

Diversification Potential of Diversified International Securities: The Case of Country Fund and iShares

Rajarshi (Raj) Aroskar and William A. Ogden¹

Abstract

In this study, the country funds and iShares of Europe and Asia are used to study diversification potential in the markets of Europe and Asia. Any short-term lead/lag relationships in these asset prices and net asset values (NAVs) respectively are investigated. Results show that both European and Asian iShares affect their country fund counterparts. While such relationships are found only in prices for Europe, both NAV and price relationships are found in Asia. Reverse relationships from country funds to iShares are not found in either region. Hence, investor perceptions play a major role in information transmission in these markets. The presence of such relationships might lead to a reduction in diversification potential for investors.

Introduction

This study investigates the diversification potential among Asian and European country funds and iShares, a subset of investible assets known as Exchange Traded Funds. Since these assets are from a single country, fundamental relationships may exist between these them. On the other hand, it is possible that the assets, as they are currently constituted, do not demonstrate any fundamental relationship, but market pricing might demonstrate the existence of relationships. Such a result would reduce diversification for investors. A basic requirement for diversification is that assets exhibit low correlations and any relationships between country funds and iShares would limit investor choices. These choices could be further reduced if there are group regional effects or if there is a dominance of one country in a single region. This study distinguishes itself from other studies by looking at the within country and within region relationship between country funds and iShares, rather than looking at the relationship of either asset with its host or home country as has been investigated in previous studies.

Closed-end country funds, which are actively managed and traded in the U.S., invest in assets of a specific country. By their very nature, closed-end funds trade at a premium or a discount from their net asset value (NAV). The reasons behind these premiums and discounts and whether they are related to NAVs have been investigated in previous studies. Studies have also shown that the listing of new funds has an impact on these premiums and discounts. While the responsiveness of these funds to the U.S. market (as they trade in the U.S.) and/or to home

¹ Rajarshi Aroskar is an Assistant Professor of Finance and William Ogden is a Professor of Finance in the Department of Accounting and Finance at the University of Wisconsin – Eau Claire. The authors would like to thank the Office of Research and Sponsored Programs and the College of Business at the University of Wisconsin – Eau Claire for their support.

markets has been analyzed by some, others have looked at whether these country funds impact their home markets. However, these studies have not analyzed the effect among similar assets (country funds and iShares) trading in the U.S.

iShares are open-end funds that trade like stocks and try to emulate the Morgan Stanley Capital Index (MSCI) for a particular country. Because they are open ended, they do not trade at significant premiums or discounts like their closed-end country fund (CECF) counterparts. Also, unlike CECFs, iShares are passively managed and, hence, have lower fees. Both invest in assets of a single country or region and both can be bought or sold anytime during trading hours. The objective of this paper is to investigate whether iShares, due to their investment in a country's MSCI, have an effect on CECFs representing a subset of stocks of a country. It also investigates whether this relationship is in NAV or just in price.

Results indicate an effect of iShare prices on own country fund prices for most of the countries in Europe but not in Asia. Reverse relationships are difficult to find in any of these countries. Any such relations are not demonstrated in NAVs. These results are indicative of investors' limited options from a diversification standpoint. This problem is exacerbated by the group relationships found in each of the regions. Dominance of Japan, as found in Asia, further impedes regional diversification. Another important observation is that the relations (both individual and group) found in prices (but not in NAVs) for Europe raise questions of market pricing and investor behavior.

The following section describes the literature in the field of diversification, country funds, and iShares. Further, the data and methodology used to investigate short-term and lead/lag relationships are described. Finally, the results of the study are discussed, followed by the conclusion of the paper.

Literature Review

Many studies have investigated the relationships among international markets. They argue that globalization and liberalization in global stock markets have led to the increased relationships among markets. Masih and Masih (2002) investigate the impact of globalization on international markets by looking at relationships pre- and post-liberalization. They find that, while the Japanese market had more of an effect on other markets during post-globalization, the U.K. market was more affected by other markets. The U.S. market is the only market that dominates other markets of the world in both pre- and post-globalization periods. Using cointegration, the effect of the U.S. and Japanese markets on developing markets is studied by Ghosh, Saidi, and Johnson (1999). They show that, while some markets are influenced by the U.S. or Japan, there are some that are not influenced by either.

Equally important as the study of global markets is the study of geographical proximity among markets, which creates unique possible relationships among these markets. Such linkages in the regional stock markets have been investigated. Dekker, Sen, and Young (2001) show strong linkages in regional Asia Pacific markets. Chelley-Steeley, Steeley, and Pentecost (1998) find increased dependence between the markets of Germany, Switzerland, and France, but not between the U.K. and Italy. Morck, Yeung, and Yu (2000) propose property rights as one of the reasons for higher correlation in the markets of low-income economies.

An important deviation from earlier studies is the investigation of relationships between investible assets such as CECFs rather than national indices. Chang, Eun, and Kolodny (1995) find that CECFs retain significant exposures to local (home) markets and provide U.S. investors with substantial diversification benefits. This, however, does not prevent them from acting more like U.S. securities than their underlying assets and exhibiting significant exposure to the U.S. market. Furthermore, CECFs from North America and Europe, but not the emerging Asian markets, show cointegration among fund price and net asset value.

While Ben-Zion, Choi, and Hauser (1996) show no cointegration between country funds and national stock prices, they do find bi-directional causality between the country funds and their national stock markets (not the U.S. market). With these results, they conclude that there is a possibility of arbitrage (barring transaction costs) between these CFs and their domestic markets. They also indicate that any long-run connection between the country funds and their markets is not close.

The importance of investible assets lies in the fact that some foreign markets impose restrictions on foreigners investing in their markets. In such scenarios CECFs and iShares provide important sources of investment opportunities. Also, similar to the indices, these assets provide a diversified investment in foreign markets rather than an investment in a single foreign stock. However, the trading of such assets in the US runs the risk of linkages among them. One such study that investigates the possible links between iShares and CECFs is by Patro (2001).

Patro (2001) shows the listing of World Equity Benchmark Shares (WEBS) reduces CECF premiums. He shows that there is a significant positive reaction on market indices to the listing of WEBS.

Prior studies on iShares have analyzed their relationships with respective regional indices and/or with the U.S. index. Khorana and Nelling (1998) compare the index tracking accuracy of the WEBS and of the CECF of those countries. Pennathur, Delcours and Anderson (2002) utilize both single index and double index models to analyze the tracking performance of iShares and CECFs. They find that iShare returns track their home country returns, while CECF prices show more exposure to U.S. returns even if their NAVs track the local indexes.

While relationships of these assets with their respective home countries are important, any relationship of these assets with each other is of greater concern to the U.S. investor. This is because such a link is detrimental from the point of view of diversification gains. Such issue provides the motivation behind investigating links and lead/lag relationships between the iShares and country funds investigated in this paper.

Data

Data for this study includes iShares and country funds from Europe and Asia. This study focuses on the iShares that initiated as of March 18, 1996 (listing of first iShares). This allows segregation of iShares into only two geographical regions: Asia and Europe. Studies in the past have analyzed only major countries (economies) in Europe and Asia. This study extends those studies to include smaller countries allowing analysis of different market sizes. In Europe, the selection criteria include two countries in the Euro zone, one representing a larger economy and

one a relatively smaller economy. Also, one non-Euro zone country is selected so as to have a country that was never in the exchange rate mechanism. These criteria lead to the selection of Germany (the largest country and economy of the Euro zone), Spain (a relatively smaller country in the Euro zone) and Switzerland (a non-Euro zone country). As there is no single currency zone in Asia, the selection criteria are slightly different. Japan represents the major economy of Asia; Singapore, a relatively smaller economy (yet developed according to MSCI classification); and Malaysia, a developing nation. For these countries, data includes closing prices of iShares and country funds spanning March 18, 1996 through August 31, 2004. iShare information has been obtained from Yahoo finance and country fund information has been provided by Lipper. When countries have multiple country funds, those having the longest history for each country are selected.

Methodology

Granger Causality is used to investigate the existence of lead/lag relationships among country fund NAVs and prices and iShare NAVs and prices respectively, and all variables are entered in logarithmic form. To use Granger causality, first the optimal number of lags are determined (to eliminate any auto correlation) using the Akaike Information Criteria (AIC). The following equation identifies the optimal lags:

$$Y_t = \sum_{i=1}^{i=r} Y_{t-i} + \sum_{n=1, j=1}^{n=k, i=r} X_{n,t-i}$$

Where,

Y_t = Log returns of dependent variables (iShare or country fund NAV/prices)

$X_{n,t-i}$ = Lags of log returns of independent variables (iShare or country fund NAV/prices)

n = Number of countries

i = number of lags

Each dependent variable is regressed with its own lags. Lags are then increased until AIC reaches its minimum value. These optimal lags are then used to find the optimal lags of independent variables by appending such lags one by one. The final model thus obtained (one country fund as the dependent variable and all the regional iShares as independent variables or one iShare as the dependent variable and all regional country funds as independent variables) is used to test if any independent variable leads the dependent variable. To do this, the coefficients of all the lags of the concerned independent variable are equated to zero. If the null hypothesis of all coefficients equal to zero cannot be rejected, then that independent variable may not Granger cause and hence may not lead the dependent variable. Again, just as in the case of short-term relationships, it is possible that all the country's iShares may not lead the country funds individually, but may lead as a group. This is investigated by setting the sum of all coefficients of all independent variables (this excludes the dependent variable lags) equal to zero. If this is

rejected, then these independent variables lead the dependent variable as a group. The following section describes the results.

Results

The Leading Effect of European iShares on Country Funds

Comparisons of NAV and price relationships are presented in Table 1. Panel A, which reports the leading effect of European iShares on country funds, shows that only the Swiss iShares lead the German country fund in NAVs. For prices (Panel B), however, both the German and the Swiss iShares lead the German country fund in price relationships. The Spanish iShare, however, does not lead the German country fund prices. Similar price relationships are also found in the case of the Swiss country fund. In contrast, the Spanish iShare is the only iShare that leads its country fund price. No leading relationships are found from regional iShares to either the Spanish or Swiss country funds in their NAVs.

Table I about here

Group relationships show that all European iShares as a group lead each of the European country funds in prices. However, only in the case of the German country fund NAV do the regional iShare NAVs lead as a group.

It is observed that each country's iShare does not lead its own country fund in the NAVs. However, such leading relationship is found in prices. Also, although group leading effects are not found from iShares to NAVs (except in the case of the German country fund), there are group leading effects from iShares to country funds in the case of each of the European prices.

One possible explanation for this behavior could be that investors perceive that iShares, representing a broader market, affect country funds. Such a theory could be further supported if we don't see a reverse effect from country fund to iShares.

The Leading Effect of European Country Funds on iShares

Panels A and B of Table 2 set forth the leading effects of European country funds on iShares. Only the Spanish country fund leads the German iShare in NAVs and only the Swiss country fund leads the German iShare in prices. The German country fund leads the Spanish iShares in both NAVs and prices. Additionally, while the Swiss country fund prices lead the Spanish iShare in prices, the Spanish country fund leads its iShare in NAVs. No other individual lead/lag relationships are found in either NAVs or prices, except the German country fund NAV effect on the Swiss iShare NAV. The Spanish iShare demonstrates the only group relationship in both prices and NAVs.

Table II about here

In contrast to the iShare-to-country-fund relationships, these results show no leading effects from individual country funds to their own iShares in both prices and NAVs. Also, there

is no group effect from country funds to iShares in both prices and NAVs. The only exception is Spain, where there is a group leading effect from regional country funds to its iShare in both price and NAV and an individual effect from its country fund to its iShare in NAV.

Hence it is seen in Europe that in the majority of cases, there are leading relationships from each country's iShare to its own country fund in prices. In all cases, there is no such relationship in NAVs. Conversely, there are no leading relationships from individual country funds to their own iShares in the majority of European cases for prices and NAVs. Furthermore, group relationships from iShare prices to country fund prices are found in Europe where none are found in NAVs (the only exception is a leading relationship on the German country fund NAV). Converse relationships are not found from country funds to iShares in both price and NAV (except Spain, where a leading relationship is found).

It can be implied from these results that NAVs indicate a minimal effect of iShares on country funds and vice versa. Hence, such minimal effects would raise the possibility of diversification in simultaneously holding these securities. However, relationships, as evidenced in prices, reduce the potential of diversification in these securities. One possible explanation for this behavior could be that investors perceive that iShares, representing a broader market, affect country funds.

The Leading Effect of Asian iShares on Country Funds

For Asian markets, the leading effects of Asian iShares on country funds are set forth in Table 3. In Panels A and B, the Japanese iShare leads all three Asian country funds in NAVs, but leads only the Singaporean and Malaysian country funds in prices. Both the Malaysian and the Japanese country funds are not led by any other Asian iShare in both NAVs and prices. The Singaporean country fund, on the other hand, is led by its iShare in both prices and NAVs.

Table III about here

However, iShares, as a group, lead individual Asian country funds in all cases in NAVs and in all cases but that of Japan in prices. To the extent that such relationships are found, we are lead to believe in the reduction of diversification in Asia.

Additionally, the Japanese iShare leads the majority of regional country funds in NAVs and prices. Thus, the Japanese iShare's dominance on country fund is also evident in the lead/lag relationships, further questioning the possibility of diversification in Asia.

The Leading Effect of Asian Country Funds on iShares

The leading effects of Asian country funds on iShares are set forth in Panels A and B of Table 4. The Japanese and Malaysian country funds lead the Japanese iShare in prices, no such leading relationship is found in NAVs. Only the Singaporean country fund and the Japanese country fund lead the Malaysian iShares in price and NAVs respectively. No other individual leading relationship is found from country fund to iShare in either prices or NAVs.

Table IV about here

As a group, the Asian country funds lead both the Japanese and the Malaysian iShares, but not the Singaporean iShare in NAVs. Conversely, the Asian country funds lead only the Singaporean iShare prices, but not that of Japan and Malaysia. These results do not show an effect of country funds on iShares.

Lead/lag relationships along with short-term relationships in Asia show that investors derive the iShares effect on the country funds in prices from NAVs and that Japan, being a major country in Asia, have an impact on regional countries. Furthermore, group relationships show an impact of regional iShares on individual country fund prices, which are derived from similar effects in NAVs. All these results lead us to believe that the diversification potential in Asia is reduced due to real fundamental effects and their propagation in prices and thus market effects.

Comparison of European and Asian Relationships

A comparison of European and Asian relationships show meaningful similarities and differences.

1. While European iShares affect their own country fund, Asian iShares do not affect their own country funds in prices. Europe, however, does not show such relations in iShares NAVs.
2. In both Europe and Asia opposite relationships from country funds to their own iShares are not found for individual countries in prices.
3. Both Europe and Asia show group effects from iShares to individual country funds in prices. While these effects are not present in the NAVs of Europe, Asia demonstrates these relationships even in their NAVs.
4. There is no evidence of dominance in Europe, but there is evidence of dominance in Asia from Japan. This dominance is not just market perception, but also demonstrated in NAV (fundamental) relationships.

The above observations indicate that, in Europe, iShares affect country funds. However, the reverse relationship does not exist. Extension of this logic is also evidenced in the group relationships from regional iShares to country funds in both Europe and Asia. While there are not fundamental reasons (NAV relationships) in Europe for such group relationships there is a fundamental reason in Asia. Interestingly, there is no dominance effect found in Europe either fundamentally or in prices, but such dominance is found in Asia from Japan, both fundamentally and continued in the market pricing. To the extent that such relationships are found in the market, the potential of diversification could be reduced.

Conclusions

This paper investigates the diversification potential in holding investible securities such as iShares and country funds. Country funds and iShares from Germany, Spain, and Switzerland

are studied for Europe and Japan, Malaysia, and Singapore for Asia. iShares, which mimic MSCI indices for a country, provide a diversified, broad-based investment into a foreign country. On the other hand, country funds, which are actively managed, also provide diversified investment in a country, though holding a smaller subset of the foreign market. Hence, it is hypothesized in this paper that iShares could have an impact on country funds. Such an effect would lead to a reduction in diversification for investors holding both securities. Further, any dominance of a single country in a region would further limit diversification gains in that region. Such could also be concluded from any group effects from a region to a country fund or iShare.

Countries are segregated into regions to investigate and compare regional impacts, and Granger Causality is used to investigate lead/lag relationships. European results indicate no effect from iShares to country funds in NAVs, but iShare-to-country-fund effects are found in prices. On the other hand, any effect from country fund to iShare in NAVs is not maintained in price relationships.

Asian relationships do not present any individual effect from iShares to country funds or vice versa. However, they do demonstrate group NAV and price relations from iShares to country funds. Also, they demonstrate Japanese dominance in the region.

These results indicate that questions can be raised on the diversification potential of country funds and iShares. Investors may not get complete diversification benefits by holding all these international assets in their portfolio. They would have to be concerned whether these country securities have relationships within the country or with regional securities. Also, they need to be concerned about the dominance of a country in a region. Finally, assets may not show any fundamental relationship but may show such in price. All these factors impede investors in obtaining diversification.

Table I: Lead/Lag Relationships in the Markets of Europe from iShares to Country funds^a

| A. Leading Effects of iShare NAVs on Country Fund NAVs | | | | B. Leading Effects of iShare Prices on Country Fund Prices | | | |
|--|---------------------------|----------------|--------------|--|---------------------------|------------------|----------------|
| <i>Independent Variable^b</i> | <i>Dependent Variable</i> | | | <i>Independent Variable^b</i> | <i>Dependent Variable</i> | | |
| | German CF NAV | Spanish CF NAV | Swiss CF NAV | | German CF Price | Spanish CF Price | Swiss CF Price |
| German IS NAV | 0.44 | 1.32 | 0.45 | German IS Price | 2.99* | 1.93 | 3.53* |
| Spanish IS NAV | 0.00 | 0.06 | 1.09 | Spanish IS Price | 0.13 | 5.41*** | 1.12 |
| Swiss IS NAV | 3.48* | 0.19 | 1.04 | Swiss IS Price | 4.06** | 0.86 | 11.37*** |
| All IS NAV ^{†c} | 5.56** | 0.62 | 0.04 | All IS Price ^{†c} | 12.74*** | 13.28*** | 6.91*** |

* 10% level of significance, ** 5% level of significance, *** 1% level of significance

† Except the dependent variable

^a Granger causality is used to analyze the leading effect that the independent variables have on the dependent variable. The optimal number of lags is obtained such that it minimizes AIC.

^b The null hypothesis that the dependent variable is not affected by the independent variable is tested by equating all the lags of independent variables equal to zero. Rejection of the null would imply the independent variable affects the dependent variable individually.

^c The null hypothesis that all the independent variables as a group affect the dependent variable is tested by equating the sum of all lags of all variables equal to zero. Rejection of the null would imply that all the independent variable as a group effect the dependent variable.

Table II: Lead/Lag Relationships in the Markets of Europe from Country fund to iShare ^a

| A. Leading Effects of Country Fund NAVs on iShare NAVs | | | | B. Leading Effects of Country Fund Prices on iShare Prices | | | |
|--|---------------------------|----------------|--------------|--|---------------------------|------------------|----------------|
| <i>Independent Variable</i> ^b | <i>Dependent Variable</i> | | | <i>Independent Variable</i> ^b | <i>Dependent Variable</i> | | |
| | German IS NAV | Spanish IS NAV | Swiss IS NAV | | German IS Price | Spanish IS Price | Swiss IS Price |
| German CF NAV | 1.26 | 2.87* | 5.63** | German CF Price | 0.27 | 2.41* | 0.31 |
| Spanish CF NAV | 3.09* | 5.26** | 0.39 | Spanish CF Price | 0.09 | 2.00 | 0.23 |
| Swiss CF NAV | 1.86 | 1.74 | 0.02 | Swiss CF Price | 4.84** | 6.92*** | 1.90 |
| All CF NAV ^{†c} | 1.75 | 2.92* | 0.12 | All CF Price ^{†c} | 2.89 | 4.29** | 0.70 |

* 10% level of significance, ** 5% level of significance, *** 1% level of significance

† Except the dependent variable

^a Granger causality is used to analyze the leading effect that the independent variables have on the dependent variable. The optimal number of lags is obtained such that it minimizes AIC.

^b The null hypothesis that the dependent variable is not affected by the independent variable is tested by equating all the lags of independent variables equal to zero. Rejection of the null would imply the independent variable affects the dependent variable individually.

^c The null hypothesis that all the independent variables as a group affect the dependent variable is tested by equating the sum of all lags of all variables equal to zero. Rejection of the null would imply that all the independent variable as a group effect the dependent variable.

Table III: Lead/Lag Relationships in the Markets of Asia from iShares to Country fund^a

| A. Leading Effects of iShare NAVs on Country Fund NAVs | | | | B. Leading Effects of iShare Prices on Country Fund Prices | | | |
|--|---------------------------|---------------------|----------------------|--|---------------------------|----------------------|----------------------|
| <i>Independent Variable^b</i> | <i>Dependent Variable</i> | | | <i>Independent Variable^b</i> | <i>Dependent Variable</i> | | |
| | Japanese CF NAV | Malaysian CF NAV | Singaporean CF NAV | | Japanese CF Price | Malaysian CF Price | Singaporean CF Price |
| Japanese IS NAV | 14.15 ^{***} | 7.28 ^{***} | 6.05 ^{***} | Japanese IS Price | 0.81 | 7.28 ^{***} | 9.46 ^{***} |
| Malaysian IS NAV | 0.33 | 2.62 | 2.67 | Malaysian IS Price | 0.17 | 2.67 | 0.07 |
| Singaporean IS NAV | 1.97 | 0.99 | 24.09 ^{***} | Singaporean IS Price | 0.05 | 0.09 | 0.54 ^{**} |
| All IS NAV ^{†c} | 10.27 ^{***} | 8.49 ^{***} | 41.79 ^{***} | All IS Price ^{†c} | 0.29 | 10.39 ^{***} | 9.34 ^{***} |

* 10% level of significance, ** 5% level of significance, *** 1% level of significance

† Except the dependent variable

^a Granger causality is used to analyze the leading effect that the independent variables have on the dependent variable. The optimal number of lags is obtained such that it minimizes AIC.

^b The null hypothesis that the dependent variable is not affected by the independent variable is tested by equating all the lags of independent variables equal to zero. Rejection of the null would imply the independent variable affects the dependent variable individually.

^c The null hypothesis that all the independent variables as a group affect the dependent variable is tested by equating the sum of all lags of all variables equal to zero. Rejection of the null would imply that all the independent variable as a group effect the dependent variable.

Table IV: Lead/Lag Relationships in the Markets of Asia from Country fund to iShare^a

| A. Leading Effects of Country Fund NAVs on iShare NAVs | | | | B. Leading Effects of Country Fund Prices on iShare Prices | | | |
|--|---------------------------|------------------|--------------------|--|---------------------------|--------------------|----------------------|
| <i>Independent Variable^b</i> | <i>Dependent Variable</i> | | | <i>Independent Variable^b</i> | <i>Dependent Variable</i> | | |
| | Japanese IS NAV | Malaysian IS NAV | Singaporean IS NAV | | Japanese IS Price | Malaysian IS Price | Singaporean IS Price |
| Japanese CF NAV | 1.72 | 10.71*** | 0.55 | Japanese CF Price | 3.06 | 0.12 | 2.26 |
| Malaysian CF NAV | 0.08 | 0.01 | 0.02 | Malaysian CF Price | 0.02* | 0.97 | 0.07 |
| Singaporean CF NAV | 1.55 | 0.00 | 2.18 | Singaporean CF Price | 0.59 | 4.20** | 0.98 |
| All CF NAV ^{†c} | 3.37* | 5.41** | 0.78 | All CF Price ^{†c} | 0.66 | 1.69 | 3.28* |

* 10% level of significance, ** 5% level of significance, *** 1% level of significance

† Except the dependent variable

^a Granger causality is used to analyze the leading effect that the independent variables have on the dependent variable. The optimal number of lags is obtained such that it minimizes AIC.

^b The null hypothesis that the dependent variable is not affected by the independent variable is tested by equating all the lags of independent variables equal to zero. Rejection of the null would imply the independent variable affects the dependent variable individually.

^c The null hypothesis that all the independent variables as a group affect the dependent variable is tested by equating the sum of all lags of all variables equal to zero. Rejection of the null would imply that all the independent variable as a group effect the dependent variable.

References

- Ben-Zion, U., J.J. Choi, & S. Hauser (1996). The price linkages between country funds and national stock markets: Evidence from cointegration and causality tests of Germany, Japan and UK funds. *Journal of Business Finance and Accounting* 23(7): 1005-1019.
- Chang, E., C.S. Eun, & R. Kolodny (1995). International diversification through closed-end country funds. *Journal of Banking and Finance* 19: 1237-1263.
- Chelley-Steeley, P.L., J.M. Steeley, & E.J. Pentecost (1998). Exchange controls and European stock market integration. *Applied Economics* 30(2): 263-267.
- Dekker, A., K. Sen, & M.R. Young (2001). Equity market linkages in the Asia Pacific region: A comparison of the orthogonalised and generalized VAR approaches. *Global Finance Journal* 12(1): 1-33.
- Ghosh, A., R. Saidi, & K.H. Johnson (1999). Who moves the Asia-Pacific stock markets – US or Japan? Empirical evidence based on the theory of cointegration. *The Financial Review* 34(1): 159-170.
- Khorana, A., & E. Nelling (1998). The emergence of country index funds. *Journal of Portfolio Management* 24(4): 78-85.
- Masih, A.M.M., & R. Masi (2002). Propagative causal price transmission among international stock markets: Evidence from the pre- and post globalization period. *Global Finance Journal* 13(1): 63.
- Morck, R., B. Yeung, & W. Yu (2000). The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics* 58(1,2): 215.
- Patro, D.K (2001). Market segmentation and international asset prices: Evidence from the listing of world equity benchmark shares. *The Journal of Financial Research* 24(1): 83-98.
- Pennathur, A.K., N. Delcoure, & D. Anderson (2002). Diversification benefits of iShares and closed-end country funds. *The Journal of Financial Research* 25(4): 541-558