Latin American iShares: prices, premiums and volume

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Abstract

In this study I propose to examine the prices, premiums and volume of a sample of Latin American exchange traded funds (ETFs). ETFs are fast becoming one of the most popular investment instruments; in fact, some ETFs are now one of the most traded securities in U.S. exchanges. I find that although price efficiency is high, other factors, beside fundamental value explain the variation in prices. Most of the ETFs in the sample are more likely to trade at a premium and deviations from net asset value persist at least for a day. Although the explanatory power is low, market volatility and deviations from net asset value do affect trading volume.

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Introduction

Ever since their introduction in the 1990s exchange traded funds (ETFs) are fast becoming one of the most popular investment vehicles among both individual and institutional investors. ETFs are shares which in turn represent claims on a diversified portfolio. Most ETFs holds a basket of securities that tracks a specific fixed income index, stock index or other underlying benchmark. In essence, ETFs are open-end mutual funds or unit investment trusts that can be traded like commons stocks. This feature allows investors to buy or sell ETFs shares throughout the day. The traded-ability of ETFs is what differentiates them from open-end index mutual funds. In fact, many ETFs are now one of the most traded securities in U.S. exchanges. For example, the Spider (ticker SPY-NYSE) an ETFs that tracks the S&P 500 index, and the

Cube (ticker QQQ-NASDAQ) which tracks the Nasdaq-100 index, are both one of the most highly traded securities in their respective exchanges.

Although in comparison to mutual funds, ETFs assets represent a small fraction of the total assets manage by investment companies in the U.S., their growth has been significant. According to statistics provided by the Investment Company Institute (ICI), in 2000 there were 80 ETFs and total net assets were 66 billion. By the end of 2010 the total number of ETFs had grown to 923 and total net assets reached 992 billion[1]. One of the reasons every year more investors are lure to ETFs is their diversity. ETFs investors can not only invest in broad market indexes but can also reap off the diversification benefits of gold or take advantages of the outperformance of a foreign market. In fact, many popular press articles advocate that ETFs have democratized international investing and provide one of the best avenues to access the emerging markets[2]. In all, ETFs provide investor with ample opportunities to own diversified portfolios with the trading benefits of stocks. Given the swell in popularity of ETFs within the investment community, it is only natural to find more and more academic articles devoted to this investment product.

In this project I empirical examine a sample of ETFs that track a series of Latin American country specific indexes as they present an interesting subject group to examine the relation between the U.S. investors' demand for Latin American investment opportunities and the underlying indexes which include assets in many of the countries of the region. As many of the Latin American stocks included in the underlying indexes trade only at their home market, ETFs are perhaps the only alternative to U.S.-investors to access some of these securities. I confine

[1] Based on data from the Investment Company Institute available in www.ici.org.
[2] ETFs basics: How to Invest in Emerging Markets, U.S. News Online Edition, October 21, 2010. Five Myths About emerging Markets, Wall Street journal Online Edition, December 5, 2011.

my analysis to three different issues: prices, premiums and volume. I focus my attention on a set of Latin American ETFs offered by one of the largest provider of ETFs: iShares. iShares offer ETFs for a vast number of domestic and global market sectors. At present time there are more than 460 different iShares ETFs with close to $500 billion in assets[3].

Given their diversity, the breath, and the growth of the iShares, they are becoming one of the groups of ETFs more studied in the finance literature. Many of the studies dealing with iShares examine their historical performance, premium or discount to net asset value (NAV), and their diversification value. Some of the studies focusing on iShares include, Harper, Madura and Schnusenberg (2003), Jares and Lavin (2004), Zhong and Yang (2005) and Tsai and Swanson (2009). Harper, Madura, and Schnusenberg (2003) study international iShares in comparison to closed-end country funds. They find that international iShares outperform closed-end country funds, and argue that iShares provide a more efficient way to add diversification to a domestic portfolio. Tsai and Swanson (2009) agree with Harper et al., and find that iShares excel above closed-end country funds in terms of diversification value to the domestic investor. Jares and Lavin (2004) examining Japan and Hong Kong iShares find a negative relation between current premium and performance which opens the possibility for profitable trading rules. Zhong and Yang (2005) examines European iShares and report that U.S. market, in contrast to the home market, significantly affect iShares returns.

Data

In this study I examine the prices, premiums and volume of five country-specific Latin American iShares from four different countries. The sample includes two iShares which track

[3] Based on the data provided in the iShares website www.ishares.com.

indexes from Brazil and iShares for the countries of Mexico, Chile, and Perú. The data used in this project comes from several sources. The some descriptive statistics and historical net asset value (NAV) data comes directly from the iShares website, www.ishares.com. Closing prices come from the Center for Research in Security Prices (CRSP) and Bloomberg. Index levels and iShares trading volume come from Bloomberg. I examine the prices, premiums and volume of each ETF from their inception until August 31, 2011.

Table 1 shows the five iShares included in this study. The data presented on Table 1 comes directly from the iShares website, and shows that the inceptions dates range from March 1996 to September, 2010. The table also shows that all these iShares track indexes from the Morgan Stanley Capital International index series and all are trade at the NYSE. Table 2 provides some descriptive statistics on the aforementioned ETFs. The data presented on Table 2 is based on information provided in the iShares website as of June 30, 2011. Table 2 shows that these ETFs have very low expense ratios. iShares Mexico have the lowest expense ratio (0.53%), while Brazil Small-Cap have the highest (0.65%). In terms of assets, iShares Brazil is by far the largest with $12.69 million in assets. The other four ETFs have total net assets ranging from 0.06 billion to 1.6 billion. Table 2 also presents the number of portfolio holdings, and shows that iShares Peru have the fewest number of securities with 27. iShares Brazil includes the largest number of securities with 90.

Methodology and empirical results

As mentioned before, in this study I add to the ETFs literature by investigating the price behavior, deviations from NAVs or premiums, and trading volume of a sample of five country-specific Latin American iShares.

Prices

The first issue I tackle on this project is the relation between prices and NAVs. ETFs have both a market price, at which all trading occur, and a net asset value. The NAV is the per-share portfolio value and a more accurate measure of fundamental value than market prices. The goal of this section is to tests whether iShares' prices reflect all NAV information, i.e., fundamental value. Similar to Tse and Martinez (2007), I test for the price efficiency of Latin American ETFs. Given the in-kind creation and redemption of ETFs, and contrary to the case of closed-end funds, I expect high price efficiency. To test the price efficiency of this sample of ETFs I estimate the following regression model:

$$NAV_t = \alpha + \beta P_t \qquad (1)$$

Where, P_t is the ETF's closing market price and NAV_t is the net asset value at time *t*.

Table 3 presents the results of the estimation of Eq. (1) and includes the estimates of the intercept and slope coefficient along with the corresponding p-values (in italics). For the results on Table 3, I estimate the price efficiency for each ETF in the sample and for a time period which starts on the inception date of each ETF and ends on August 31, 2011. In general I find a high degree of price efficiency with all the coefficient estimates close to one and all statistically significant at one percent. The coefficient estimates ranges from a low of 0.8939 for iShares Brazil Small-Cap to a high of 1.0057 for iShares Perú. However, beside iShares Chile, there is some evidence of deviation between net asset value and market price for all ETFs in the sample. The estimate of the intercept for iShares Chile is the only intercept not statistically different from zero. The results for the other four iShares show intercepts which are statistically different from

zero evidencing deviations in price from their underlying value. These deviations present both, a cost and an opportunity to investors.

Premiums

ETFs can trade at a premium or discount to NAV. Although the creation and deletion feature of ETFs should help to keep deviations from NAV at a minimum, it has been advocated in the academic literature and the popular press that in many instances ETFs trade at prices significantly different from their NAVs. The evidence on the previous section indicates that for this sample of ETFs, deviations from NAV are not rare. These deviations can present arbitrage opportunities as well as a hidden cost to investors.

Similar to Elton, Grubber, Comer and Li (2002), I define the difference percentage (*dp*) as:

$$dp_t = \frac{P_t - NAV_t}{NAV_t} \qquad (2)$$

Where, P_t is the ETF's closing market price and NAV_t is the net asset value at time *t*. If the difference percentage is positive, the ETF is selling at a premium, while negative values indicate a discount.

Table 4 presents some descriptive statistics of the historical differences between the prices and NAVs of the five Latin American iShares. iShares Mexico has the longest trading history with 3877 days, while the youngest iShares in the sample is Brazil Small-Cap with 234 days. The median value of the percentage difference ranges from a low value of -0.0003 for iShares Mexico to a high of 0.0197 for Brazil Small-Cap. The table also presents the percentage

of days the ETFs close at a premium or a discount. iShares Mexico closed at a premium (NAV higher than market price) on 48.67 percent of the time, and is the only ETF in the sample most likely to trade at a discount (49.45 percent). iShares Brazil, Chile and Peru are more likely to trade at a premium with 58.18, 60.59 and 51.62 percent of the time closing at a price higher than NAV. iShares Brazil Small-Cap presents a surprising result, this ETF close at a premium more than 95 percent of the time. Perhaps this result come from the fact that iShares Brazil Small-Cap is the youngest ETF in the sample with less than a year of price history.

So far the results presented here points to the fact that this sample of ETFs most of the time trade at prices which are different from NAV. As these differences might present opportunities for arbitrage or hint hidden costs to investors. I now examine the persistence, or lack off, of the deviations from NAV. To this end, and as in Elton et al., I estimate the following simple linear regression model:

$$dp_t = \alpha + dp_{t-1t} \qquad (3)$$

In this model I regress the difference percentage at time *t* against the difference in percentage at time *t-1*. The results are presented in Table 5. The results show that indeed deviations from NAV do persist, at least for a day. The slope coefficient ranges from 0.3708 to 0.7446. More importantly, the lag percentage difference explains as much as 55 percent the variation in percentage difference. The evidence in stronger for the ETFs with the shortest history, that is, Peru and Brazil Small-Cap. This evidence points to the fact that investors are not sufficiently taking advantages of the arbitrage opportunities provided by these ETFs.

Volume

The last issue I examine in this study is the trading volume associated with Latin American iShares. As mentioned before, many ETFs are now on the list of the most traded securities in both the NYSE and NASDAQ. Trading volume is associated with diverse opinions and the arrival of new information about the fundamental value of a security. Volume is also associated with investors trying to take full advantages of arbitrage opportunities, a plausible justification of higher volume as evidenced by the results presented above.

In this section I empirically examine the determinants of volume in Latin American iShares trading volume by implementing a formulation first proposed in Elton et al. (2002). Elton et al. propose a model which takes into consideration market volatility as a proxy for instances when arbitrage opportunities are likely to occur. To measure market volatility the first term of the model, called spread, is a variable computed as the difference between the highest and the lowest index value divided by the index closing price. The second term of the model is the absolute value of the lag value of the percentage difference, also an indication of arbitrage opportunities. The model I estimate is the following:

$$volume_t = \alpha + \beta_1 \left(\frac{ihigh_t - ilow_t}{iclose_t} \right) + \beta_2 ABS(dp_{t-1}) \qquad (4)$$

Where, *ihigh* is the highest index value, *ilow* is the lowest index value and *iclose* is the index close *ivalue* at time *t*, and $ABS(dp_{t-1})$ is the absolute value of the difference percentage at time *t-1*.

Table 6 presents the results of the estimation of Eq. (4). Besides iShares Chile, there is strong evidence in favor of the notion that high market volatility induces higher volume for all

the iShares in the sample. In fact all estimated spread coefficients are high and statistically significant. The evidence regarding the effect of the lag percentage difference on volume is mixed. The estimated coefficient is not significant in the case of iShares Mexico and Peru. Lag percentage differences positively influence the daily trading volume of iShares Brazil, and Brazil Small-Cap. iShares Chile presents a surprising results as the estimated coefficient is negative and highly significant. Meaning that when deviations in prices where high yesterday, today trading volume is lower. Although for all the ETFs in the sample either the spread or the lag percentage differences influences volume, the model fail to fully explain trading volume. The adjusted r-squares are low, explaining less than 24 percent (in the best case) of the changes in volume during the time period studied.

Concluding Remarks

Exchange traded funds are one of the most popular new investment vehicles available to investors. ETFs are similar to open-end mutual funds but can be traded during the day like a common stock. In fact, many ETFs are on the list of the most traded securities in U.S. exchanges. In this study I examined three issues (prices, premiums and volume) related to ETFs using Latin American country-specific iShares as the study group. The sample includes two ETFs from Brazil, and ETFs from Mexico, Chile and Peru.

I find evidence of a high level of price efficiency; however I also find that other factors besides fundamental value affect prices. In fact, most of the ETFs in the sample are more likely to trade at a premium than at a discount and this deviation persist for at least day. These deviations from net asset value may indicate arbitrage opportunities. The last issue I tackle in this study is trading volume. I find that both, market volatility and deviations from net asset value

influence trading volume. However, the explanatory power of the model is low, meaning that other factors are important in explaining the trading volume of this sample of Latin American ETFs.

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Table 1 Latin American iShares

Country	Ticker	Inception Date	Index	Stock Exchange
Mexico	EWW	3/12/1996	MSCI Mexico Investable market index	NYSE
Brazil	EWZ	7/10/2000	MSCI Brazil Index	NYSE
Chile	ECH	11/12/2007	MSCI Chile Investable Market Index	NYSE
Perú	EPU	6/19/2009	MSCI All Peru Capped Index	NYSE
Brazil Small-Cap	EWZS	9/28/2010	MSCI Brazil Small Cap Index	NYSE

Notes: This table presents the list of Latin American iShares included in the study.

Table 2 Summary statistics

Country	Expense ratio (%)	Net Assets ($billions)	Price to Earnings	Price to Book	# of Holdings
Mexico	0.53	1.6	19.69	4.15	43
Brazil	0.61	12.69	13.79	3.09	90
Chile	0.61	0.86	19.78	2.91	40
Peru	0.62	0.45	13.21	3.42	27
Brazil Small Cap	0.65	0.06	20.47	2.31	78

Notes: This table presents some descriptive statistics of the Latin American iShares. All the data is as of June 30, 2011.

Table 3 Latin American iShares Net Asset Value/Price Relation

Name	Ticker	Intercept	Coefficient
Mexico	EWW	0.0173	1.0000
		0.0070	*0.0000*
Brazil	EWZ	0.0793	0.9952
		0.0000	*0.0000*
Chile	ECH	0.0260	0.9982
		0.6270	*0.0000*
Perú	EPU	-0.2066	1.0057
		0.0040	*0.0000*
Brazil Small-Cap	EWZS	2.5222	0.8939
		0.0000	*0.0000*

Table 4 Premium/Discounts Latin American iShares

Name	Days	Median	Days with Premium (%)	Days with Discount (%)
Mexico	3877	-0.0003	48.67	49.45
Brazil	2769	0.0017	58.18	39.76
Chile	954	0.0017	60.59	38.78
Perú	554	0.0002	51.62	47.65
Brazil Small-Cap	234	0.0197	95.72	3.85

Table 5 Regression Results on the Persistence of the Percentage Difference

Name	Intercept	Lag percentage difference	R2 (%)
Mexico	-0.0004	0.3718	13.8
	0.0080	*0.0000*	
Brazil	0.0011	0.3710	13.8
	0.0000	*0.0000*	
Chile	0.0008	0.3708	13.7
	0.0150	*0.0000*	
Perú	0.0000	0.7245	53.5
	0.8670	*0.0000*	
Brazil Small-Cap	0.0047	0.7446	55.3
	0.0000	*0.0000*	

Table 6 Explaining the Daily Volume of Latin American iShares

Name	Intercept	Spread	Lag dp	adj. R2 (%)
Mexico	2439262	38974188	5746750	23.3
	0.000	*0.000*	*0.471*	
Brazil	2607983	220160521	77608308	23.5
	0.000	*0.000*	*0.000*	
Chile	188343	-88551	-3219147	1.8
	0.000	*0.850*	*0.000*	
Peru	10876	13064200	2340248	18.1
	0.721	*0.000*	*0.451*	
Brazil Small-Cap	2864	580582	883418	4.3
	0.715	*0.018*	*0.005*	