-2.30%	0.21	-1.64%	0.03	-1.03%	0.38	0.71%	0.06	-1.27%	0.18
+10	-0.41%	0.33	-2.71%	0.18	-1.07%	0.16	-2.09%	0.28	0.65%	0.07	-0.62%	0.33
+11	-1.40%	0.03	-4.11%	0.09	-1.35%	0.08	-3.44%	0.17	-0.05%	0.45	-0.67%	0.33
+12	0.31%	0.38	-3.80%	0.12	0.33%	0.38	-3.11%	0.21	-0.03%	0.47	-0.70%	0.33
+13	-0.33%	0.38	-4.13%	0.12	-0.21%	0.43	-3.32%	0.21	-0.11%	0.39	-0.81%	0.31
+14	-0.21%	0.41	-4.34%	0.11	-0.24%	0.41	-3.56%	0.20	0.03%	0.47	-0.78%	0.32
+15	1.08%	0.13	-3.26%	0.19	0.36%	0.37	-3.20%	0.23	0.72%	0.06	-0.06%	0.49
+16	-0.94%	0.17	-4.20%	0.14	-1.18%	0.16	-4.38%	0.16	0.24%	0.30	0.18%	0.46
+17	-0.69%	0.22	-4.89%	0.11	-0.39%	0.35	-4.77%	0.15	-0.30%	0.23	-0.12%	0.47
+18	-0.07%	0.47	-4.96%	0.11	-0.48%	0.33	-5.25%	0.13	0.41%	0.17	0.29%	0.44
+19	-0.66%	0.25	-5.62%	0.09	-0.48%	0.33	-5.74%	0.12	-0.18%	0.33	0.12%	0.48
+20	1.25%	0.14	-4.37%	0.16	1.82%	0.08	-3.92%	0.22	-0.57%	0.10	-0.45%	0.41
+21	-2.55%	0.01	-6.92%	0.06	-3.01%	0.01	-6.92%	0.09	0.46%	0.12	0.01%	0.50
+22	-1.16%	0.11	-8.08%	0.04	-0.39%	0.36	-7.31%	0.08	-0.77%	0.03	-0.76%	0.36
+23	-0.88%	0.15	-8.96%	0.03	-0.61%	0.27	-7.92%	0.07	-0.27%	0.25	-1.03%	0.31
+24	-0.37%	0.31	-9.33%	0.02	0.20%	0.41	-7.72%	0.08	-0.57%	0.07	-1.61%	0.23
+30	0.35%	0.34	-6.25%	0.12	0.22%	0.40	-2.05%	0.37	0.13%	0.36	-4.21%	0.03
+36	0.82%	0.21	-11.84%	0.02	0.87%	0.21	-6.27%	0.17	-0.04%	0.45	-5.57%	0.01
Panel B: 2000s Issues												
+ 1	1.86%	0.10	1.86%	0.10	2.05%	0.08	2.05%	0.08	-0.19%	0.28	-0.19%	0.28
+ 2	3.28%	0.01	5.14%	0.00	3.73%	0.00	5.77%	0.00	-0.45%	0.10	-0.64%	0.09
+ 3	0.04%	0.49	5.18%	0.01	-0.09%	0.47	5.68%	0.01	0.13%	0.36	-0.50%	0.20
+ 4	2.88%	0.01	8.06%	0.00	2.86%	0.02	8.54%	0.00	0.02%	0.48	-0.48%	0.25
+ 5	1.00%	0.18	9.05%	0.00	0.60%	0.31	9.14%	0.00	0.40%	0.12	-0.08%	0.46
+ 6	-1.11%	0.15	7.95%	0.00	-1.48%	0.09	7.66%	0.01	0.37%	0.20	0.29%	0.37
+ 7	1.92%	0.05	9.87%	0.00	1.92%	0.05	9.58%	0.00	0.01%	0.50	0.29%	0.38
+ 8	-0.67%	0.28	9.20%	0.00	-0.11%	0.46	9.47%	0.00	-0.57%	0.05	-0.27%	0.40
+ 9	-2.05%	0.03	7.15%	0.02	-1.71%	0.06	7.76%	0.02	-0.34%	0.17	-0.61%	0.29
+10	0.86%	0.22	8.01%	0.02	1.56%	0.10	9.32%	0.01	-0.70%	0.05	-1.31%	0.13
+11	0.11%	0.45	8.12%	0.02	0.26%	0.39	9.58%	0.01	-0.15%	0.35	-1.46%	0.12
+12	-0.29%	0.39	7.83%	0.03	0.01%	0.50	9.59%	0.01	-0.30%	0.19	-1.76%	0.09
+13	1.18%	0.14	9.01%	0.02	1.39%	0.11	10.98%	0.01	-0.21%	0.29	-1.97%	0.07
+14	1.82%	0.06	10.84%	0.01	2.14%	0.04	13.12%	0.00	-0.31%	0.18	-2.28%	0.05
+15	0.81%	0.26	11.65%	0.00	0.97%	0.22	14.09%	0.00	-0.17%	0.31	-2.45%	0.04
+16	0.38%	0.38	12.02%	0.01	0.65%	0.31	14.75%	0.00	-0.28%	0.22	-2.72%	0.03
+17	0.45%	0.33	12.48%	0.00	-0.11%	0.46	14.64%	0.00	0.56%	0.06	-2.16%	0.08
+18	0.78%	0.27	13.25%	0.00	0.30%	0.41	14.94%	0.00	0.48%	0.10	-1.68%	0.14
+19	2.63%	0.01	15.88%	0.00	1.60%	0.10	16.54%	0.00	1.02%	0.01	-0.66%	0.34
+20	1.53%	0.10	17.41%	0.00	1.34%	0.13	17.88%	0.00	0.20%	0.31	-0.46%	0.39
+21	1.30%	0.13	18.72%	0.00	0.87%	0.23	18.74%	0.00	0.44%	0.10	-0.03%	0.49
+22	1.49%	0.07	20.21%	0.00	1.03%	0.16	19.77%	0.00	0.46%	0.09	0.44%	0.40
+23	1.62%	0.08	21.83%	0.00	1.67%	0.07	21.44%	0.00	-0.05%	0.45	0.39%	0.41
+24	2.28%	0.03	24.11%	0.00	2.02%	0.05	23.46%	0.00	0.26%	0.25	0.65%	0.36
+30	1.07%	0.15	29.94%	0.00	0.67%	0.27	27.96%	0.00	0.40%	0.13	1.97%	0.16
+36	1.75%	0.01	34.76%	0.00	1.98%	0.01	32.54%	0.00	-0.23%	0.25	2.23%	0.15

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

Table 4: 3-Year Performance for Asia Pacific NYSE-Listed ADRs US versus Regional Index (1990 – 2009)^a

Month	Asia Pacific Sample Versus US Index				Asia Pacific Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.95%	0.32	0.95%	0.32	1.81%	0.18	1.81%	0.18	-0.86%	0.03	-0.86%	0.03
+ 2	3.34%	0.08	4.29%	0.09	4.73%	0.03	6.54%	0.02	-1.38%	0.00	-2.24%	0.00
+ 3	-1.85%	0.12	2.44%	0.25	-0.86%	0.30	5.68%	0.05	-1.00%	0.03	-3.24%	0.00
+ 4	2.10%	0.15	4.54%	0.13	2.47%	0.11	8.15%	0.02	-0.37%	0.22	-3.61%	0.00
+ 5	1.91%	0.12	6.45%	0.07	2.63%	0.06	10.78%	0.01	-0.72%	0.07	-4.33%	0.00
+ 6	-1.17%	0.24	5.28%	0.13	-1.31%	0.22	9.46%	0.02	0.15%	0.40	-4.18%	0.00
+ 7	2.14%	0.11	7.42%	0.07	2.07%	0.12	11.54%	0.01	0.07%	0.45	-4.12%	0.00
+ 8	-3.49%	0.01	3.93%	0.23	-1.72%	0.13	9.81%	0.03	-1.76%	0.00	-5.88%	0.00
+ 9	-2.40%	0.02	1.54%	0.39	-1.19%	0.16	8.62%	0.06	-1.20%	0.02	-7.08%	0.00
+10	-2.06%	0.07	-0.53%	0.46	-1.43%	0.17	7.18%	0.10	-0.63%	0.14	-7.71%	0.00
+11	-1.43%	0.13	-1.96%	0.37	-1.53%	0.11	5.65%	0.16	0.10%	0.42	-7.61%	0.00
+12	-0.31%	0.43	-2.27%	0.35	-0.15%	0.46	5.51%	0.18	-0.16%	0.36	-7.78%	0.00
+13	2.32%	0.08	0.05%	0.50	3.04%	0.02	8.55%	0.08	-0.72%	0.07	-8.50%	0.00
+14	1.46%	0.19	1.51%	0.41	1.67%	0.16	10.22%	0.06	-0.21%	0.35	-8.71%	0.00
+15	3.55%	0.03	5.05%	0.22	4.25%	0.00	14.47%	0.01	-0.70%	0.09	-9.41%	0.00
+16	-1.65%	0.15	3.40%	0.31	-1.90%	0.12	12.57%	0.03	0.24%	0.32	-9.17%	0.00
+17	0.02%	0.49	3.42%	0.31	-0.40%	0.36	12.17%	0.04	0.42%	0.22	-8.75%	0.00
+18	1.69%	0.17	5.10%	0.24	1.97%	0.13	14.14%	0.02	-0.28%	0.30	-9.04%	0.00
+19	1.69%	0.16	6.79%	0.18	0.80%	0.32	14.94%	0.02	0.89%	0.03	-8.15%	0.00
+20	0.80%	0.31	7.60%	0.16	0.81%	0.31	15.75%	0.02	0.00%	0.50	-8.15%	0.00
+21	-1.24%	0.21	6.36%	0.21	-2.48%	0.05	13.27%	0.04	1.24%	0.01	-6.91%	0.00
+22	1.56%	0.16	7.92%	0.16	0.90%	0.28	14.17%	0.04	0.66%	0.09	-6.25%	0.01
+23	0.60%	0.36	8.52%	0.15	0.55%	0.37	14.72%	0.03	0.04%	0.47	-6.20%	0.01
+24	3.06%	0.04	11.57%	0.08	4.01%	0.01	18.73%	0.01	-0.96%	0.03	-7.16%	0.00
+30	1.77%	0.12	15.10%	0.05	1.62%	0.15	23.88%	0.00	0.15%	0.36	-8.77%	0.00
+36	0.39%	0.39	13.22%	0.09	0.85%	0.26	23.50%	0.01	-0.47%	0.13	-10.28%	0.00

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

Table 5 Panel A shows the same comparison but only for the 1990s issues. It includes a sample of 31 observations and tells us that the Asia Pacific sample versus the U.S. index CXR was -21.20%. The Asia Pacific sample versus the regional index was 28.83%, giving us a difference of -50.03%. The major differences between the two indexes may point to the currency problems that existed in many of the Asia Pacific countries during the 1990s.

Panel B of Table 5 shows how the Asia Pacific ADRs listed in the 2000s decade performed. Overall these ADRs outperformed the S&P 500 by over 31% while outperforming the regional index by over 19%. Seeing that the ADRs listed in the 1990s underperformed while those listed in the 2000s outperformed the US index indicates these provided US investors with measurable diversification benefits while the US market was volatile (in the 2000s decade) versus when the US market was stable (in the 1990s). Since the Asia Pacific regional index severely underperformed the US index in the 1990s by 50% but outperformed the US index in the 2000s by nearly 12%, this may indicate that the emerging markets in the region developed over the 20-year period.

Table 6 illustrates the 3-year performance for the European ADRs versus the S&P500 the regional index. The CXR for the European sample versus the U.S. Index was 7.03% while the CXR for the European sample versus the regional index was 2.41% after 36 months. This is a difference between the regional index and the U.S. index of 4.62%.

Table 5: 3-Year Performance for Asia Pacific NYSE-Listed ADRs US versus Regional Index^a

Month	Asia Pacific Sample Versus US Index				Asia Pacific Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	-0.52%	0.40	-0.52%	0.40	2.04%	0.17	2.04%	0.17	-2.57%	0.00	-2.57%	0.00
+ 2	1.24%	0.40	0.71%	0.45	3.48%	0.25	5.53%	0.16	-2.25%	0.00	-4.81%	0.00
+ 3	-1.37%	0.28	-0.66%	0.46	1.85%	0.23	7.38%	0.11	-3.22%	0.00	-8.04%	0.00
+ 4	-3.21%	0.14	-3.86%	0.28	-1.47%	0.30	5.90%	0.19	-1.73%	0.04	-9.77%	0.00
+ 5	0.75%	0.37	-3.12%	0.33	3.83%	0.07	9.73%	0.08	-3.08%	0.00	-12.85%	0.00
+ 6	-0.93%	0.38	-4.05%	0.30	-0.98%	0.39	8.75%	0.13	0.05%	0.49	-12.80%	0.00
+ 7	-1.34%	0.32	-5.39%	0.25	0.04%	0.49	8.79%	0.15	-1.38%	0.11	-14.18%	0.00
+ 8	-1.66%	0.28	-7.04%	0.21	1.45%	0.30	10.25%	0.12	-3.11%	0.00	-17.29%	0.00
+ 9	-3.27%	0.02	-10.32%	0.12	-1.04%	0.31	9.21%	0.16	-2.23%	0.02	-19.52%	0.00
+10	-2.99%	0.03	-13.31%	0.07	-1.90%	0.12	7.31%	0.21	-1.09%	0.16	-20.62%	0.00
+11	-3.41%	0.02	-16.71%	0.03	-2.14%	0.12	5.17%	0.29	-1.26%	0.09	-21.88%	0.00
+12	1.84%	0.30	-14.87%	0.06	2.41%	0.23	5.78%	0.22	-0.57%	0.24	-22.45%	0.00
+13	2.34%	0.22	-12.54%	0.11	4.64%	0.05	12.22%	0.12	-2.31%	0.00	-24.76%	0.00
+14	-3.66%	0.03	-16.20%	0.06	-2.39%	0.13	9.83%	0.18	-1.27%	0.12	-26.03%	0.00
+15	5.05%	0.03	-11.15%	0.15	5.95%	0.00	15.78%	0.07	-0.90%	0.18	-26.92%	0.00
+16	-6.26%	0.00	-17.41%	0.05	-6.00%	0.00	9.78%	0.19	-0.26%	0.41	-27.19%	0.00
+17	-1.82%	0.19	-19.23%	0.04	-0.88%	0.34	8.90%	0.22	-0.95%	0.16	-28.13%	0.00
+18	-1.79%	0.22	-21.02%	0.03	-0.63%	0.39	8.27%	0.24	-1.16%	0.11	-29.29%	0.00
+19	-1.29%	0.31	-22.30%	0.03	-0.98%	0.36	7.29%	0.27	-0.31%	0.38	-29.60%	0.00
+20	-0.54%	0.42	-22.85%	0.03	0.60%	0.41	7.90%	0.26	-1.15%	0.11	-30.74%	0.00
+21	-2.26%	0.20	-25.11%	0.02	-3.03%	0.12	4.87%	0.35	0.77%	0.26	-29.97%	0.00
+22	-1.49%	0.29	-26.59%	0.02	-1.16%	0.34	3.71%	0.38	-0.33%	0.35	-30.30%	0.00
+23	0.66%	0.40	-25.93%	0.02	2.07%	0.20	5.78%	0.33	-1.41%	0.07	-31.72%	0.00
+24	-2.99%	0.07	-28.92%	0.01	-0.62%	0.38	5.16%	0.35	-2.37%	0.00	-34.08%	0.00
+30	1.41%	0.29	-18.82%	0.11	0.96%	0.36	23.57%	0.06	0.45%	0.31	-42.39%	0.00
+36	0.55%	0.43	-21.20%	0.10	1.63%	0.28	28.83%	0.04	-1.08%	0.09	-50.03%	0.00
Panel B: 2000s Issues												
+ 1	1.73%	0.28	1.73%	0.28	1.81%	0.26	1.81%	0.26	-0.08%	0.43	-0.08%	0.43
+ 2	4.45%	0.04	6.18%	0.06	5.23%	0.02	7.05%	0.03	-0.78%	0.08	-0.87%	0.12
+ 3	-2.11%	0.16	4.07%	0.18	-2.15%	0.15	4.90%	0.13	0.04%	0.47	-0.83%	0.19
+ 4	4.88%	0.03	8.95%	0.04	4.87%	0.04	9.76%	0.03	0.02%	0.49	-0.81%	0.23
+ 5	2.52%	0.12	11.47%	0.02	1.85%	0.20	11.62%	0.02	0.67%	0.11	-0.14%	0.45
+ 6	-1.29%	0.26	10.18%	0.04	-2.15%	0.11	9.47%	0.05	0.86%	0.14	0.71%	0.31
+ 7	3.97%	0.03	14.15%	0.01	2.58%	0.12	12.04%	0.03	1.39%	0.03	2.11%	0.10
+ 8	-4.45%	0.01	9.70%	0.07	-3.39%	0.03	8.65%	0.09	-1.06%	0.03	1.05%	0.27
+ 9	-1.94%	0.12	7.77%	0.13	-1.18%	0.22	7.47%	0.13	-0.75%	0.11	0.30%	0.44
+10	-1.58%	0.22	6.19%	0.19	-1.06%	0.31	6.41%	0.18	-0.52%	0.23	-0.22%	0.46
+11	-0.40%	0.41	5.79%	0.22	-1.24%	0.23	5.17%	0.24	0.84%	0.08	0.62%	0.38
+12	-1.43%	0.22	4.36%	0.28	-1.25%	0.24	3.91%	0.30	-0.18%	0.37	0.44%	0.42
+13	2.31%	0.12	6.66%	0.20	2.25%	0.11	6.16%	0.21	0.06%	0.46	0.50%	0.41
+14	4.15%	0.03	10.81%	0.09	4.07%	0.04	10.24%	0.10	0.08%	0.44	0.58%	0.40
+15	2.75%	0.13	13.57%	0.06	3.43%	0.06	13.66%	0.05	-0.68%	0.14	-0.10%	0.48
+16	0.77%	0.37	14.33%	0.05	-0.03%	0.49	13.63%	0.06	0.80%	0.09	0.70%	0.39
+17	0.98%	0.25	15.31%	0.04	-0.34%	0.40	13.29%	0.06	1.32%	0.02	2.03%	0.21
+18	3.52%	0.07	18.83%	0.02	3.01%	0.10	16.30%	0.04	0.51%	0.23	2.53%	0.17
+19	3.25%	0.06	22.08%	0.01	1.17%	0.29	17.47%	0.03	2.08%	0.00	4.62%	0.05
+20	1.51%	0.23	23.59%	0.01	1.44%	0.24	18.91%	0.02	0.07%	0.46	4.68%	0.05
+21	-0.70%	0.35	22.89%	0.01	-2.00%	0.13	16.91%	0.04	1.29%	0.01	5.98%	0.02
+22	3.16%	0.05	26.05%	0.00	2.01%	0.14	18.93%	0.03	1.15%	0.03	7.13%	0.01
+23	0.56%	0.40	26.62%	0.00	0.12%	0.48	19.05%	0.03	0.44%	0.27	7.57%	0.01
+24	6.23%	0.00	32.85%	0.00	6.09%	0.00	25.14%	0.01	0.14%	0.42	7.71%	0.01
+30	1.96%	0.14	32.93%	0.00	1.58%	0.20	22.55%	0.02	0.38%	0.25	10.37%	0.00
+36	0.30%	0.41	31.30%	0.00	0.76%	0.30	19.35%	0.05	-0.45%	0.24	11.95%	0.00

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

The comparison for only the 1990s issues, shown in in Table 7 Panel A, has the CXR for the European sample versus the U.S. index is -1.87%, while the CXR for the European sample versus the regional index was -0.46%. This gives a difference between the regional index and the U.S. index of -1.41%. In Table 7 Panel B, the same comparison is made, but it is for the 2000s issues. It includes 55 observations in the

sample and shows a CXR for the European sample versus the U.S. index of 25.91% and a CXR for the European sample versus the regional index of 10.09%. This means that the difference between the regional index and the U.S. index was 15.82%. These results would seem to indicate that the European index tracks closely with the S&P500 and there appears to be less benefit of diversification for purchasing European ADRs.

Table 6: 3-Year Performance for European NYSE-Listed ADRs US versus Regional Index (1990 – 2009)^a

Month	European Sample Versus US Index				European Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.77%	0.22	0.77%	0.22	0.67%	0.26	0.67%	0.26	0.10%	0.38	0.10%	0.38
+ 2	1.38%	0.08	2.15%	0.06	1.76%	0.04	2.44%	0.04	-0.39%	0.13	-0.29%	0.27
+ 3	1.64%	0.07	3.79%	0.02	1.48%	0.10	3.91%	0.02	0.16%	0.32	-0.13%	0.42
+ 4	1.12%	0.14	4.90%	0.01	0.69%	0.27	4.60%	0.02	0.43%	0.10	0.31%	0.33
+ 5	-0.57%	0.29	4.33%	0.03	-0.81%	0.22	3.79%	0.06	0.24%	0.27	0.55%	0.24
+ 6	-0.56%	0.29	3.77%	0.07	-0.45%	0.33	3.34%	0.10	-0.11%	0.38	0.44%	0.30
+ 7	-0.13%	0.44	3.65%	0.09	-0.04%	0.48	3.29%	0.12	-0.08%	0.40	0.36%	0.35
+ 8	0.60%	0.28	4.24%	0.07	0.95%	0.19	4.24%	0.07	-0.36%	0.15	0.00%	0.50
+ 9	-1.69%	0.02	2.55%	0.20	-2.12%	0.01	2.12%	0.24	0.43%	0.10	0.43%	0.34
+10	0.41%	0.33	2.96%	0.17	0.22%	0.41	2.34%	0.23	0.19%	0.30	0.62%	0.29
+11	0.05%	0.47	3.01%	0.17	0.28%	0.34	2.63%	0.21	-0.23%	0.25	0.39%	0.37
+12	0.17%	0.43	3.18%	0.17	0.39%	0.34	3.02%	0.19	-0.22%	0.23	0.17%	0.44
+13	-1.82%	0.02	1.36%	0.35	-1.93%	0.01	1.08%	0.38	0.11%	0.36	0.28%	0.41
+14	-0.30%	0.37	1.06%	0.38	-0.34%	0.35	0.74%	0.42	0.04%	0.45	0.32%	0.40
+15	1.09%	0.15	2.15%	0.28	0.42%	0.35	1.16%	0.38	0.66%	0.04	0.98%	0.23
+16	1.01%	0.17	3.16%	0.21	1.46%	0.09	2.63%	0.25	-0.45%	0.09	0.53%	0.35
+17	0.09%	0.46	3.25%	0.21	0.16%	0.43	2.79%	0.25	-0.07%	0.41	0.46%	0.37
+18	0.58%	0.28	3.82%	0.17	0.30%	0.38	3.09%	0.23	0.27%	0.17	0.73%	0.31
+19	-1.34%	0.06	2.49%	0.28	-1.85%	0.02	1.24%	0.39	0.51%	0.05	1.25%	0.20
+20	1.35%	0.12	3.83%	0.19	1.46%	0.09	2.70%	0.27	-0.12%	0.36	1.13%	0.23
+21	1.29%	0.16	5.12%	0.13	0.82%	0.27	3.52%	0.22	0.47%	0.08	1.60%	0.15
+22	-1.35%	0.09	3.77%	0.21	-1.13%	0.13	2.39%	0.31	-0.22%	0.27	1.38%	0.19
+23	0.57%	0.29	4.34%	0.18	0.51%	0.31	2.90%	0.27	0.06%	0.43	1.44%	0.19
+24	0.13%	0.44	4.47%	0.18	0.11%	0.45	3.01%	0.27	0.02%	0.48	1.46%	0.19
+30	-0.02%	0.49	7.08%	0.09	-0.53%	0.27	3.93%	0.23	0.52%	0.04	3.16%	0.04
+36	-0.31%	0.37	7.03%	0.11	-0.68%	0.24	2.41%	0.34	0.37%	0.10	4.62%	0.01

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

Comparing the excess performance across decades shows that the ADRs performed about the same as the US and European indexes in the 1990s. However they outperformed both indexes in the 2000s while the world stock markets were very volatile. This suggests these ADRs provided diversification benefits to investors in both regions.

The 3-year performance for Latin American ADRS is shown in Table 8. The Latin America sample includes 118 observations. After 36 months, the CXR was 1.38% for the Latin America sample versus the U.S. index and 7.29% for the Latin America sample versus the regional index. This means that the difference between the regional index and the U.S. index was -5.91%.

Table 7: 3-Year Performance for European NYSE-Listed ADRs US versus Regional Index^a

Month	European Sample Versus US Index				European Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	0.62%	0.30	0.62%	0.30	0.58%	0.32	0.58%	0.32	0.04%	0.46	0.04%	0.46
+ 2	1.33%	0.12	1.95%	0.12	1.68%	0.07	2.25%	0.09	-0.35%	0.22	-0.31%	0.32
+ 3	1.86%	0.11	3.81%	0.04	1.79%	0.12	4.05%	0.04	0.06%	0.45	-0.24%	0.38
+ 4	1.47%	0.14	5.28%	0.02	1.44%	0.16	5.48%	0.02	0.04%	0.47	-0.21%	0.41
+ 5	-0.63%	0.32	4.65%	0.06	-0.85%	0.27	4.63%	0.06	0.22%	0.35	0.01%	0.50
+ 6	0.31%	0.40	4.96%	0.06	0.56%	0.33	5.20%	0.06	-0.25%	0.30	-0.24%	0.42
+ 7	-0.64%	0.29	4.31%	0.10	-0.86%	0.24	4.34%	0.11	0.21%	0.31	-0.03%	0.49
+ 8	-0.43%	0.38	3.89%	0.14	0.27%	0.43	4.61%	0.11	-0.70%	0.07	-0.73%	0.30
+ 9	-1.24%	0.10	2.64%	0.24	-1.77%	0.05	2.84%	0.24	-0.53%	0.13	-0.20%	0.44
+10	-0.14%	0.45	2.50%	0.26	-0.31%	0.60	2.53%	0.27	0.17%	0.36	-0.03%	0.49
+11	-0.30%	0.37	2.20%	0.29	-0.43%	0.66	2.10%	0.31	0.13%	0.40	0.10%	0.48
+12	0.04%	0.48	2.24%	0.30	0.44%	0.36	2.54%	0.28	-0.39%	0.83	-0.29%	0.43
+13	-1.80%	0.03	0.44%	0.46	-1.60%	0.06	0.94%	0.42	-0.20%	0.33	-0.50%	0.38
+14	-0.45%	0.35	-0.01%	0.50	-0.59%	0.31	0.35%	0.47	0.14%	0.39	-0.36%	0.42
+15	2.33%	0.02	2.32%	0.31	1.15%	0.19	1.50%	0.38	1.18%	0.02	0.82%	0.33
+16	0.84%	0.25	3.16%	0.26	1.46%	0.13	2.96%	0.28	-0.63%	0.11	0.19%	0.46
+17	0.33%	0.39	3.49%	0.24	0.87%	0.22	3.84%	0.23	-0.54%	0.09	-0.34%	0.43
+18	1.31%	0.14	4.80%	0.17	1.37%	0.14	5.21%	0.16	-0.06%	0.44	-0.40%	0.42
+19	-1.46%	0.09	3.34%	0.26	-1.65%	0.07	3.55%	0.26	0.19%	0.34	-0.21%	0.46
+20	-0.08%	0.48	3.27%	0.27	0.71%	0.29	4.27%	0.22	-0.79%	0.04	-1.00%	0.32
+21	0.12%	0.47	3.39%	0.27	-0.41%	0.59	3.85%	0.25	0.54%	0.13	-0.46%	0.41
+22	-2.52%	0.02	0.87%	0.44	-1.56%	0.11	2.30%	0.35	-0.96%	0.02	-1.43%	0.26
+23	0.45%	0.37	1.32%	0.41	0.47%	0.37	2.76%	0.33	-0.02%	0.49	-1.44%	0.26
+24	0.27%	0.41	1.60%	0.40	0.65%	0.30	3.42%	0.29	-0.38%	0.22	-1.82%	0.21
+30	0.87%	0.22	2.19%	0.37	0.41%	0.36	3.25%	0.32	0.47%	0.13	-1.06%	0.34
+36	-1.98%	0.06	-1.87%	0.40	-1.92%	0.08	-0.46%	0.48	-0.06%	0.44	-1.41%	0.30
Panel B: 2000s Issues												
+ 1	0.95%	0.28	0.95%	0.28	0.87%	0.31	0.87%	0.31	0.08%	0.43	0.08%	0.43
+ 2	2.39%	0.09	3.34%	0.08	2.75%	0.05	3.63%	0.07	-0.36%	0.24	-0.28%	0.34
+ 3	1.82%	0.11	5.16%	0.03	1.56%	0.16	5.18%	0.04	0.26%	0.28	-0.02%	0.49
+ 4	0.98%	0.27	6.14%	0.03	-0.08%	0.48	5.10%	0.06	1.07%	0.00	1.04%	0.13
+ 5	0.52%	0.35	6.67%	0.03	0.27%	0.42	5.37%	0.07	0.25%	0.29	1.29%	0.10
+ 6	-1.72%	0.12	4.95%	0.10	-1.91%	0.09	3.46%	0.19	0.19%	0.34	1.49%	0.09
+ 7	-0.08%	0.48	4.86%	0.12	0.44%	0.38	3.90%	0.17	-0.52%	0.12	0.96%	0.21
+ 8	2.21%	0.06	7.07%	0.05	2.07%	0.06	5.97%	0.09	0.14%	0.37	1.10%	0.19
+ 9	-2.13%	0.07	4.94%	0.14	-2.48%	0.04	3.49%	0.22	0.35%	0.23	1.45%	0.14
+10	2.79%	0.05	7.73%	0.06	2.44%	0.08	5.93%	0.11	0.35%	0.26	1.80%	0.11
+11	0.25%	0.39	7.99%	0.05	1.10%	0.09	7.03%	0.08	-0.85%	0.04	0.95%	0.27
+12	-0.18%	0.44	7.81%	0.06	-0.33%	0.38	6.71%	0.09	0.15%	0.36	1.10%	0.25
+13	-1.79%	0.12	6.02%	0.13	-2.19%	0.07	4.51%	0.20	0.40%	0.22	1.50%	0.19
+14	-0.29%	0.41	5.72%	0.15	-0.33%	0.40	4.18%	0.22	0.04%	0.47	1.54%	0.19
+15	-1.14%	0.27	4.58%	0.21	-1.46%	0.21	2.72%	0.32	0.32%	0.15	1.86%	0.15
+16	0.25%	0.45	4.83%	0.22	0.62%	0.38	3.35%	0.29	-0.38%	0.15	1.48%	0.21
+17	-1.09%	0.27	3.75%	0.28	-1.76%	0.15	1.59%	0.40	0.67%	0.06	2.16%	0.12
+18	-0.12%	0.47	3.63%	0.29	-0.72%	0.32	0.87%	0.45	0.60%	0.06	2.76%	0.07
+19	-0.27%	0.43	3.36%	0.31	-1.55%	0.15	-0.68%	0.46	1.28%	0.00	4.04%	0.02
+20	3.82%	0.02	7.18%	0.15	2.65%	0.07	1.97%	0.39	1.17%	0.00	5.21%	0.00
+21	2.37%	0.10	9.56%	0.10	2.07%	0.13	4.04%	0.29	0.30%	0.24	5.51%	0.00
+22	-0.58%	0.34	8.98%	0.11	-1.32%	0.18	2.72%	0.35	0.74%	0.04	6.25%	0.00
+23	2.10%	0.09	11.08%	0.07	1.72%	0.13	4.45%	0.28	0.38%	0.21	6.63%	0.00
+24	0.91%	0.26	11.98%	0.06	-0.01%	0.50	4.43%	0.28	0.92%	0.01	7.55%	0.00
+30	-1.30%	0.17	19.29%	0.01	-1.85%	0.07	8.43%	0.16	0.55%	0.06	10.86%	0.00
+36	2.73%	0.01	25.91%	0.00	1.52%	0.08	10.09%	0.13	1.21%	0.00	15.82%	0.00

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

Table 8: 3-Year Performance for Latin American NYSE-Listed ADRs US versus Regional Index (1990 – 2009)^a

Month	Lat. Amer. Sample Versus US Index				Lat. Amer. Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.50%	0.36	0.50%	0.36	1.07%	0.26	1.07%	0.26	-0.57%	0.18	-0.57%	0.18
+ 2	0.85%	0.25	1.35%	0.24	-0.14%	0.47	0.93%	0.35	0.99%	0.08	0.42%	0.33
+ 3	-1.25%	0.15	0.09%	0.48	-2.66%	0.05	-1.73%	0.28	1.41%	0.03	1.82%	0.07
+ 4	-1.06%	0.18	1.15%	0.32	1.31%	0.20	-0.42%	0.45	-0.25%	0.37	1.57%	0.14
+ 5	3.11%	0.02	4.26%	0.08	4.73%	0.01	4.32%	0.13	-1.63%	0.03	-0.05%	0.49
+ 6	-0.92%	0.24	3.34%	0.15	-0.25%	0.44	4.06%	0.17	-0.67%	0.17	-0.72%	0.35
+ 7	-1.60%	0.11	1.74%	0.31	-1.20%	0.23	2.86%	0.27	-0.40%	0.25	-1.12%	0.28
+ 8	-1.48%	0.11	0.26%	0.47	-2.73%	0.04	0.13%	0.49	1.26%	0.04	0.14%	0.47
+ 9	-0.49%	0.35	-0.23%	0.48	-1.68%	0.13	-1.55%	0.38	1.19%	0.04	1.33%	0.27
+10	0.96%	0.26	0.73%	0.43	0.41%	0.41	-1.15%	0.42	0.55%	0.21	1.88%	0.20
+11	-1.06%	0.17	-0.33%	0.47	-1.05%	0.25	-2.20%	0.35	-0.01%	0.49	1.87%	0.21
+12	0.52%	0.35	0.19%	0.48	0.64%	0.35	-1.56%	0.39	-0.11%	0.43	1.75%	0.24
+13	1.48%	0.19	1.67%	0.37	1.35%	0.26	-0.21%	0.49	0.13%	0.42	1.88%	0.23
+14	1.16%	0.21	2.83%	0.29	1.31%	0.22	1.10%	0.43	-0.15%	0.40	1.73%	0.25
+15	-1.01%	0.23	1.82%	0.36	-1.55%	0.17	-0.45%	0.47	0.54%	0.22	2.27%	0.20
+16	-0.65%	0.33	1.18%	0.41	-1.05%	0.29	-1.49%	0.41	0.40%	0.29	2.67%	0.17
+17	-0.20%	0.44	0.98%	0.43	-0.16%	0.46	-1.66%	0.41	-0.04%	0.48	2.64%	0.18
+18	-1.43%	0.16	-0.45%	0.47	-2.59%	0.07	-4.24%	0.28	1.15%	0.05	3.79%	0.10
+19	1.65%	0.13	1.20%	0.42	2.26%	0.10	-1.98%	0.40	-0.61%	0.16	3.18%	0.15
+20	1.69%	0.16	2.88%	0.32	2.03%	0.16	0.05%	0.50	-0.35%	0.31	2.83%	0.18
+21	-3.05%	0.02	-0.17%	0.49	-3.14%	0.03	-3.09%	0.35	0.09%	0.44	2.92%	0.18
+22	0.51%	0.34	0.34%	0.48	1.33%	0.20	-1.76%	0.41	-0.82%	0.10	2.10%	0.26
+23	-1.36%	0.07	-1.02%	0.44	-0.69%	0.30	-2.45%	0.38	-0.67%	0.14	1.43%	0.33
+24	-0.86%	0.20	-1.88%	0.39	-0.66%	0.31	-3.11%	0.35	-0.20%	0.36	1.24%	0.36
+30	0.72%	0.26	3.85%	0.30	0.94%	0.25	6.78%	0.23	-0.22%	0.35	-2.93%	0.21
+36	3.65%	0.00	1.38%	0.43	4.04%	0.00	7.29%	0.23	-0.39%	0.21	-5.91%	0.06

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

In Table 9 Panel A, the same comparison is made but for the 1990s issues only. The Latin America sample versus the U.S. index CXR was -18.74%. The CXR for the Latin America sample versus the regional index was -24.57%, giving a 5.83% difference between the regional index and the U.S. index in the 1990s.

Table 9 Panel B shows the comparison of a Latin America sample of 30 observations and the U.S. and regional indexes for the 2000s issues. It shows the CXR for the Latin America sample versus the U.S. index is 57.79% while the Latin America versus the region CXR was 99.62%. This gives us a difference between the regional index and the U.S. index of -41.83%. The performance of Latin American ADRs indicates that they provide the most diversification benefits of the three regions. Furthermore, because Latin American ADRs traded on the NYSE are probably the largest firms in the emerging regions, they seem to have a wider range of performance relative to the regional index (as indicated by the ADRs strongly outperforming the regional index).

By comparing the excess performance of the Latin American ADRs listed in the 1990s to the 2000s, we see that the ADRs did better versus the S&P 500 index when the US market was volatile (the 2000s) than when the US market was stable (the 1990s). The same holds true when comparing the ADRs versus the regional index. Therefore, the Latin American firms listed as ADRs on the NYSE provided diversification benefits for investors in both regions.

Table 9: 3-Year Performance for Latin American NYSE-Listed ADRs US versus Regional Index^a

Month	Lat. Amer. Sample Versus US Index				Lat. Amer. Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	-0.69%	0.35	-0.69%	0.35	-0.26%	0.45	-0.26%	0.45	-0.43%	0.29	-0.43%	0.29
+ 2	-0.14%	0.46	-0.83%	0.36	-1.49%	0.25	-1.74%	0.28	1.35%	0.07	0.92%	0.23
+ 3	-2.06%	0.08	-2.88%	0.15	-3.93%	0.02	-5.68%	0.06	1.88%	0.02	2.79%	0.03
+ 4	0.62%	0.33	-2.26%	0.23	0.45%	0.40	-5.23%	0.10	0.18%	0.43	2.97%	0.05
+ 5	4.45%	0.01	2.19%	0.27	6.67%	0.01	1.44%	0.38	-2.22%	0.02	0.75%	0.36
+ 6	-1.51%	0.17	0.68%	0.43	-0.74%	0.36	0.70%	0.45	-0.77%	0.19	-0.01%	0.50
+ 7	-2.89%	0.03	-2.21%	0.30	-2.94%	0.06	-2.25%	0.35	0.05%	0.47	0.04%	0.49
+ 8	-2.52%	0.03	-4.73%	0.15	-4.61%	0.00	-6.86%	0.12	2.10%	0.01	2.13%	0.20
+ 9	0.21%	0.44	-4.52%	0.17	-1.73%	0.13	-8.59%	0.08	1.93%	0.01	4.07%	0.07
+10	0.21%	0.45	-4.31%	0.20	-1.54%	0.24	-10.13%	0.06	1.75%	0.02	5.82%	0.02
+11	-1.81%	0.10	-6.12%	0.12	-2.01%	0.15	-12.14%	0.04	0.20%	0.41	6.02%	0.02
+12	0.04%	0.49	-6.09%	0.13	-0.50%	0.41	-12.64%	0.04	0.54%	0.25	6.56%	0.02
+13	0.25%	0.45	-5.84%	0.16	-0.51%	0.43	-13.15%	0.04	0.75%	0.19	7.31%	0.01
+14	1.25%	0.24	-4.59%	0.23	0.88%	0.33	-12.27%	0.06	0.37%	0.32	7.68%	0.01
+15	-1.60%	0.17	-6.19%	0.17	-2.42%	0.12	-14.69%	0.04	0.82%	0.17	8.50%	0.01
+16	-0.88%	0.31	-7.07%	0.14	-2.18%	0.18	-16.87%	0.02	1.30%	0.07	9.81%	0.00
+17	-1.33%	0.21	-8.40%	0.11	-1.51%	0.23	-18.38%	0.02	0.18%	0.41	9.99%	0.00
+18	-0.89%	0.31	-9.28%	0.09	-2.32%	0.15	-20.71%	0.01	1.44%	0.05	11.42%	0.00
+19	0.38%	0.42	-8.91%	0.11	0.88%	0.33	-19.83%	0.02	-0.50%	0.25	10.92%	0.00
+20	3.23%	0.07	-5.67%	0.23	3.38%	0.10	-16.45%	0.04	-0.14%	0.44	10.77%	0.00
+21	-5.38%	0.00	-11.05%	0.08	-5.65%	0.00	-22.10%	0.01	0.27%	0.35	11.05%	0.00
+22	0.35%	0.41	-10.70%	0.09	1.08%	0.29	-21.02%	0.02	-0.73%	0.19	10.32%	0.00
+23	-2.79%	0.01	-13.49%	0.05	-2.66%	0.05	-23.68%	0.01	-0.13%	0.43	10.20%	0.01
+24	-0.11%	0.46	-13.60%	0.05	0.03%	0.49	-23.66%	0.01	-0.14%	0.42	10.06%	0.01
+30	-0.57%	0.33	-10.47%	0.12	-0.23%	0.44	-16.49%	0.07	-0.33%	0.30	6.02%	0.09
+36	3.79%	0.02	-18.74%	0.02	3.45%	0.03	-24.57%	0.02	0.34%	0.28	5.83%	0.11
Panel B: 2000s Issues												
+ 1	3.78%	0.05	3.78%	0.05	4.67%	0.03	4.67%	0.03	-0.89%	0.15	-0.89%	0.15
+ 2	2.60%	0.13	6.38%	0.02	2.54%	0.16	7.21%	0.02	0.06%	0.47	-0.83%	0.24
+ 3	1.00%	0.29	7.38%	0.02	0.92%	0.35	8.13%	0.03	0.08%	0.47	-0.75%	0.32
+ 4	2.43%	0.11	9.81%	0.01	4.31%	0.06	12.44%	0.01	-1.88%	0.06	-2.63%	0.10
+ 5	-1.14%	0.30	8.68%	0.03	-1.28%	0.32	11.16%	0.03	0.15%	0.44	-2.48%	0.13
+ 6	0.39%	0.43	9.06%	0.04	0.64%	0.41	11.81%	0.03	-0.26%	0.41	-2.74%	0.13
+ 7	1.58%	0.22	10.64%	0.03	3.34%	0.10	15.14%	0.01	-1.76%	0.04	-4.50%	0.05
+ 8	1.47%	0.30	12.11%	0.03	2.36%	0.24	17.51%	0.01	-0.89%	0.18	-5.39%	0.03
+ 9	-2.12%	0.25	9.99%	0.08	-1.35%	0.36	16.16%	0.03	-0.77%	0.18	-6.16%	0.02
+10	2.12%	0.15	12.11%	0.05	5.11%	0.02	21.26%	0.01	-2.99%	0.00	-9.15%	0.00
+11	0.84%	0.31	12.95%	0.04	1.66%	0.23	22.93%	0.01	-0.83%	0.21	-9.98%	0.00
+12	1.76%	0.22	14.71%	0.03	3.11%	0.13	26.03%	0.00	-1.34%	0.05	-11.32%	0.00
+13	4.43%	0.03	19.14%	0.01	6.28%	0.01	32.31%	0.00	-1.85%	0.02	-13.18%	0.00
+14	1.13%	0.31	20.26%	0.01	2.86%	0.14	35.17%	0.00	-1.73%	0.02	-14.91%	0.00
+15	0.55%	0.38	20.82%	0.01	0.61%	0.39	35.78%	0.00	-0.06%	0.47	-14.97%	0.00
+16	-0.14%	0.47	20.67%	0.01	2.07%	0.22	37.85%	0.00	-2.21%	0.01	-17.17%	0.00
+17	2.24%	0.16	22.91%	0.01	3.37%	0.11	41.21%	0.00	-1.13%	0.13	-18.30%	0.00
+18	-2.97%	0.07	19.94%	0.02	-3.16%	0.12	38.05%	0.00	0.19%	0.42	-18.11%	0.00
+19	6.70%	0.00	26.64%	0.00	8.22%	0.00	46.28%	0.00	-1.53%	0.06	-19.64%	0.00
+20	-2.61%	0.10	24.02%	0.01	-1.28%	0.31	45.00%	0.00	-1.34%	0.08	-20.98%	0.00
+21	3.29%	0.09	27.31%	0.00	4.29%	0.07	49.29%	0.00	-1.00%	0.13	-21.98%	0.00
+22	2.01%	0.11	29.32%	0.00	3.40%	0.04	52.70%	0.00	-1.40%	0.04	-23.38%	0.00
+23	2.81%	0.01	32.13%	0.00	4.63%	0.01	57.32%	0.00	-1.81%	0.04	-25.19%	0.00
+24	-2.96%	0.07	29.17%	0.00	-2.27%	0.19	55.05%	0.00	-0.69%	0.25	-25.88%	0.00
+30	3.65%	0.05	43.57%	0.00	3.51%	0.12	74.40%	0.00	0.14%	0.45	-30.83%	0.00
+36	2.80%	0.01	57.79%	0.00	5.25%	0.00	99.62%	0.00	-2.45%	0.00	-41.83%	0.00

^aThe computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

CONCLUDING COMMENTS

Previous ADR performance studies have focused mostly on excess returns relative to the US market benchmark during brief periods. This study analyzed the characteristics and benefits of ADRs compared

to US and regional indexes for two full decades. We computed cumulative excess returns of ADRs listed by companies headquartered in the Asia Pacific, European, and Latin American regions. We calculated the CXR using both the S&P 500 index and the relevant Morgan Stanley Capital International regional indexes (these represent a typical US investor's easily obtainable investment set). We then divided our samples to analyze performance during stable periods (1990s) and volatile periods (2000s). Utilizing only ADRs listed on the New York Stock Exchange ensured the highest information requirements were met by the ADR issuing firms and helped to control somewhat for firm size. The results show that ADRs are a great way to diversify your portfolio even though their regional indexes closely follow the US market. We found that the developing and emerging regions of Asia Pacific and Latin American provide more diversification than those of the more established European region. Our study provides evidence that the ADRs provided US investors with good diversification benefits based on their performance in the 1990s (during stable times) versus their much better performance versus the S&P 500 in the 2000s (when the markets were volatile). Offsetting portfolio losses when the US market is correcting makes ADR investing very attractive.

A major reason for tracking performance with the regional indexes was to help understand the role of country and exchange rate risks not accounted for when comparing ADR returns solely to US benchmark returns. Overall, the entire sample shows that lumping the regional ADRs together eliminates most of these risks as shown by how the indexes performed roughly the same. This result is in spite of some of the vast differences of isolated regions versus the US index. Once again, ADRs not only provide diversification benefits based on market timing (when US markets are stable versus volatile) but also provide exchange rate and country risk diversification benefits as well when employing a well-diversified portfolio across different regions. Also, a case can be made that ADR investing can in some instances be superior to international index investing as seen by how much ADRs tended to do versus the regional indexes. While most European countries have the same currency, this is not true for Asia Pacific countries nor those in Latin American. Therefore, to better analyze exchange rate risk benefits of ADRs, future research should focus on calculating cumulative excess return using country specific indexes; particularly those country specific indexes that can be easily acquired as exchange traded index funds (ETFs).

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