

CICLO DE SEMINARIOS 1997
DEPARTAMENTO DE ECONOMIA

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Crisis of 1994**

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Día: Martes 1 de Julio

9:00 hs.

First Draft: December, 1996

This Draft: May 8, 1997

Comments Welcome

COUNTRY FUNDS AND ASYMMETRIC INFORMATION[†]

Jeffrey A. Frankel
and
Sergio L. Schmukler

Department of Economics
University of California at Berkeley

Abstract

Closed-end country funds trade in New York at their price. Their Net Asset Value (NAV) represent the value of the underlying assets, usually traded in each particular country. If the holders of the underlying assets have more information the about local assets than the country fund holders, changes in NAVs will tend to explain future changes in prices but not vice versa. This paper shows that most NAVs appear exogenous; while most prices reject exogeneity. Past changes in NAVs and discounts predict current prices more frequently than prices and discounts predict NAVs. The price (NAV) adjustment coefficients are low and negatively correlated with the local (foreign) market variability--but not with the fund price (NAV) variability. These findings are consistent with the existence of asymmetric information in international capital markets. The appendix introduces a model of asymmetric information, that rationalizes our empirical findings. Different perceived risk makes foreign investors willing to less pay for local assets than domestic investors. Therefore, country fund prices (driven mainly by small U.S. investors) tend to be lower than NAVs (driven mainly by domestic and large foreign investors). Two other propositions are derived. First, since NAVs and prices are linked by a long-run relationship, unusually large past discounts explain current NAVs and prices. Second, the presence of "noise traders" delays the adjustment toward the long-run equilibrium.

JEL Classification Numbers: F30, G11, G14, G15

Keywords: asymmetric information; country funds; closed-end funds; cost of information; noise traders; cointegration; error-correction model; exogeneity.

[†] We received encouragement and helpful comments from George Akerlof, Bob Anderson, David Bowman, Menzie Chinn, Brad De Long, Neil Ericsson, Charlie Kramer, Mico Loretan, Rich Lyons, Sole Martinez Peria, Tom Rothenberg, and Maury Obstfeld. Fruitful suggestions were received from seminar participants at the following places: the Bank for International Settlements, Brandeis University, the Federal Reserve Board, Emory University, the Inter-American Development Bank, the International Monetary Fund Research Department, the National Bureau of Economic Research Summer Institute, Rice University, Rutgers University, Tufts University, University of California at Berkeley, University of Illinois at Urbana-Champaign, University Pompeu Fabra, and the World Bank Research Department. We are certainly responsible for any remaining errors. The data was kindly provided by Don Cassidy, of Lipper Analytical Services, and Thierry Wizman. The Comisión Nacional de Investigaciones Científicas y Técnicas from Argentina provided financial support.

Address: 549 Evans Hall, Berkeley, CA 94720-3880. E-mail addresses: frankel@econ.berkeley.edu and sergio@econ.berkeley.edu.

I. Introduction

In the past, investors wishing to diversify their portfolios through global investment needed to buy stocks or bonds in the market of each particular country. This implied a certain degree of sophistication and capital. For instance, transaction costs to trade in foreign markets vary but they are generally higher than the cost of buying in domestic markets, even for countries without any restrictions on capital movements.

The new trends in international capital markets, namely securitization and globalization, have made foreign investment more accessible to all investors. Along with these changes, new financial instruments have become available. As a consequence, less sophisticated investors with little capital have begun to find international diversification easier to achieve. First foreign bonds, and later equities of foreign companies started trading in international stock exchange markets. In the United States, American investors can now acquire shares of many major foreign companies through American Depository Receipts (ADRs), available in New York. However, this kind of investment still requires some knowledge of the country, of the industry, and of the company itself.

This paper focuses on another new vehicle for global investment. Investors attracted to certain countries, but with no specific knowledge of particular industries or firms, can acquire shares of closed-end country and regional funds. Most of these funds were established in the late 1980s and during the 1990s, although others have a longer history. They primarily invest in equities from a specific country. Regional funds invest in groups of countries within a given region. Some open-end country and regional funds also exist. Holding open-end funds is

analogous to holding the underlying assets, because their shares can be redeemed. Both open-end country funds and their respective underlying equities are valued almost identically, provided that arbitrage is feasible. However, this is not the case for closed-end country funds.

The shares of closed-end country funds cannot be redeemed, so perfect arbitrage becomes practically impossible. The fund manager decides the portfolio of the fund, and investors only become aware of the assets they hold at certain points in time--when the fund manager reports the fund composition. Country fund holders trade most of their shares in Wall Street at the country fund price. The net asset value (NAV) is also computed. The NAV is the dollar value of the underlying assets, which are individually traded in each domestic market. The discount, equal to the percentage difference between the NAV and the price, reflects how the holders of the individual shares value their assets relative to the country fund holders.

In a perfectly efficient and internationally integrated market, discounts would be equal to zero --since NAVs and country fund prices are two market values of the same assets. However, closed-end country fund discounts are in fact large and variable. For instance, it is not uncommon to find average discounts of around 15 percent for country funds like the German ones, the French funds, the United Kingdom Fund, the First Australian Fund, and the Mexico Fund. Contrary to other cases, several of these funds are relatively big and liquid. Moreover, most of the stock markets of their respective countries are also liquid, and do not have restrictions on capital movements. Therefore, one would expect NAVs to be close to fund prices. However, average discounts persist. In addition, they exhibit large fluctuations. For example, discounts reached peaks of 30 percent in 50 percent of the funds.

The literature has proposed two main explanations for this phenomenon. On the one hand, discounts have been attributed to the presence of transaction costs and illiquid markets, that makes perfect arbitrage infeasible. Therefore, since markets are partially segmented, the NAV and the fund price reflect the specific characteristics of each respective market. On the other hand, the literature has also claimed that country funds are held by a different clientele, which includes “noise traders.” These irrational investors trade based on sentiments, and tend to misperceive the fundamental values of the assets. Since sentiments shift randomly over time and since only rational traders buy the underlying assets, there is an extra risk in holding country funds. Given that pure arbitrage is impossible to achieve, the riskier asset (the country fund) is valued below the underlying assets, and discounts are the norm.

In this paper, though we allow for imperfect arbitrage and noise traders in the markets, we present a novel explanation to the existence of average discounts in country funds. The main hypothesis of this paper is that asymmetric information implies that country funds trade at positive discounts. Rational country fund holders internalize the fact that they know little about each remote country or region. As a consequence, they are willing to pay less than relatively well-informed local investors for the same assets.

Asymmetric information also explains the dynamics between NAVs and fund prices. Then, the paper computes exogeneity tests for 61 country funds from Europe, Latin America, and the Pacific Rim. We test whether the NAV, the price, or both adjust to the long-run and to the short-run relationships between NAVs and prices. In other words, we investigate which variable appears to be “strongly exogenous” (or predicted only by its own past): the NAV or the price.

The results are obtained by estimating error-correction models for each fund by full-information maximum likelihood (following Johansen, 1988, and Johansen and Juselius, 1990).

The paper also tests whether there is a statistically significant relationship between the NAV-price adjustment coefficients and the variability of NAVs and fund prices. The asymmetric information model predicts that with more noise in the “external market” the adjustment coefficients become smaller. In other words, the less noise NAVs contain, the faster prices react to changes in NAVs--if NAVs are closer to fundamentals. On the other hand, the “noise traders model” predicts that with more noise in the New York market the adjustment of prices to NAVs become slower--since noise traders in New York disconnect prices from NAVs (namely, from fundamentals). By estimating these relationships, we are able to see which model is supported by the data.

In the appendix, we present a model of asymmetric information. The model captures some of the empirical regularities found in country funds. We assume that investors are risk averse, and that more information reduces the subjective variance of returns. The model also relies on two factors. On the one hand, domestic and large international investors--who are usually well informed--are the ones that mainly determine the NAVs. On the other hand, small American investors who are relatively uninformed drive the fund prices. As a consequence, country fund prices are below NAVs in equilibrium. Two other propositions are derived from the theoretical assumptions. They show how past discounts affect current prices and NAVs.

The remainder of the paper is organized as follows. Section II summarizes the existing literature on country fund discounts. Sections III tests the asymmetric information hypothesis. The theoretical model is introduced in the appendix section.

II. The Rationale Behind Country Fund Discounts in the Literature

Country funds are known to trade at high and variable average discounts. In other words, the prices at which country funds trade are in general lower than their Net Asset Values. Part A of Table 1 shows summary results from a sample of 61 country funds based in New York. The table demonstrates that, when statistically different from zero, discounts tend to have a positive mean. Discounts are significantly positive for around 82 percent, 42 percent, and 53 percent of the European, Latin American, and the Pacific Rim funds respectively. On the other hand, discounts are significantly negative for only 12 percent, 25 percent, and 28 percent of the funds.¹

It should be noted that most of the country funds started trading in the early 1990s. During the early 1990s, the international community was optimistic about emerging markets in Asia and Latin America. Favored by low U.S. interest rates, foreign capital flew toward these markets. Part of these flows were channeled through country funds. For instance, Claessens and Rhee [1994] show that new country funds account for 25 percent of the equity flows to developing countries over the 1989-1993 period. The sentiment changed when the U.S. interest rates increased during 1994, and in the aftermath of the Mexican crisis of 1994. Therefore, the fact that a higher proportion of European funds trade at positive discounts (when compared with funds from the other regions) is not surprising. Optimistic U.S. investors probably pushed up the price of the country funds from emerging economies--relative to the value of their underlying assets--and discounts shrank over that period.

TABLE 1
SAMPLE OF 62 FUNDS, 1/4/85-3/8/96

PART A:
PERCENTAGE OF DISCOUNT MEANS SIGNIFICANTLY DIFFERENT FROM ZERO*

	NUMBER OF FUNDS	DISCOUNT= 100*log(NAV/Price)	
		POSITIVE	NEGATIVE
EUROPE	17	82%	12%
LATIN AMERICA	12	42%	25%
PACIFIC RIM	32	53%	28%

* The results are computed at a 5% significance level. Details are tabulated in Tables A1.2.

PART B:
DISCOUNT SUMMARY STATISTICS FOR EACH REGION**

	NUMBER OF OBSERV.	MEAN DISCOUNT	MEDIAN DISCOUNT	STD. DEV. OF DISCOUNTS	MAXIMUM DISCOUNT	MINIMUM DISCOUNT
EUROPE	5646	8.6	11.3	13.8	50	-89
LATIN AMERICA	3163	4.3	3.4	15.6	83	-54
PACIFIC RIM	7439	-0.5	1.4	17.5	54	-94

** All available observations for each region are used to calculate the summary statistics. Summary statistics by fund are displayed in Tables A1.2

Positive discounts can be observed in Figure 1, which takes two representative funds from each region. The plots show that the funds started trading at premia. Funds like the Italy Fund, the Chile Fund, the Malaysia Fund, and the Swiss Fund (although to a lesser degree) demonstrate this point.² Fund managers planned the initial public offerings (IPO) around a time of optimistic sentiments with respect to the specific country. It should be remarked that when periods of high premia, around the IPOs, are not included in the sample the results of Table 1 change. Average discounts rise, and close-to-zero discounts become statistically significant and positive. Figure 1 also shows that in the case of the Korea Fund, premia persisted over time, however it vanished in the last years. For some time, this fund was considered as one of the only channels to invest in Korean equities, therefore the demand for its shares was high. When other instruments like new Korean funds became available, the Korean Fund premia declined.

Appendix Tables A1.2 display detailed summary statistics of percentage discounts for the sample of 61 country funds. The statistics include funds that invest in particular countries as well as regional funds, which invest in several countries within one region.³ The table tabulates their average, standard deviation, minimum, and maximum. Table 1 and appendix tables show that discounts are quite variable. Funds achieved premia as high as 94 percent for the Korea Fund and 89 percent for the Spain Fund. They also hit discounts of 83 percent for the Brazil Fund and 53 percent for the Malaysia Fund.

FIGURE 1
SIX REPRESENTATIVE COUNTRY FUND DISCOUNTS

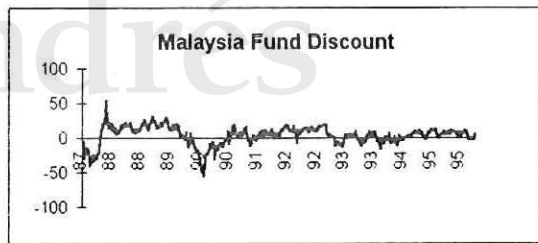
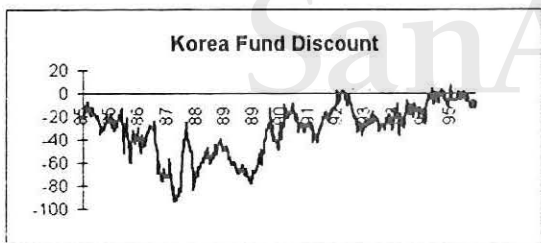
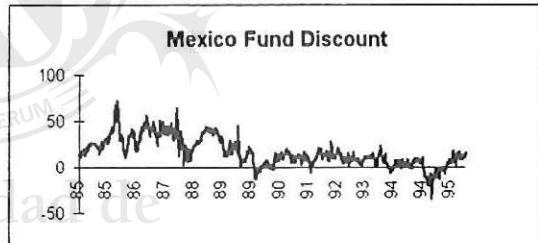
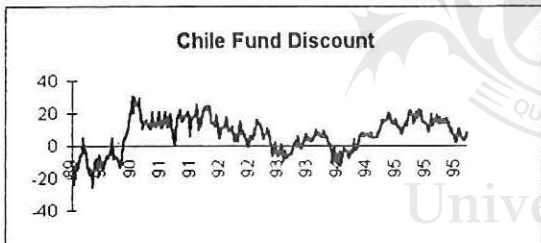
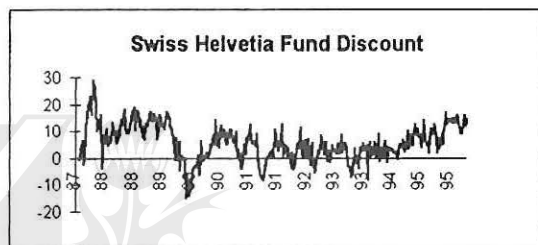
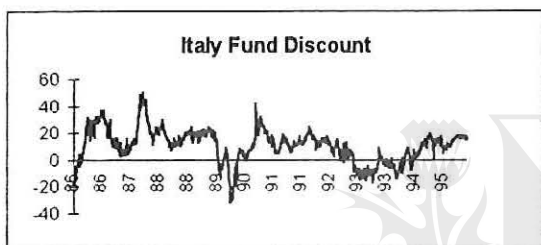
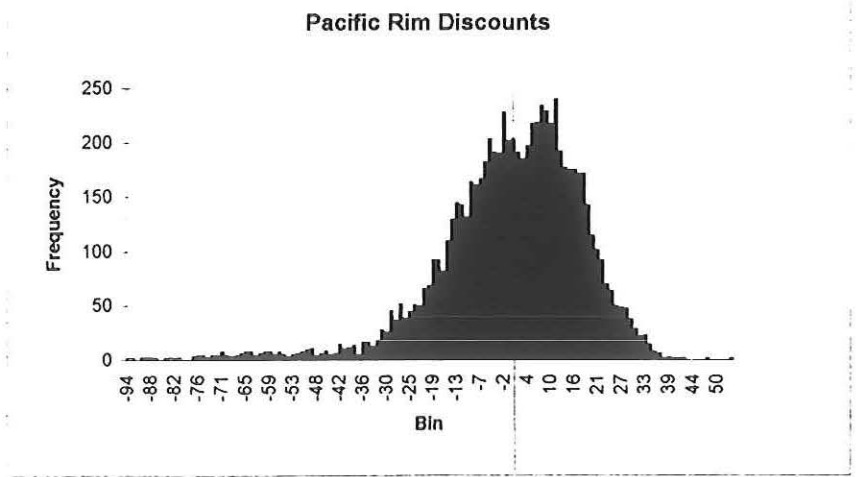
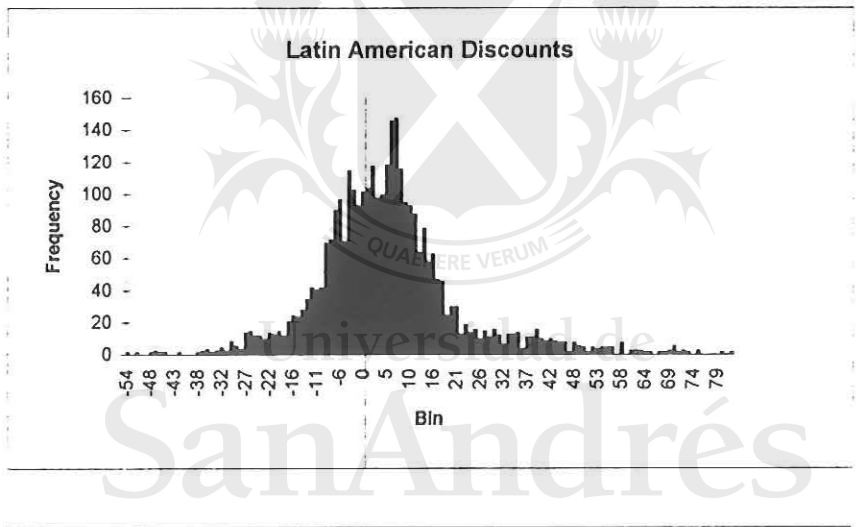
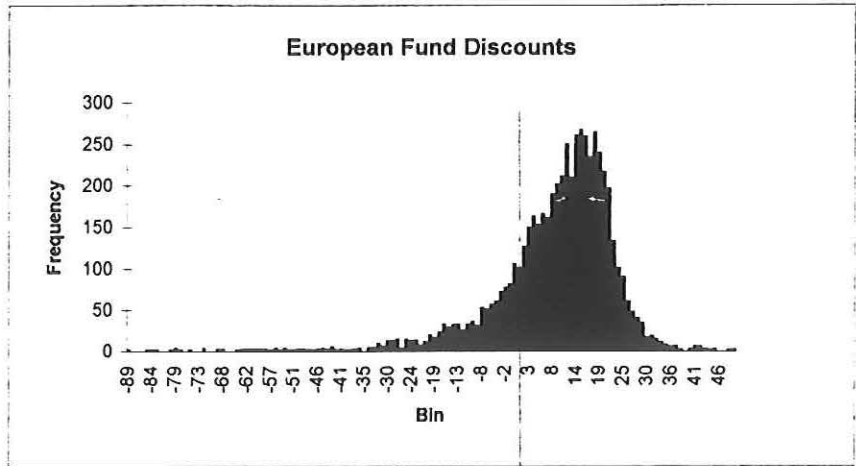


FIGURE 2
HISTOGRAMS OF COUNTRY FUND DISCOUNTS*



* Histograms are constructed using all the observations available for each fund in each region.

When all the observations are taken jointly, Part B of Table 1 and Figure 2 show that discounts are positive for Europe and Latin America but not for Asia. The histogram for Europe is somewhat skewed to the right, showing that discounts tend to be positive except for some observations that display large premia. The histogram for Asia is similar but it is more centered in zero. Long left tails are consistent with large premia around the IPO and with optimistic sentiments, in particular around the Berlin Wall fall in 1989 and in the period of capital inflows to emerging Asian economies. The histogram for Latin America presents both long left and right tails, implying optimistic and pessimistic sentiments with respect to these countries.

As noted in the introduction, these large and variable discounts have been rationalized in the literature in two different ways. The first one claims that transaction costs and market segmentation impose obstacles to arbitrage. Therefore, NAVs and prices can differ from each other. In light of these barriers, Frankel and Schmukler [1996] summarize a set of possible “arbitrage strategies” intended to take advantage of the NAV-price difference. We conclude that, despite large discounts, there is no pure arbitrage strategy that can be easily followed. Closed-end funds do not admit share redemptions. Therefore, investors cannot treat the country fund shares as identical to the basket of underlying assets.

In an frictionless world, a rational arbitrageur could buy the country fund and sell short its underlying assets whenever the fund trades at discount. However, besides the fact that closed-end fund shares cannot be redeemed, different types of transaction costs impose additional obstacles to arbitrage. Management fees should be paid when buying both the country funds and the underlying assets. These fees are higher than the ones to buy domestic closed-end funds. Other institutional factors generate barriers to arbitrage. The underlying assets are traded in the local

currency, while the country fund shares are sold in the currency of the market where they trade (U.S. dollars in this case). Since buying in one market and selling in the other one cannot be done simultaneously, arbitrage involves exchange rate risks. Markets trade at different times and barriers to capital movement exist--making simultaneous transactions sometimes impossible. In addition, the composition of the country fund portfolio is known only at certain points in time, so any arbitrageur must be aware of any changes in the portfolio composition when selling short. The transaction costs we allude to in this paper have already been theoretically and empirically studied in Stulz [1981], Diwan, Errunza, and Senbet [1993], Errunza and Losq [1985], Bonser-Neal, Brauer, Neal, and Wheatley [1990], and Rogers [1994].

Another group of papers explain the existence of positive discounts due to the participation of noise traders in international capital markets.⁴ This literature claims that a different clientele, composed by both rational and irrational agents, holds country funds. On the other hand, only rational investors hold the underlying assets. Therefore, holding the country fund is riskier than holding the assets, because future changes in noise traders misperceptions cannot be fully predicted. Since investors are risk averse, the price of the country fund is lower than the NAV. Among the papers that relate this theory to domestic closed-end fund are Lee, Shleifer, and Thaler [1990, 1991], Chen, Kan, and Miller [1993], and Chopra, Lee, Shleifer, and Thaler [1993]. Other papers like Hardouvelis, La Porta, and Wizman [1994], and Klibanoff, Lamont, and Wizman [1996] look at the presence of noise traders among country funds holders.

The present paper introduces asymmetric information into the discussion about country fund discounts. Asymmetric information has been widely treated in the finance and related literature. Some examples include Akerlof [1970], Grossman and Stiglitz [1980], French and

Poterba [1991], Lang, Litzenberger, and Madrigal [1992], and Gehrig [1993]. Asymmetric information can show up in different ways. First, domestic investors may have access to locally available information, that foreign investors do not receive. Perhaps foreign investors can obtain the same information, but must bear an extra cost to get it. Second, domestic investors may have the same information, but interpret it in a different way. Third, there may be leaks in information, and domestic investors are able to obtain it first. Fourth, asymmetric information could also be introduced from a different angle. Domestic and foreign investors may have the same information set. However, country fund holders might lack information on how the fund is managed

Even though there is an information disadvantage, foreign investment may still look attractive as a consequence of expected high returns and diversification benefits (especially from emerging markets). Small uninformed investors may be more attracted to buy country funds than the underlying assets, since transaction costs are far lower. Also, they know that country fund managers are generally more informed about the country, and can allocate the portfolio of assets more wisely. As a consequence, small investors will prefer country funds to directly purchase local securities.

This paper claims that foreign investors realize that they are less informed than local investors when buying foreign equities. They know that they will do worse on average when holding foreign assets with respect to local resident. As a consequence, other things equal, foreign investors are willing to pay less for the same assets, and average positive discounts are observed. The effects of introducing asymmetric information are formally presented in the Appendix.

The idea of asymmetric information differs from the noise traders model, in which country fund holders randomly overestimate or underestimate future returns on foreign investment. In this paper, foreign investors are rational agents who try to assess the best forecast of future returns. However, since they are far away from the market in which they invest, they face higher uncertainty. In other words, due to asymmetric information, foreign investors have a “higher subjective variance” than local investors--even though their average forecast is unbiased. They perceive investment in a foreign country as been riskier than domestic investors do.

As an instance of asymmetric information, Frankel and Schmukler [1996] show that NAVs fell before fund prices, around two weeks prior to the Mexican devaluation of December 1994. We interpret this fact as evidence of asymmetric information, since Mexican investors (the main holders of the underlying assets) reacted to the crisis of 1994 before foreign investors (the main holder of the country funds). Mexican investors probably knew more and foresaw the crisis, while small American investors reacted with a lag.

This paper concentrates only on country funds, where the information asymmetry may be more obvious--given that the underlying assets are located in distant countries. Nevertheless, the same idea can be applied to domestic closed-end country funds, in which most of the previous literature has focused on. Small investors are the ones that usually buy domestic closed-end funds, since--compared with large investors--they have less information about particular firms and industries. Therefore, asymmetric information might also explain discounts in domestic funds.

It would be interesting to compare the size of country fund discounts versus the ones of domestic funds. If the asymmetry in information is more present in international capital markets

than in domestic markets, one would expect to find deeper discounts in country funds than in domestic closed-end funds. However, most of the country funds have been affected by idiosyncratic country factors that would bias any valid comparison. Perhaps, once country funds acquire a longer history, a comparison of the discounts would be more appropriate.

III. Empirical Testing

Asymmetric information yields three testable empirical implications. First, discounts tend to be positive on average. Second, past large discounts, NAVs, and prices help to predict current country fund NAVs and prices. Third, the adjustment coefficients are negatively correlated with the presence of noise in the other markets. We already showed in Table 1 that discounts are in general greater than zero for most of the funds. In this section, we empirically analyze the last two implications of our hypothesis.

III.1 Testing for Exogeneity in NAVs and Prices

In this subsection, we perform exogeneity tests to determine which variable tends to be exogenous: the NAV or the fund price. In other words, we study which variable is the one that adjusts to the long-run NAV-price relationship, and whether lagged short-run changes in NAVs and prices are significant in explaining current changes in both variables. We expect that the variable that comprises more information about the fundamental values of the assets is the one that tends to be exogenous with respect to the other variable. If NAVs are closer to changes in

fundamentals, they will tend to react first. Thus future price changes will be predicted by present NAV changes. If prices are the ones closer to fundamentals, the opposite relationship will hold. In summary, we investigate whether NAVs tend to predict prices more often than prices tend to predict NAVs.

When testing for exogeneity we use the same framework for all the funds. We tried different specifications, allowing for several lag structures and restrictions on the variables. Based on economic grounds and on preliminary results, we choose to work with the error-correction model (ECM) to analyze all the funds. We gained confidence on the results after doing sensitivity analysis (which is partially described in the paper).

We tried different lag specifications, working with 2, 4, 8, 24, and 52 lags. We also used the Akaike information criterion to determine the number of lags. We only report the case of 4 lags as a representative result in order to make comparisons across funds by using the same model.⁵ For most of the funds further lags are statistically insignificant. Furthermore, the results appear robust to various lag structures. In addition, the estimates do not tend to change across specifications when restrictions on the long-run relationships are imposed.

Exogeneity of NAVs and prices needs to be analyzed in the context of non-stationarity. Appendix Tables A2 display augmented Dickey-Fuller [1979] and Phillips-Perron [1988] tests for NAVs and prices. They conclude that most country fund NAVs and prices are $I(1)$, integrated of order 1.⁶ Except for some European and Asian funds, we are not able to reject non-stationarity. Moreover, although not reported, we computed unit root tests for the variables in first differences; non-stationarity is widely rejected.

Even though NAVs and prices seem to be non-stationary, we expect that the variables do not diverge without bound from each other. Country fund NAVs and prices are ultimately two different values of the same assets, so they tend to move together in the long run. In econometric terms, we expect to find cointegration between the variables. Specifically, NAVs and prices may be linked by a stationary (linear) long-run relationship of the following form

$$P_t = \pi + \lambda N_t + \varepsilon_t,$$

where the mean-zero error term ε_t is stationary, $\varepsilon_t \sim I(0)$.

Johansen [1988], and Johansen and Juselius [1990] tests are tabulated in Tables A3. The results vary for each region, but we find a number of cases in which the presence of one cointegrating vector cannot be rejected. For 8 out of 17 funds we cannot reject cointegration among European funds. For 4 out of 12 funds there is evidence of cointegration in Latin American funds. In the case of Asia, cointegration is not rejected for 17 out of 32 funds. Tables A3 also display unit root tests for country fund discounts. Namely, we test for stationarity once the cointegrating vectors are constrained to be (1, -1). For most of the cases, the tests reject non-stationarity in discounts. The Phillips-Perron tests reject--at a 10 percent significance level--the presence of unit roots in 16 out of 17 European funds, in 12 out of 12 Latin American funds, and in 24 out of 32 Pacific Rim funds.

The fact that there is cointegration is in itself interesting since it confirms the a-priori economic intuition mentioned above--that there is a long-run equilibrium relationship linking country fund NAVs and prices. Notwithstanding, we can obtain more information from the cointegration tests. Appendix Tables A4 display the fitted lambda calculated by the "Johansen" full-information maximum likelihood (FIML) methodology. Standard errors obtained from

FIML, and the hypotheses that the λ s are 0 and 1 are also displayed on the tables. At a 10 percent significance level we find that 75 percent of the European funds, 91 percent of the Latin American funds, and 85 percent of the Pacific Rim funds, reject the null hypotheses that the fitted λ s are 0.

At the same time, the tables show that 65 percent of the European fund, 66 percent of the Latin American funds, and 47 percent of the Pacific Basin funds cannot reject that the fitted λ s are 1. That means that shocks to NAVs are entirely transmitted to prices in the long run. This finding also confirms our economic intuition, which says that changes in the value of the underlying assets will eventually be reflected entirely in the corresponding country fund prices. Some of the fitted λ s are different from 1, like for example the one for the France Growth Fund--what contradicts the economic intuition. However, their standard errors appear very large.

Given that the variables are non-stationary, usual Granger-causality tests of the variables in levels--which are exogeneity tests in the vector-autoregression (VAR) framework--do not yield statistics that are Normally distributed. On the other hand, VAR processes in first differences omit important information contained in the long-run relationship, and consequently may have specification biases. Nevertheless, both the short-run and the long-run dynamics are embedded in the ECM representation. The first differences of NAVs and prices are related to the one-period lagged cointegrating vector, and with lagged first differences of both variables,

$$(1) \quad \begin{aligned} \Delta P_t &= \omega_1 + \alpha_1(P_{t-1} - \pi - \lambda N_{t-1}) + \sum_{i=1}^L \gamma_{1i} \Delta N_{t-i} + \sum_{i=1}^L \beta_{1i} \Delta P_{t-i} + \nu_t \\ \Delta N_t &= \omega_2 + \alpha_2(P_{t-1} - \pi - \lambda N_{t-1}) + \sum_{i=1}^L \gamma_{2i} \Delta P_{t-i} + \sum_{i=1}^L \beta_{2i} \Delta N_{t-i} + \nu_t. \end{aligned}$$

As part of the sensitivity analysis, we estimate the above model using different techniques and specifications. First, we restrict the cointegrating vector to be (1, -1), and estimate the ECM by including lagged discounts as regressors. Second, we estimate the entire model (1) by FIML. In this way, we can simultaneously obtain estimates for π and λ , along with estimates for the other parameters of the model.

Representative results from the FIML procedure are displayed in Table 2. Large funds from each of the three regions are chosen. We select funds with a long history, which are not affected by particular optimism around the IPO. Table 2 contains information detailed in Tables A4 and A5, where the results for all the country funds are reported. Fitted λ s with their standard errors are displayed in the first two columns of Table 2.

The rest of Table 2 tabulates exogeneity tests, calculated from FIML estimations of each country fund. Weak exogeneity tests--with respect to the parameters π and λ --are computed by looking at the adjustment toward the long-run relationship. Given that there is cointegration, either the NAVs, the fund price, or both respond to deviations in the long-run relationship. A significant fitted α_1 (α_2) means that the price (NAV) adjusts to changes in the cointegration relationship. If one of the variables is "weakly exogenous"--if it does not adjust to the long-run equilibrium--only one equation of model (1) is sufficient for efficient inference about the parameters π and λ . Nevertheless, in the present case we are particularly interested in another issue: we want to determine which variable is the one that responds to changes in the long-run equilibrium.

TABLE 2
FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION RESULTS
THE CASE OF 6 REPRESENTATIVE FUNDS (2 FOR EACH REGION)*
EXOGENEITY TESTS (WALD STATISTICS) AND NORMALIZED COINTEGRATING VECTORS
4 LAGS - SAMPLE 1/4/85-3/8/96

	ID	No. OBS.	FITTED LAMBDA	FITTED STAND. ERROR	LONG-RUN ADJUSTMENT (Weak Exogeneity)				SHORT-RUN ADJUSTMENT		GRANGER-NONCAUSALITY (Strong Exogeneity)	
					Chi-Squared (1)				Chi-Squared (2)		Chi-Squared (3)	
					H0: alpha1=0	alpha1	H0: alpha2=0	alpha2	H0: gamma1'=0	H0: gamma2'=0	H0: alpha1 & gamma1'=0	H0: alpha2 & gamma2'=0
EUROPEAN FUNDS:												
ITALY FUND	ITA	499	0.87	0.165	6.32 **	-0.050	2.56	0.021	11.10 **	1.60	19.08 ***	5.46
SWISS HELVETIA FUI	SWZ	443	0.97	0.082	5.49 **	-0.076	1.07	0.019	31.81 ***	1.41	48.11 ***	2.87
LATIN AMERICAN FUNDS:												
CHILE FUND	CH	332	0.93	0.082	9.35 ***	-0.083	2.46	-0.027	22.78 ***	5.20	37.94 ***	6.75
MEXICO FUND	MXF	555	1.18	0.046	1.12	-0.027	7.38 ***	0.051	18.74 ***	8.03 *	25.41 ***	26.89 ***
PACIFIC RIM FUNDS:												
KOREA FUND	KF	584	0.69	0.306	4.37 **	-0.023	0.16	-0.002	19.13 ***	8.74 *	24.17 ***	8.74
MALAYSIA FUND	MF	453	1.09	0.116	13.04 ***	-0.085	0.19	-0.007	6.73	40.34 ***	26.42 ***	41.24 ***

* All the results are tabulated in Tables A4 and A5.
 *, (**), (***) Implies significance at 10%, (5%), [1%].

The point estimates of α are also displayed, since besides their statistical significance their size is also interesting. Significant α_1 s are greater than significant α_2 s. Significant α_1 s range from values as low 2 percent for the Korea Fund, and as high as 28 percent for the Templeton Vietnam Fund. Significant α_2 s range from values as low 3 percent for the India Growth Fund, and as high as 13 percent for the Jardine Fleming India Fund. These coefficients imply half lives for prices that go from less than 2 weeks to 18 weeks, and half lives for NAVs that go from more than 3 weeks to 18 weeks. The average significant α_1 (α_2) is -0.11 (0.075).⁷ They suggest that the adjustments are relatively slow, but higher in absolute value for prices than for NAVs. One could argue that these results support the asymmetric information hypothesis. Prices react more to changes in past discounts because deviations from the long-run equilibrium convey more information for prices than for NAVs.

Table 2 also reports tests regarding the short-run adjustment. These tests look at whether the set of fitted γ_1 and γ_2 are jointly zero. A vector γ_1' (γ_2') different from zero means that current fund prices (NAVs) adjust to past changes in NAVs (prices). Finally, Table 2 displays statistics that test which variable is "strongly exogenous:" the NAV, the price, or both. The strong exogeneity test looks at whether α_1 and γ_1' (or α_2 and γ_2') are jointly zero. As in the case of weak exogeneity, strong exogeneity should be considered in the context of the parameters of interest. Nevertheless, in this paper we are particularly focused in another aspect. We call "strong exogeneity" or "Granger-noncausality" the cases when the fund NAV or price is explained only by its own past--but not by the long-run equilibrium or by the recent history of the other variable.

All the results are detailed in Tables A5, A6, and A7. Tables A5 assume that cointegration exists in all the funds, even when the tests failed to detect it. Tables A6 do not include the long-

run relationship for the cases we failed to find evidence of cointegration. Tables A7 assumes that all the funds are not cointegrated. We display results from different specifications to illustrate how results vary across models. We are also reluctant to work with only one model because some of the standard errors are relatively large. We summarize all these results in Table 3, given that the reader might be interested in a general conclusion rather than in particular country funds.

Table 3 tabulates the percentage of funds for which NAVs and fund prices adjust to short-run and long-run changes. In addition, Table 3 displays the median Wald statistic for each test across every group of funds. The table shows that NAVs tend to be the exogenous variables. In other words, past changes in NAVs help to explain present changes in prices but not otherwise. Moreover, deviations from the long-run equilibrium seem to be more informative for prices than they are for NAVs. The results hold for the case when cointegration is assumed, but even more strongly for the one when cointegration is not assumed. Overall, NAVs tend to be strongly exogenous. Table 3 shows that in 70 and 73 percent of the times NAVs are strongly exogenous, depending on whether cointegration is assumed or not. Meanwhile, prices are only strongly exogenous in 30 and 33 percent of the times respectively. When cointegration is ruled out, the results show that for 61 (33) percent of the cases NAVs (prices) are exogenous.

In general terms, these results are consistent with the fact that NAVs are closer to information about local market fundamentals, and consequently react first. Nevertheless, we recognize that in principle these results are also consistent with previous papers--which assumed that noise traders hold country funds but not the underlying assets. If country fund holders repeatedly underpredict or overpredict changes in fund prices, they are the ones that will adjust to

changes in NAVs (which are closer to fundamentals). We explore further implications of both theories in the next subsection.

A further look at Table 3 suggests interesting conclusions. First, all the exogeneity tests for every region yield the same results: NAVs tend to be the exogenous variable, while fund prices are the ones that adjust to past changes in NAVs. This evidence seems to support the hypothesis of asymmetric information in all regions. Second, this relationship holds more strongly for Europe than for Latin America or the Pacific Rim. This fact is not surprising. We have already indicated that discounts are positive for a smaller proportion of Latin American and Pacific Rim funds relative to European funds. Appendix Table A1.1 shows that most funds started trading in the early 1990s. As mentioned before, these funds cover a period of high capital flows to emerging countries in Asia and Latin America. A significant part of these flows was due to investors that bought foreign equities in the form of ADRs and country funds. Therefore, optimistic foreign investors may have generated a boom in country fund prices, that later on pushed local stock market prices up.

Third, if fund prices reflect foreign investors' reactions toward each country, Table 3 might also suggest that foreign investors have treated the Latin America and the Pacific Rim differently. They react in more cases to short-run changes in Latin American NAVs, while they do so in a higher proportion to long-run changes in Pacific Rim country funds. Part A of Table 3 shows that 50 percent of the Pacific Rim fund prices respond to long-run movements in the NAV-price long-run equilibrium, but 41 percent of the prices adjust to the short-run dynamics. On the other hand, 25 percent of the Latin American fund prices react to deviations from the long-run relationship, but instead 67 percent of the prices revert to short-run changes in NAVs.

TABLE 3
PERCENTAGE OF FUNDS FOR WHICH THEIR NAVS AND PRICES
REJECT EXOGENEITY AT A 5% SIGNIFICANCE LEVEL
FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION
4 LAGS - SAMPLE 1/4/85-3/8/96

PART A: ASSUMES COINTEGRATION	LONG-RUN ADJUSTMENT (Weak Exogeneity, w.e.)			
	H0: Prices Weakly Exog.	Median Wald Statistic	H0: NAVs Weakly Exog.	Median Wald Statistic
EUROPEAN FUNDS	65%	5.59**	6%	0.86
LATIN AMERICAN FUNDS	25%	2.09	17%	1.80
PACIFIC RIM FUNDS	50%	3.69*	28%	1.07
TOTAL	50%	3.91**	20%	1.15

	SHORT-RUN ADJUSTMENT			
	H0: Prices Do Not Adjust	Median Wald Statistic	H0: NAVs Do Not Adjust	Median Wald Statistic
EUROPEAN FUNDS	82%	16.80***	12%	5.22
LATIN AMERICAN FUNDS	67%	15.77***	17%	4.08
PACIFIC RIM FUNDS	41%	6.50	22%	6.26
TOTAL	57%	11.19**	18%	5.54

	GRANGER-NONCAUSALITY (Strong Exogeneity, s.e.)			
	H0: Prices Strongly Exog.	Median Wald Statistic	H0: NAVs Strongly Exog.	Median Wald Statistic
EUROPEAN FUNDS	88%	32.28***	24%	7.29
LATIN AMERICAN FUNDS	83%	16.84***	25%	6.34
PACIFIC RIM FUNDS	56%	11.58**	34%	9.86*
TOTAL	70%	18.38***	30%	8.45

PART B: DOES NOT ASSUME COINTEGRATION	LONG-RUN ADJUSTMENT (Weak Exogeneity, w.e.)			
	H0: Prices Weakly Exog.	Median Wald Statistic	H0: NAVs Weakly Exog.	Median Wald Statistic
EUROPEAN FUNDS	79%	6.46**	7%	0.89
LATIN AMERICAN FUNDS	38%	2.01	25%	3.15*
PACIFIC RIM FUNDS	59%	4.33**	33%	1.71
TOTAL	61%	4.46**	24%	1.76

	SHORT-RUN ADJUSTMENT			
	H0: Prices Do Not Adjust	Median Wald Statistic	H0: NAVs Do Not Adjust	Median Wald Statistic
EUROPEAN FUNDS	82%	18.81***	12%	6.35
LATIN AMERICAN FUNDS	67%	15.77***	17%	4.65
PACIFIC RIM FUNDS	44%	8.19*	22%	6.58
TOTAL	59%	12.64**	18%	6.14

	GRANGER-NONCAUSALITY (Strong Exogeneity, s.e.)			
	H0: Prices Strongly Exog.	Median Wald Statistic	H0: NAVs Strongly Exog.	Median Wald Statistic
EUROPEAN FUNDS	86%	32.31***	29%	8.61
LATIN AMERICAN FUNDS	100%	16.84***	25%	7.34
PACIFIC RIM FUNDS	59%	14.74***	37%	10.22*
TOTAL	73%	20.05***	33%	9.20*

PART C: ASSUMES NO COINTEGRATION	SHORT-RUN ADJUSTMENT			
	H0: Prices Do Not Adjust	Median Wald Statistic	H0: NAVs Do Not Adjust	Median Wald Statistic
EUROPEAN FUNDS	71%	18.81***	18%	6.25
LATIN AMERICAN FUNDS	75%	20.20***	25%	4.74
PACIFIC RIM FUNDS	50%	9.32*	44%	7.81*
TOTAL	61%	14.11**	33%	6.77

*, (**), (***) Implies significance at 10%, (5%), [1%].

The results might imply that investment in Latin America had a shorter horizon than investment in the Pacific Rim. This point has already been suggested among others by Calvo, Leiderman, and Reinhart [1994], who show that inflows to Asia had a higher proportion of foreign direct investment than flows to Latin America. Therefore, concerns of sudden reversals of the inflows were more predominant among people that invested in Latin American than among the ones that invested in Asia.

III.2 Why Are Adjustments Slow?

If only asymmetric information exists fund prices would mimic NAVs as soon as NAVs become available every week. However, the ECMs show that prices follow NAVs, but at a slower pace than the one implied by asymmetric information. Four reasons may explain this sluggishness.

First, the presence of noise traders may delay the adjustment since foreign investors face a signal-extraction problem. Changes in NAVs can be caused by noise traders' misperceptions (who participate in the local market) or by changes in the country's fundamentals. Second, prices may be slow to react due to market illiquidity. If country fund markets are shallow, investors may be willing to trade their assets but few transactions take place. Therefore, prices will follow NAVs as long as transactions occur.⁸

Third, if there are noise traders only in the country fund market as the noise traders literature suggests, they will not react to changes in NAVs. Their estimates of the asset values differ from the fundamental values, reflected by the NAVs. So the link between NAVs and prices is distorted by noise traders' misperceptions. Fourth, it could be the case that domestic and

foreign investors have different preferences or are part of different clienteles. So NAVs and fund prices move according to each market preferences, although they may eventually move together in the long run. Therefore, a weak connection is found between NAVs and prices in the short run. This idea of “different opinions” was discussed in Harris and Raviv [1993].

This section tests whether there is statistical evidence consistent with the competing explanations of sluggish responses. We relate the adjustment coefficients to measures of noise trading and market liquidity. As a proxy for noise trading we take the standard deviation of first-differenced log NAVs and prices, given that the variables in levels are non-stationary. Assuming a constant variability in the fundamental factors that explain NAVs and prices, more noise in the markets leads to increasing variability in NAVs and prices. As a proxy for market liquidity we take each fund’s total assets. A more appropriate measure would be the turnover ratio, displayed in Table A1.1. Unfortunately, several missing data do permit us to compute valid tests.

The first part of Table 4 shows regressions of the fitted price adjustment coefficients (negative fitted α_1 s) on three explanatory variables: the standard deviation of first-differenced NAVs and prices, and the value of the country funds’ assets. The first three regressions show that more noise in the local market implies lower adjustment coefficients for country fund prices. They also show that the value of the total assets is not statistically significant in explaining price adjustments. Lastly, they show that noise in the country fund market is not statistically related to the adjustment coefficient.

The fourth and fifth regressions concentrate on the NAV adjustment coefficients. They suggest that the standard deviation of first-differenced log prices is slightly correlated with the fitted α_2 s. However, the standard deviation of first-differenced NAVs is not statistically related to

the NAV adjustment to the long-run equilibrium. Figure 3 gives another perspective of these relationships by displaying plots of the adjustment coefficients on our measure of noise trading. Although not reported, similar results are obtained when we correct for heteroskedasticity. The correction takes into account different standard errors of the adjustment coefficients, calculated in the first-step regressions.

In summary, results from Table 4 suggest that the speeds of adjustment are negatively related to the variability of the “external market.” The adjustment of country fund prices is negatively related to the variability of the NAVs, while the adjustment of NAVs is negatively related to the variability of the fund prices. This suggests the typical signal-extraction problem of markets with imperfect information. The statistical relationship holds more strongly for the price adjustment case. Finally, the noise trader models would predict that more noise in the foreign market is related to slower price adjustments. The higher the misperception, the less related NAVs and prices are. Our results do not support this hypothesis, but they favor the asymmetric information model.

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FIGURE 3
ADJUSTMENT COEFFICIENTS

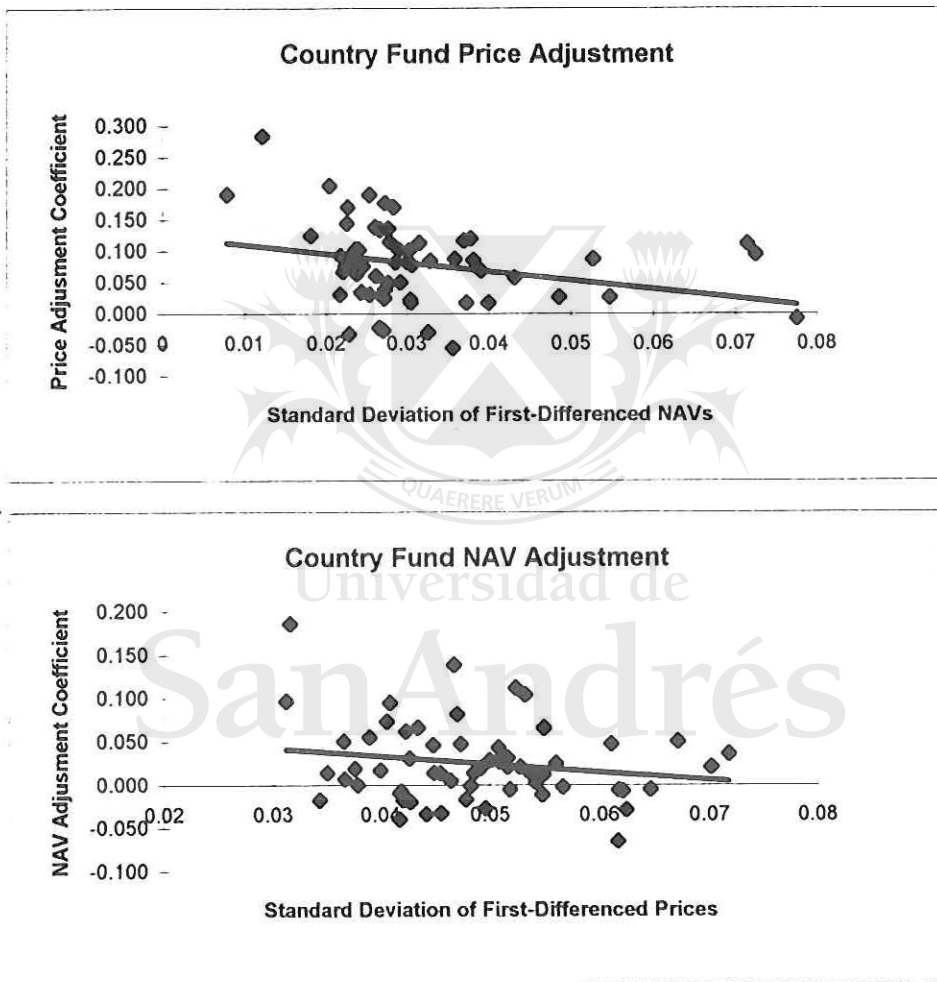


TABLE 4
WHAT EXPLAINS SLOW ADJUSTMENT COEFFICIENTS?
ADJUSTMENT COEFFICIENTS VERSUS NAV AND PRICE VARIABILITY

Dependent Variable: PRICE ADJUSTMENT

(negative alpha1 coefficients, higher values imply faster adjustments)

Regression 1:

Number of Observations: 61

Independent Variables:

	Coefficient	Std. Error	t-Statistic
Constant	0.12	0.02	6.00 ***
St. Dev. of First-Diff. Log NAVs	-1.42	0.62	-2.29 **
Adjusted R-squared	0.07	S.E. of regression	0.06

Regression 2:

Number of Observations: 56

Independent Variables:

	Coefficient	Std. Error	t-Statistic
Constant	0.13	0.02	5.65 ***
St. Dev. of First-Diff. Log NAVs	-1.31	0.64	-2.05 **
Total Assets	-3E-05	5E-05	-0.64
Adjusted R-squared	0.05	S.E. of regression	0.06

Regression 3:

Number of Observations: 61

Independent Variables:

	Coefficient	Std. Error	t-Statistic
Constant	0.09	0.05	1.83 *
St. Dev. of First-Diff. Log NAVs	-1.76	0.88	-2.01 **
Total Assets	-4E-05	5E-05	-0.74
St. Dev. of First-Diff. Log Prices	0.99	1.32	0.75
Adjusted R-squared	0.08	S.E. of regression	0.06

Dependent Variable: NAV ADJUSTMENT

(alpha2 coefficients, higher values imply faster adjustments)

Regression 4:

Number of Observations: 61

Independent Variables:

	Coefficient	Std. Error	t-Statistic
Constant	0.07	0.03	2.23 **
St. Dev. of First-Diff. Log Prices	-0.91	0.63	-1.45
Adjusted R-squared	0.02	S.E. of regression	0.05

Regression 5:

Number of Observations: 61

Independent Variables:

	Coefficient	Std. Error	t-Statistic
Constant	0.08	0.03	2.45 **
St. Dev. of First-Diff. Log Prices	-1.55	0.86	-1.79 *
St. Dev. of First-Diff. Log NAVs	0.67	0.62	1.07
Adjusted R-squared	0.02	S.E. of regression	0.05

*, (**), (***) Implies significance at 10%, (5%), [1%].

VI. Summary and Conclusions

This paper has addressed several issues concerning country funds. The main finding of the paper is that country funds support the hypothesis of asymmetric information. We estimated error-correction models for each country fund, since the variables appeared to be non-stationary, and due to the existence of cointegration between NAVs and prices. The exogeneity tests concluded that NAVs tend to be the exogenous variable. In other words, past NAVs and discounts predict current changes in country fund prices more often than past fund prices and discounts predict current changes in NAVs. This relationship held in general for the three regions studied, namely Europe, Latin America, and the Pacific Rim.

The results appeared robust to various specifications. When cointegration was (not) assumed, we rejected the null hypothesis of strongly exogenous prices in 70 (73) percent of the funds, but we only rejected the null hypothesis of strongly exogenous NAVs in 30 (33) percent of the funds. On the other hand, by ruling out cointegration, we found that prices adjust in 61 percent of the cases to short-run changes in NAV. However, NAVs adjust in 33 percent of the cases to short-run changes in prices. In light of the theoretical model, we found this evidence consistent with asymmetric information. NAVs seem to be closer to local information; they are the ones that react first to local news. Later on, the foreign markets receive the information, so prices react after NAVs have reacted.

Our empirical analysis also found sluggish adjustments to the long-run relationships between NAVs and prices. In other words, NAVs and prices react to large discounts slower than what asymmetric information predicts. Thus, we explored the statistical relationship between the

speeds of adjustment and other variables. We worked with each market's variability as a measure of noise in the markets. The tests showed that there is a statistically significant negative relationship between the price adjustment coefficients and the standard deviation of first-differenced log NAVs. We found a similar relationship between the NAV adjustment coefficients and the standard deviation of first-differenced log prices. However, we failed to find a significant relationship between the adjustment coefficients and the variability of the markets where the shares trade.

The model introduced in the Appendix explains why one might expect average positive discounts to be the norm. Assuming asymmetric information, the theoretical model derives three propositions. In the first proposition, the model shows that discounts are on average positive. Foreign investors, less informed than domestic residents, are willing to pay less for the same assets, driving prices below NAVs.

As one extension to the theoretical model, the second proposition shows that past fluctuations in discounts help to predict current changes in prices and NAVs. Furthermore, if holders of the underlying assets have better information, deviations from the NAV-price relationship will be more informative for the country fund holders than for the owners of the underlying assets. Hence, asymmetric information suggests that past changes in NAVs and discounts tend to predict current changes in prices more often than vice versa. NAVs turn out to be "exogenous" with respect to country fund prices.

The mere presence of asymmetric information implies that prices (NAVs) adjust to changes in NAVs (prices) at most with a lag of one week. The reason for this timing is that NAVs are only reported once a week, while prices are available whenever the New York markets are open.

The third proposition extends the results by introducing noise traders, thus NAVs and prices are not fully revealing. As a consequence, investors face a signal-extraction problem. They need to guess what part of the changes in NAVs (prices) is due to changes in fundamentals, and which part is due to change in noise traders' misperceptions. In summary, the last theoretical proposition demonstrates that the short-run adjustment of prices and NAVs to the long-run equilibrium is only partial. In other words, the model shows that prices and NAVs are sticky to changes in the NAV-price equilibrium relationship.

The asymmetric information approach presents two main advantages over the "noise traders model." First, it enables us to derive average positive discounts excluding noise traders or irrational agents from the model. In addition, it allows us to include noise traders in the market of country funds as well as in the market of underlying assets. Therefore, we could see how noise in both markets affect the adjustment toward the long-run equilibrium. Finally, we are able to empirically test the asymmetric information hypothesis against the noise traders model.

This paper could be extended in several ways. For example, the asymmetric information hypothesis model can be related to other results found in previous research. Asymmetric information may arise as an alternative model to rationalize the home-country bias puzzle--which previous models have failed to solve. As another extension, this model might explain why investors may decide to remain uninformed. When the share they invest in local assets is small it might be too costly to pay for local advice. Therefore, they will overreact to big headlines (which appear to convey important information), but not to small news. This feature would be consistent with Klibanoff, Lamont, and Wizman's [1996] empirical finding. Finally, asymmetric information is also consistent with herding behavior, as noted in Calvo [1995].

Appendix - A Model of Asymmetric Information

This appendix introduces a model that addresses the primary ideas of this paper. The model also captures some of the main stylized facts about country funds. The type of approach presented here can be found in De Long, Shleifer, Summers, and Waldman [1990], Lang, Litzenberger, and Madrigal [1992], Gehrig [1993], Hardouvelis, La Porta, and Wizman [1994], and Klibanoff, Lamont, and Wizman [1996].⁹

In period 1, they choose their portfolio to maximize their future expected utility. They consume all their wealth in period 2 and leave no bequests to future generations. Two assets are available in the economy: a safe asset and a risky one. The safe asset, which we think of as U.S. government bonds, has a perfectly elastic supply and pays a return r . Its price is normalized to 1. The risky asset is a basket of securities from the domestic country. The risky asset can be held directly or via holding the respective country fund.

P_t is the foreign market price of the country funds. N_t is the NAV, the domestic value of the portfolio of underlying assets (denominated in the foreign currency). For simplicity we assume that domestic investors only hold the underlying assets while foreign investors only hold country funds.¹⁰ The domestic investor's demand function is ϕ_t^d , while the foreign investor's demand is ϕ_t^{*f} .

Both domestic and foreign investors have constant absolute risk aversion utility functions. γ represents their degree of absolute risk aversion. Investors maximize their expected utility in period 1, choosing their demand for risk-free and risky securities. Their wealth in the period they consume are

$$W_{t+1} = W_t(1+r) + \phi_t^n (N_{t+1} + y_{t+1} - N_t(1+r)),$$

$$W_{t+1}^* = W_t^*(1+r) + \phi_t^f (P_{t+1} + y_{t+1} - P_t(1+r)).$$

W_t (W_t^*) stands for the initial wealth (in foreign currency) of the representative domestic (foreign) investor. The dividend paid by the risky asset is equal to y_{t-1} . The returns of the risky assets are

$$R_{t+1}^n = N_{t+1} + y_{t+1} - N_t(1+r),$$

$$R_{t+1}^f = P_{t+1} + y_{t+1} - P_t(1+r),$$

such that

$$y_{t+1} = y + \varepsilon_{t+1}.$$

ε_{t-1} stands for unexpected shocks to the returns of the risky asset.

We assume that

$$\varepsilon_t \sim N(0, \sigma^2).$$

Domestic and foreign investors have access to different information sets. Domestic investors observe I_t , while foreign investors look at a more limited information set I_t^* , such that $I_t^* \subset I_t$. In each period, the prior distributions of NAVs and prices are equal for both groups of investors. Nevertheless, the posterior distributions--conditioned on both information sets--are distinct across groups. The only difference between investors is reflected in the following expression:

$$(2) \text{Var}(\varepsilon_{t+1}|I_t) = \frac{\text{Var}(\varepsilon_{t+1})}{(1+\theta)} < \text{Var}^*(\varepsilon_{t+1}|I_t^*) = \text{Var}(\varepsilon_{t+1}).$$

At time t , foreign investors cannot observe N_t , since the NAV is published once a week ex post. In addition, foreign investors do not know the composition of the fund. Taking into account

these factors, equation (2) asserts that--given the locally available information at time t--foreign investors perceive a higher variance. $\theta > 0$ represents the difference in the one-step-ahead expected variances. It captures the fact that foreign investment is perceived as a more risky activity than domestic investment. In other terms, expression (2) says that the conditional variance is smaller than the unconditional variance for domestic investors, but not for foreign investors. We assume that the information asymmetry does not affect expected wealth: both sets of investors make the same average forecasts.

Returns are assumed to be normally distributed. Then investors maximize the following conditional expected utility functions

$$E(U_{t+1}|I_t) = E(W_{t+1}|I_t) - \gamma \text{Var}(W_{t+1}|I_t),$$

$$E^*(U_{t+1}^*|I_t^*) = E^*(W_{t+1}^*|I_t^*) - \gamma \text{Var}^*(W_{t+1}^*|I_t^*).$$

A) Asymmetric Information and Positive Discounts

Proposition 1:

Discounts are strictly positive if the difference in information is greater than zero. In other terms, if $\theta > 0$, $N_t - P_t > 0$.

Proof of Proposition 1

Substituting the expressions for wealth into the conditional expected utility functions we get

$$E(U_{t+1}|I_t) = W_t(1+r) + \phi_t^n (E(N_{t+1} + y_{t+1}) - N_t(1+r)) - \gamma \phi_t^{n2} \text{Var}(N_{t+1} + y_{t+1}|I_t),$$

and

$$E^*(U_{t+1}^*|I_t^*) = W_t^*(1+r) + \phi_t^{*f} (E(P_{t+1} + y_{t+1}) - P_t(1+r)) - \gamma \phi_t^{*f2} \text{Var}^*(P_{t+1} + y_{t+1}|I_t^*).$$

Expected values and variances are taken at time t .

The maximization process yields the following demand functions for the underlying assets and for the country fund

$$\phi_t^n = \frac{1}{2\gamma \text{Var}(N_{t+1} + y_{t+1} | I_t)} \left(E(N_{t+1} + y_{t+1}) - N_t(1+r) \right),$$

and

$$\phi_t^{*f} = \frac{1}{2\gamma \text{Var}^*(P_{t+1} + y_{t+1} | I_t^*)} \left(E(P_{t+1} + y_{t+1}) - P_t(1+r) \right).$$

The equilibrium conditions for the risky assets are,

$$\phi_t^n = S^n \quad \text{and} \quad \phi_t^{*f} = S^f.$$

We assume that S^n and S^f (the supplies of underlying assets and country funds) are fixed and equal to S .¹¹ We also assume that there exists a continuum $[0,1]$ of domestic and foreign investors.

To solve for NAVs and country fund prices, we impose that the unconditional distributions of N_{t-1} and P_{t-1} are identical to the distributions of N_t and P_t . We also know that

$$\text{Var}(N_{t+1} + y_{t+1} | I_t) = E \left[\left(N_{t+1} + y_{t+1} - E(N_{t+1} + y_{t+1}) \right)^2 | I_t \right],$$

and

$$\text{Var}^*(P_{t+1} + y_{t+1} | I_t^*) = E^* \left[\left(P_{t+1} + y_{t+1} - E^*(P_{t+1} + y_{t+1}) \right)^2 | I_t^* \right].$$

Then, using the demand functions and the equilibrium conditions, we obtain the following steady-state closed-form expressions

$$N_t = \frac{1}{r} \left[y - \frac{S2\gamma}{r^2} \frac{\sigma^2}{1+\theta} \right],$$

$$P_t = \frac{1}{r} \left[y - \frac{S2\gamma\sigma^2}{r^2} \right]$$

Finally, we can derive the following expression for the country fund discount

$$N_t - P_t = \frac{S2\gamma\sigma^2}{r^3} \frac{\theta}{1+\theta}$$

This result shows that under no information asymmetry ($\theta=0$), both assets are valued equally, $N_t - P_t = 0$. Namely, the NAV-price difference depends on the fact that domestic investors have more information than foreign investors. If $\theta > 0$, $N_t - P_t > 0$. In addition, discounts depend positively on the other parameters of the model, like the risk aversion coefficient and the unconditional variance of the fundamentals. QED



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B) Lagged Discounts, Present Prices, and Present NAVs

Proposition 2:

Past values of NAVs (prices) explain present fund prices (NAVs) when NAVs (prices) react first to fundamentals.

Proof of Proposition 2

We now assume that both domestic and foreign investors can buy the country fund and the underlying assets. However, investors pay an extra cost to buy in the “external market.” Domestic (foreign) investors pay a fixed amount “ k ” per share to buy the country fund (underlying assets). These costs are based on the fact that pure arbitrage is not feasible--as summarized in Frankel and Schmukler (1996). Investors maximize the following expected utility functions. Since both assets are perfectly correlated, there are no gains from diversification and investors demand only one of the assets. Other things equal, domestic (foreign) investors demand underlying assets (country fund shares). The “excess demand functions” are:

$$\phi_t^d - \phi_t^f = \frac{1}{\gamma \frac{2}{r^2} \left(\frac{\sigma^2}{1+\theta} \right)} \left((E(N_{t+1} - P_{t+1})) + (k - (N_t - P_t))(1+r) \right),$$

$$\phi_t^{*f} - \phi_t^{*d} = \frac{1}{\gamma \frac{2}{r^2} \sigma^2} \left((E(P_{t+1} - N_{t+1})) + (k - (P_t - N_t))(1+r) \right).$$

The above expressions show that arbitrage will take place if discounts are relatively large. Large deviations of prices from NAVs will not persist over time. Therefore, unusually large past

discounts are informative about how NAVs and prices will behave. We assume that the long-run relationship between prices and NAVs of the following form

$$P_t = \pi + N_t.$$

Changes in this relationship induce adjustments toward the long-run level. As an empirical fact, we know that the current NAV is unknown when the country fund price is set (due to the frequency that NAVs become publicly available). However, the past value is public knowledge. Investors realize that large previous discounts will make future prices and/or NAVs change. If NAVs change first, according to news received, prices adjust in the following periods. If instead changes in prices reflect new long-run conditions, NAVs will adjust later on.

We illustrate the case of prices following changes in discounts due to past changes in NAVs. However, the symmetrical case--when NAVs follow prices--can be demonstrated. The new expected utility function account for future changes in prices,

$$E^*(U_{t+1}^* | I_t^*, |P_{t-1} - N_{t-1}| > \pi) = W_{t+1}^*(1+r) + \phi_t^{*f} (E(P_{t+1} + y_{t+1}) - (P_{t-1} - \pi - N_{t-1}) - P_t(1+r)) - \gamma \text{Var}^*(P_{t+1} + y_{t+1} | I_t^*).$$

Then, the new demand function for country funds is

$$\phi_t^{*f} = \frac{1}{\frac{2\gamma\sigma^2}{r^2}} (E(P_{t+1} + y_{t+1}) - (P_{t-1} - \pi - N_{t-1}) - P_t(1+r)).$$

Substituting into the market equilibrium conditions,

$$\phi_t^{*f} = S^f.$$

we can obtain the new country fund price,

$$P_t = \frac{1}{r} \left[y - (P_{t-1} - \pi - N_{t-1}) - \frac{S2\gamma\sigma^2}{r^2} \right],$$

which shows that the past price and NAV affect today's price. The long-run adjustment is taken into account and incorporated into the present fund price. QED

If country funds prices and NAVs were available at every moment in time, knowing that local residents have more information, foreign investors would constantly follow the domestic agents. However, NAVs are published ex-post on a weekly basis, so they are usually not available when country funds are traded.

A similar result to proposition 1 can be derived under the new framework. We now assume that shocks to dividends are imperfectly correlated across markets. Therefore, diversification is beneficial; domestic and foreign investors participate in both markets. However domestic investors would tend to buy the underlying assets, while foreign investors would tend to buy the country fund. Asymmetric information would imply positive discounts whenever $k > 0$ and $\theta > 0$.

Investors maximize,

$$E(U_{t+1}|I_t) = W_{t+1}(1+r) + \phi_t^n (E(N_{t+1} + y_{t+1}) - N_t(1+r)) + \phi_t^f (E(P_{t+1} + y_{t+1}) - (P_t + k)(1+r)) - \gamma \text{Var}(W_{t+1}|I_t),$$

and

$$E^*(U_{t+1}^*|I_t^*) = W_{t+1}^*(1+r) + \phi_t^{*n} (E(N_{t+1} + y_{t+1}) - (N_t + k)(1+r)) + \phi_t^{*f} (E(P_{t+1} + y_{t+1}) - P_t(1+r)) - \gamma \text{Var}^*(W_{t+1}^*|I_t^*).$$

The new steady-state closed-form expressions for the NAV and price are

$$N_t = \frac{1}{r} \left[y - \frac{k}{2+\theta} - \frac{S2\gamma(1+\rho)\sigma^2}{r^2(2+\theta)} \right],$$

$$P_t = \frac{1}{r} \left[y - \frac{k(1+\theta)}{2+\theta} - \frac{S2\gamma(1+\rho)\sigma^2}{r^2(2+\theta)} \right].$$

$$\text{where } \rho = \frac{\text{Cov}(N_t, P_t)}{\text{Var}(N_t)} = \frac{\text{Cov}(N_t, P_t)}{\text{Var}(P_t)}.$$

The new expression for the country fund discount is:

$$N_t - P_t = \frac{k\theta}{r(2 + \theta)}.$$

C) Noise-Traders and the Speed of Adjustment

The basic model predicts that both NAVs and prices fully react to past changes in abnormally large discounts with at most a one-week lag. However, the empirical results showed that the adjustment coefficients are low. It takes more than one week to return to the long-run equilibrium. We extend the basic model by introducing noise traders into the picture. This extension makes the adjustment coefficients smaller.

Proposition 3:

The presence of noise traders imply that NAVs and prices can vary due to new information received or to deviations in noise traders' misperceptions. Therefore, the adjustments to past changes in NAVs and prices become slower because of a signal-extraction problem.

Proof of Proposition 3

The representative domestic and foreign noise trader misperceives the value of the assets by a random variable η_t and η_t^* , respectively, such that

$$\eta_t \sim N(\bar{\eta}, \sigma_\eta^2) \text{ and } \eta_t^* \sim N(\bar{\eta}^*, \sigma_\eta^{*2}).$$

For simplicity, we assume that the underlying assets are only held by domestic investors, while country fund shares are only held by foreign investors. There is a fraction v and v^* of noise traders in both markets. The domestic and foreign representative noise traders maximize:

$$E(U_{t+1}|I_t) = W_{t+1}(1+r) + \phi_t^n (E(N_{t+1} + y_{t+1}) - N_t(1+r)) - \gamma \text{Var}(N_{t+1} + y_{t+1}|I_t) + \phi_t^n \eta_t,$$

and

$$E^*(U_{t+1}^*|I_t^*) = W_{t+1}^*(1+r) + \phi_t^{*f} (E(P_{t+1} + y_{t+1}) - P_t(1+r)) - \gamma \text{Var}^*(P_{t+1} + y_{t+1}|I_t^*) + \phi_t^{*f} \eta_t^*.$$

Then, the closed-form steady-state NAV and price are:

$$N_t = \frac{1}{r} \left[y + \frac{rv(\eta_t - \bar{\eta})}{1+r} + v\bar{\eta} - \frac{S2\gamma}{r^2} \left[\frac{\sigma^2}{1+\theta} + \frac{v^2\sigma_\eta^2}{(1+r)^2} \right] \right],$$

$$P_t = \frac{1}{r} \left[y + \frac{rv(\eta_t^* - \bar{\eta}^*)}{1+r} + v\bar{\eta}^* - \frac{S2\gamma}{r^2} \left[\sigma^{*2} + \frac{v^{*2}\sigma_\eta^{*2}}{(1+r)^2} \right] \right].$$

As in proposition 3, we only illustrate the case in which prices adjust to past NAVs, given that relevant information is only known locally. The symmetrical situation--the case in which NAVs follow changes in prices--could be described in a similar manner. The above expressions assumed that $E(\varepsilon_{t-1})=0$. However, NAVs are affected by unforeseen shocks to the local assets and by changes in the noise traders misperceptions. Foreign investors only observe changes in NAVs ex-post. They do not know whether the change came from locally available news or from shifts in noise traders' misperceptions. The only information they have is that any change in NAV took the following form:

$$\Delta N_{t-1} = \frac{1}{r} \varepsilon_{t-1} + \frac{v}{1+r} (\eta_{t-1} - \bar{\eta}).$$

Foreign investors know that only changes in fundamentals will be transmitted to prices in the future. Therefore, any change in past NAVs is a noisy signal of the change in fundamentals. Foreign investors face a signal-extraction problem. The distribution of shocks to news and to misperceptions are public knowledge. Both shocks are independent and normally distributed, therefore

$$E^*(\varepsilon_{t-1}|\Delta N_{t-1}) = \frac{Cov(\varepsilon_{t-1}, \Delta N_{t-1})}{Var(\Delta N_{t-1})} \Delta N_{t-1}.$$

Then,

$$E^*(\Delta P_{t+1}) = E^*(\varepsilon_{t-1}|\Delta N_{t-1}) = \frac{\frac{1}{r} \sigma^2}{\left(\frac{1}{r}\right)^2 \sigma^2 + \left(\frac{\nu}{1+r}\right)^2 \sigma_\eta^2} \Delta N_{t-1}.$$

Foreign investors take into account the future expected change in prices, so the maximization process yields that

$$\frac{\Delta P_t}{\Delta N_{t-1}} = \frac{\left(\frac{1}{r}\right)^2 \sigma^2}{\left(\frac{1}{r}\right)^2 \sigma^2 + \left(\frac{\nu}{1+r}\right)^2 \sigma_\eta^2} < 1.$$

The higher the noise in the local market, the slower the one-period adjustment of prices with respect to NAVs, given that the number of noise traders (ν) is positive. In other words, the lower the relative variability of noise with respect to the total variability of NAVs and the fewer the noise traders, the more revealing past NAVs are. QED

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Endnotes

- ¹. Discounts at time t are equal to $100 \cdot \ln(\text{NAV}_t / \text{price}_t)$.
- ². Note that the Korea Fund and the Mexico Fund were established before 1985.
- ³. Some of them started trading in the early and mid 1980s, but the initial public offering (IPO) for the majority of the funds is in the late 1980s and early 1990s.
- ⁴. Noise traders in financial markets have been introduced by De Long, Shleifer, Summers, and Waldmann (1990).
- ⁵. Other results are available upon request to the authors.
- ⁶. All econometric tests have been run with the variables in logarithms.
- ⁷. Note that the structure of the model implies that the expected α_1 are negative, while the expected α_2 are positive in order to have convergence towards the long-run equilibrium.
- ⁸. Note that the only data available are traded prices. Data such as the ask-bid spread would be useful to analyze how liquid markets are. Unfortunately, this kind of data is not available.
- ⁹. We recognize that the type of model used in previous literature could be extended to characterize particular features of country funds more accurately. However, we choose to work with the kind of model that has already been used, so the results are comparable to earlier papers on closed-end country funds.
- ¹⁰. This assumption looks plausible even though there are no public statistics about the nationality of country fund holders. Surveyed country fund managers and administrators acknowledged that country funds are mainly held by small U.S. investors. In addition, the assumption seems reasonable because we expect domestic investors to mainly participate in the market of underlying assets. If country funds are considered "foreign equities" relative to the underlying assets, we can relate this assumption to the home-country bias evidence. Several studies, like Lewis (1995), French and Poterba (1991), Gehrig (1993), and Tesar and Werner (1994), document its presence in international financial markets.
- ¹¹. Our assumption about S'' and S' leaves the information asymmetry as a necessary element to explain the NAV-price difference.

Appendix Tables

TABLE A.1
SAMPLE OF CLOSED-END COUNTRY FUND
SAMPLE PERIOD 1/4/85-3/8/96

	<u>SYMBOL</u>	<u>Initial Public Offering (IPO)</u>	<u>Total Assets (Mill.)</u> (5/31/1996)	<u>Portfolio Turnover</u> (%, 1995)	
EUROPEAN FUNDS:					
1	AUSTRIA FUND	OST	9/21/89	135.7	27
2	EMERGING GERMANY FUN	FRG	3/29/90	132.7	40
3	FIRST IBERIAN FUND	IBF	4/13/88	71.6	43
4	FIRST ISRAEL FUND	ISL	10/22/92	71.3	22
5	FRANCE FUND	FR	5/30/86	#N/A	#N/A
6	FRANCE GROWTH FUND	FRF	5/10/90	193.5	49
7	FUT. GERMANY FUND	FGF	3/9/90	#N/A	#N/A
8	GERMANY FUND	GER	7/18/86	208	41
9	GROWTH SPAIN	GSP	2/14/90	234.2	#N/A
10	IRISH INVESTMENT FUND	IRL	3/30/90	78.8	81
11	ITALY FUND	ITA	2/26/86	101.1	58
12	NEW GERMANY FUND	GF	1/24/90	531.7	#N/A
13	PORTUGAL FUND	PGF	11/1/89	77.8	36
14	SPAIN FUND	SNF	6/21/88	118.4	38
15	SWISS HELVETIA FUND	SWZ	8/19/87	299.7	10
16	TURKISH INVEST FUND	TKF	12/15/89	5.83	41.1
17	UNITED KINGDOM FUND	UKM	8/6/87	63.8	63.6
LATIN AMERICAN FUNDS:					
1	ARGENTINA FUND	AF	10/11/91	126.9	25
2	BRAZIL EQUITY	BZL	4/3/92	72.6	55
3	BRAZIL FUND	BZF	3/31/88	410.6	10
4	CHILE FUND	CH	9/26/89	366.5	2
5	EMERGING MEXICO FUND	MEF	10/2/90	11.4	83
6	HERZFELD CARIBBEAN BA	CUBA	9/10/93	9	6
7	LATIN AMERICA DLR INC F	LBF	7/24/92	#N/A	#N/A
8	LATIN AMERICA EQUITY FC	LAQ	10/22/91	146.1	27
9	LATIN AMERICA INVESTME	LAM	6/16/92	152.1	39
10	LATIN AMERICAN DISCOVE	LDF	7/25/90	164.4	122
11	MEXICO EQUITY AND INCC	MXE	8/14/90	148.2	51
12	MEXICO FUND	MXF	6/3/81	931.1	11
PACIFIC RIM FUNDS:					
1	ASIA PACIFIC FUND	APB	2/24/87	282.9	48
2	ASIA TIGERS FUND	GRR	11/18/93	277.9	#N/A
3	CHINA FUND	CHN	7/10/92	140.4	#N/A
4	EMERGING TIGERS FUND	TGF	2/25/94	#N/A	#N/A
5	FIDELITY ADV EMERG ASIA	FAE	3/18/94	139.4	#N/A
6	FIRST AUSTRALIA FUND	IAF	12/12/85	191.4	#N/A
7	FIRST PHILLIPINE FUND	FPF	11/8/89	240.7	#N/A
8	GREATER CHINA FUND	GCH	7/15/92	191.3	#N/A
9	INDIA FUND	IFN	2/14/94	329.6	#N/A
10	INDIA GROWTH FUND	IGF	8/12/88	131.9	#N/A
11	INDONESIA FUND	IF	3/1/90	48.2	#N/A
12	JAKARTA GROWTH FUND	JGF	4/10/90	48.1	#N/A
13	JAPAN EQUITY FUND	JEQ	3/14/90	128.2	28
14	JAPAN FUND (Open-ended)	JAP	4/12/62	#N/A	#N/A
15	JAPAN OTC EQTY FUND	JOF	3/14/90	99.3	79
16	JARDINE FLEMING CHINA I	JFC	7/16/92	107.6	#N/A
17	JARDINE FLEMING INDIA F	JFI	3/3/94	109	#N/A
18	KOREA EQUITY FUND	KEF	11/24/93	77.8	#N/A
19	KOREA FUND	KF	8/22/84	769.9	#N/A
20	KOREAN INVESTMENT FUN	KIF	2/13/92	96.9	#N/A
21	MALAYSIA FUND	MF	5/8/87	208.9	#N/A
22	PAKISTAN INVESTMENT FL	PKF	12/16/93	86.5	#N/A
23	ROC TAIWAN FUND	ROC	5/12/89	335	#N/A
24	SCHRODER ASIAN GROWT	SHF	7/24/90	281.1	67
25	SCUDDER NEW ASIA FUNC	SAF	12/22/93	142.3	58
26	SINGAPORE FUND	SGF	6/18/87	118.9	#N/A
27	TAIWAN EQUITY FUND	TYW	7/18/94	45.6	#N/A
28	TAIWAN FUND	TWN	12/16/83	335.5	#N/A
29	TEMPLETON CHINA WORL	TCH	9/9/93	266.8	#N/A
30	TEMPLETON VIETNAM OPF	TVF	9/15/94	114.1	#N/A
31	THAI CAPITAL FUND	TC	5/22/90	96.4	#N/A
32	THAI FUND	TTF	2/17/88	341.5	#N/A

TABLE A1.2: EUROPE
SUMMARY STATISTICS
SAMPLE 1/4/85-3/8/96

			Discount=100*log(NAV/Price)				
<u>EUROPEAN FUNDS:</u>	<u>SYMBOL</u>	<u>No. OBS.</u>	Mean	Std. Dev.	Min.	Max.	H0: Mean Disc.=0
1 AUSTRIA FUND	OST	316	8.37	13.49	-61.62	35.66	11.03 ***
2 EMERGING GERMANY FUND	FRG	288	15.43	6.43	-0.25	31.62	40.76 ***
3 FIRST IBERIAN FUND	IBF	392	9.19	14.01	-62.73	30.41	12.99 ***
4 FIRST ISRAEL FUND	ISL	157	0.12	11.89	-23.39	18.44	0.12
5 FRANCE FUND	FR	179	17.41	8.91	0.29	43.42	26.15 ***
6 FRANCE GROWTH FUND	FRF	274	14.28	8.24	-12.70	40.41	28.69 ***
7 FUT GERMANY FUND	FGF	294	14.64	6.17	-7.53	30.75	40.70 ***
8 GERMANY FUND	GER	498	1.37	13.54	-69.31	22.44	2.26 **
9 GROWTH SPAIN	GSP	294	15.98	5.97	1.93	32.93	45.92 ***
10 IRISH INVESTMENT FUND	IRL	289	16.62	6.75	-2.61	40.67	41.87 ***
11 ITALY FUND	ITA	499	10.41	12.41	-32.18	49.66	18.75 ***
12 NEW GERMANY FUND	GF	298	13.95	8.91	-41.34	28.85	27.02 ***
13 PORTUGAL FUND	PGF	310	5.90	10.30	-33.51	32.21	10.08 ***
14 SPAIN FUND	SNF	380	-4.34	21.45	-89.42	20.84	-3.95 ***
15 SWISS HELVETIA FUND	SWZ	443	5.83	6.59	-14.76	28.97	18.63 ***
16 TURKISH INVEST FUND	TKF	306	-6.08	20.70	-69.44	44.79	-5.14 ***
17 UNITED KINGDOM FUND	UKM	429	14.62	6.62	-4.78	41.17	45.71 ***

*, (**), (***) Implies significance at 10%, (5%), [1%]

TABLE A1.2: LATIN AMERICA
SUMMARY STATISTICS
SAMPLE 1/4/85-3/8/96

			Discount=100*log(NAV/Price)				
<u>LATIN AMERICAN FUNDS:</u>	<u>SYMBOL</u>	<u>No. OBS.</u>	Mean	Std. Dev.	Min.	Max.	H0: Mean Disc.=0
1 ARGENTINA FUND	AF	224	7.39	7.55	-32.49	7.55	14.65 ***
2 BRAZIL EQUITY	BZL	185	-2.68	9.47	-30.16	14.99	-3.85 ***
3 BRAZIL FUND	BZF	393	0.69	23.06	-31.10	82.67	0.59
4 CHILE FUND	CH	332	7.12	10.29	-25.90	30.50	12.61 ***
5 EMERGING MEXICO FUND	MEF	237	0.37	11.26	-51.73	21.86	0.50
6 HERZFELD CARIBBEAN BASIN FUND	CUBA	96	-22.95	10.66	-53.60	-3.88	-21.08 ***
7 LATIN AMERICA DLR INC FUND	LBF	190	-3.08	4.44	-16.64	8.85	-9.56 ***
8 LATIN AMERICA EQUITY FD	LAQ	229	3.91	7.60	-20.11	19.86	7.79 ***
9 LATIN AMERICA INVESTMENT	LAM	294	6.34	10.12	-20.39	34.74	10.73 ***
10 LATIN AMERICAN DISCOVERY FUND	LDF	195	1.02	7.69	-18.87	18.84	1.85 *
11 MEXICO EQUITY AND INCOME FUND	MXE	234	0.54	11.41	-36.62	22.08	0.72
12 MEXICO FUND	MXF	555	16.13	16.01	-35.67	71.89	23.74 ***

*, (**), (***) Implies significance at 10%, (5%), [1%]

TABLE A1.2: PACIFIC RIM
SUMMARY STATISTICS
SAMPLE 1/4/85-3/8/96

			Discount=100*log(NAV/Price)				
<u>PACIFIC RIM FUNDS:</u>	<u>SYMBOL</u>	<u>No. OBS.</u>	Mean	Std. Dev.	Min.	Max.	H0: Mean Disc.=0
1 ASIA PACIFIC FUND	APB	323	2.23	15.07	-28.51	37.33	2.66 ***
2 ASIA TIGERS FUND	GRR	121	7.25	8.05	-15.67	23.68	9.91 ***
3 CHINA FUND	CHN	192	-4.95	9.30	-30.51	17.83	-7.37 ***
4 EMERGING TIGERS FUND	TGF	106	9.96	5.34	-7.52	21.62	19.21 ***
5 FIDELITY ADV EMERG ASIA FUND	FAE	105	9.93	6.19	-8.92	19.08	16.45 ***
6 FIRST AUSTRALIA FUND	IAF	512	13.39	8.72	-17.97	38.73	34.77 ***
7 FIRST PHILLIPINE FUND	FPF	308	19.64	10.42	-28.97	40.94	33.09 ***
8 GREATER CHINA FUND	GCH	191	1.19	7.44	-17.35	18.23	2.22 **
9 INDIA FUND	IFN	108	9.58	10.39	-14.99	33.25	9.58 ***
10 INDIA GROWTH FUND	IGF	386	0.02	17.43	-43.75	37.46	0.03
11 INDONESIA FUND	IF	309	-12.76	11.53	-39.13	23.63	-19.46 ***
12 JAKARTA GROWTH FUND	JGF	309	-3.44	10.06	-29.96	36.15	-6.00 ***
13 JAPAN EQUITY FUND	JEQ	143	-3.04	9.69	-27.53	14.78	-3.74 ***
14 JAPAN FUND (Open-ended 1987)	JAP	131	12.52	11.53	-8.38	34.87	12.44 ***
15 JAPAN OTC EQTY FUND	JOF	291	-5.59	12.17	-38.88	30.38	-7.84 ***
16 JARDINE FLEMING CHINA FUND	JFC	191	-0.06	9.33	-27.51	18.73	-0.09
17 JARDINE FLEMING INDIA FUND	JFI	106	1.30	8.54	-21.14	21.34	1.57
18 KOREA EQUITY FUND	KEF	120	2.33	10.57	-25.49	19.60	2.41 **
19 KOREA FUND	KF	584	-32.25	22.26	-93.52	5.99	-35.00 ***
20 KOREAN INVESTMENT FUND	KIF	213	-4.48	11.48	-37.02	18.02	-5.70 ***
21 MALAYSIA FUND	MF	453	3.10	13.67	-55.70	53.50	4.83 ***
22 PAKISTAN INVESTMENT FUND	PKF	117	17.70	8.73	-10.70	34.56	21.93 ***
23 ROC TAIWAN FUND	ROC	336	1.14	10.76	-29.36	37.91	1.94 *
24 SCHRODER ASIAN GROWTH FUND	SHF	116	9.37	7.88	-13.53	23.38	12.80 ***
25 SCUDDER NEW ASIA FUND	SAF	323	2.47	9.68	-20.51	30.57	4.59 ***
26 SINGAPORE FUND	SGF	294	1.90	11.31	-27.83	32.27	2.88 ***
27 TAIWAN EQUITY FUND	TYW	86	3.40	9.82	-12.89	23.49	3.21 ***
28 TAIWAN FUND	TWN	322	-10.82	14.20	-62.57	26.65	-13.67 ***
29 TEMPLETON CHINA WORLD FUND	TCH	131	1.11	8.54	-13.56	18.64	1.49
30 TEMPLETON VIETNAM OPPTY FUND	TVF	78	6.49	8.13	-10.45	24.16	7.04 ***
31 THAI CAPITAL FUND	TC	294	8.94	6.80	-9.37	27.47	22.56 ***
32 THAI FUND	TTF	400	-5.80	17.31	-64.89	24.56	-6.70 ***

*, (**), (***) Implies significance at 10%, (5%), (1%)

TABLE A2: EUROPE
UNIT ROOT TESTS
4 LAGS - SAMPLE 1/4/85-3/8/96

	ID	No. OBS.	Test Statistic for Unit Root in NAV		Test Statistic for Unit Root in Price	
			Aug. Dickey-Fuller	Phillips-Perron	Aug. Dickey-Fuller	Phillips-Perron
EUROPEAN FUNDS:						
1 AUSTRIA FUND	OST	316	-0.70	-2.45	-2.19	-16.92 **
2 EMERGING GERMANY FUND	FRG	288	-1.37	-3.58	-1.26	-5.18
3 FIRST IBERIAN FUND	IBF	392	-2.54	-11.93 *	-2.28	-10.84
4 FIRST ISRAEL FUND	ISL	157	-2.63 *	-11.80 *	-3.60 ***	-27.52 ***
5 FRANCE FUND	FR	179	-1.52	-4.65	-2.24	-10.93
6 FRANCE GROWTH FUND	FRF	274	-1.30	-5.54	-4.00 ***	-29.75 ***
7 FUT GERMANY FUND	FGF	294	-2.02	-8.55	-2.65 *	-17.71 **
8 GERMANY FUND	GER	498	-2.55	-13.22 *	-2.58 *	-14.41 **
9 GROWTH SPAIN	GSP	294	-0.97	-2.31	-1.43	-8.40
10 IRISH INVESTMENT FUND	IRL	289	-1.23	-2.90	-1.51	-5.57
11 ITALY FUND	ITA	499	-2.06	-7.80	-2.83 *	-17.03 **
12 NEW GERMANY FUND	GF	298	-1.56	-4.93	-2.08	-11.04
13 PORTUGAL FUND	PGF	310	-1.46	-3.69	-2.42	-9.81
14 SPAIN FUND	SNF	380	-1.77	-6.49	-1.91	-5.35
15 SWISS HELVETIA FUND	SWZ	443	0.43	0.71	-0.55	-1.65
16 TURKISH INVEST FUND	TKF	306	-2.20	-6.39	-2.49	-8.79
17 UNITED KINGDOM FUND	UKM	429	-2.54	-13.67 *	-2.43	-22.11 ***

*, (**), (***) Implies significance at 10%, (5%), [1%].

TABLE A2: LATIN AMERICA
UNIT ROOT TESTS
4 LAGS - SAMPLE 1/4/85-3/8/96

	ID	No. OBS.	Test Statistic for Unit Root in NAV		Test Statistic for Unit Root in Price	
			Aug. Dickey-Fuller	Phillips-Perron	Aug. Dickey-Fuller	Phillips-Perron
LATIN AMERICAN FUNDS:						
1 ARGENTINA FUND	AF	224	-1.98	-6.51	-2.41	-11.16
2 BRAZIL EQUITY	BZL	185	-1.62	-4.67	-1.51	-4.31
3 BRAZIL FUND	BZF	393	-1.94	-7.91	-1.49	-4.13
4 CHILE FUND	CH	332	-1.71	-2.70	-1.65	-2.92
5 EMERGING MEXICO FUND	MEF	237	-1.14	-1.88	-0.78	-1.57
6 HERZFELD CARIBBEAN BASIN I	CUBA	96	-1.72	-4.18	-2.45	-15.42 **
7 LATIN AMERICA DLR INC FUND	LBF	190	-1.35	-3.84	-1.58	-5.39
8 LATIN AMERICA EQUITY FD	LAQ	229	-2.32	-6.59	-1.98	-5.58
9 LATIN AMERICA INVESTMENT	LAM	294	-2.54	-6.08	-2.56	-5.40
10 LATIN AMERICAN DISCOVERY F	LDF	195	-1.61	-3.68	-1.21	-2.56
11 MEXICO EQUITY AND INCOME F	MXE	234	-1.64	-4.54	-1.13	-4.13
12 MEXICO FUND	MXF	555	-2.11	-4.26	-1.75	-3.39

*, (**), (***) Implies significance at 10%, (5%), [1%].

TABLE A2: PACIFIC RIM
UNIT ROOT TESTS
4 LAGS - SAMPLE 1/4/85-3/8/96

PACIFIC RIM FUNDS:	ID	No. OBS.	Test Statistic for Unit Root in NAV		Test Statistic for Unit Root in Price	
			Aug. Dickey-Fuller	Phillips-Perron	Aug. Dickey-Fuller	Phillips-Perron
1 ASIA PACIFIC FUND	APB	323	-2.57 *	-13.15 *	-1.82	-8.76
2 ASIA TIGERS FUND	GRR	121	-2.12	-7.36	-2.58 *	-7.36
3 CHINA FUND	CHN	192	-1.70	-5.14	-2.02	-7.44
4 EMERGING TIGERS FUND	TGF	106	-1.82	-8.58	-2.26	-8.54
5 FIDELITY ADV EMERG ASIA FUI	FAE	105	-1.92	-8.24	-2.47	-9.85
6 FIRST AUSTRALIA FUND	IAF	512	-3.48 ***	-18.20 **	-3.96 ***	-26.53 ***
7 FIRST PHILLIPINE FUND	FPF	308	-0.87	-1.17	-0.94	-2.23
8 GREATER CHINA FUND	GCH	191	-1.80	-6.06	-1.88	-6.44
9 INDIA FUND	IFN	108	-0.26	-0.37	-1.93	-5.40
10 INDIA GROWTH FUND	IGF	386	-2.74 *	-8.80	-2.58 *	-8.77
11 INDONESIA FUND	IF	309	-2.61 *	-7.42	-2.69 *	-13.73 *
12 JAKARTA GROWTH FUND	JGF	309	-2.36	-5.93	-2.89 **	-12.05 *
13 JAPAN EQUITY FUND	JEQ	143	-3.14 **	-9.58	-4.06 ***	-11.59 *
14 JAPAN FUND (Open-ended 1987)	JAP	131	-0.66	-0.87	-0.06	-1.07
15 JAPAN OTC EQTY FUND	JOF	291	-1.96	-7.26	-3.44 ***	-14.86 **
16 JARDINE FLEMING CHINA FUNE	JFC	191	-1.15	-2.61	-0.97	-2.84
17 JARDINE FLEMING INDIA FUND	JFI	106	-0.52	-0.66	-0.91	-2.65
18 KOREA EQUITY FUND	KEF	120	-1.91	-5.86	-1.64	-3.53
19 KOREA FUND	KF	584	-2.06	-3.32	-2.48	-5.90
20 KOREAN INVESTMENT FUND	KIF	213	-1.33	-3.37	-1.87	-7.12
21 MALAYSIA FUND	MF	453	-1.02	-2.45	-1.82	-6.20
22 PAKISTAN INVESTMENT FUND	PKF	117	-0.77	-0.86	-1.59	-1.87
23 ROC TAIWAN FUND	ROC	336	-2.20	-7.13	-3.22 **	-16.43 **
24 SCHRODER ASIAN GROWTH FL	SHF	116	-1.92	-9.56	-2.57 *	-8.32
25 SCUDDER NEW ASIA FUND	SAF	323	-1.65	-5.32	-1.51	-5.68
26 SINGAPORE FUND	SGF	294	-1.66	-3.77	-1.38	-3.43
27 TAIWAN EQUITY FUND	TYW	86	-0.41	-0.61	-2.23	-5.88
28 TAIWAN FUND	TWN	322	-2.60 *	-8.51	-3.87 ***	-26.11 ***
29 TEMPLETON CHINA WORLD FU	TCH	131	-1.51	-3.23	-1.28	-3.12
30 TEMPLETON VIETNAM OPPTY F	TVF	78	-1.50	-7.02	-2.94 **	-11.15
31 THAI CAPITAL FUND	TC	294	-1.06	-2.17	-1.29	-3.31
32 THAI FUND	TTF	400	-1.51	-3.24	-2.09	-7.85

*, (**), (***) Implies significance at 10%, (5%), (1%).

TABLE A3: EUROPE
COINTEGRATION TESTS
4 LAGS - SAMPLE 1/4/85-3/8/96

	EUROPEAN FUNDS:	ID	No. OBS.	UNIT ROOT TESTS IN DISCOUNTS		JOHANSEN ESTIMATION (Full-Information Maximum Likelihood)			
				Test Statistic		Eigval1	Eigval2	H0:r=0	H0:r<=1
				Phillips-Perron					
1	AUSTRIA FUND	OST	316	-27.66 ***	0.079	0.015	29.57 ***	4.66	
2	EMERGING GERMANY FUND	FRG	288	-90.74 ***	0.049	0.022	19.69 **	5.97	
3	FIRST IBERIAN FUND	IBF	392	-20.75 ***	0.021	0.017	14.53	6.55 *	
4	FIRST ISRAEL FUND	ISL	157	-5.43	0.035	0.017	7.58	2.48	
5	FRANCE FUND	FR	179	-12.81 *	0.013	0.011	4.00	1.85	
6	FRANCE GROWTH FUND	FRF	274	-19.77 **	0.041	0.021	16.49 *	5.58	
7	FUT GERMANY FUND	FGF	294	-79.82 ***	0.074	0.002	22.02 **	0.70	
8	GERMANY FUND	GER	498	-25.16 ***	0.020	0.005	12.23	2.57	
9	GROWTH SPAIN	GSP	294	-31.35 ***	0.039	0.013	14.69	3.54	
10	IRISH INVESTMENT FUND	IRL	289	-36.62 ***	0.033	0.007	11.00	1.87	
11	ITALY FUND	ITA	499	-34.05 ***	0.034	0.011	22.35 **	5.58	
12	NEW GERMANY FUND	GF	298	-41.00 ***	0.117	0.007	37.08 ***	1.88	
13	PORTUGAL FUND	PGF	310	-28.01 ***	0.055	0.011	19.86 **	3.23	
14	SPAIN FUND	SNF	380	-9.80	0.022	0.008	11.23	2.93	
15	SWISS HELVETIA FUND	SWZ	443	-54.27 ***	0.032	0.000	13.98	0.06	
16	TURKISH INVEST FUND	TKF	306	-13.61 *	0.035	0.015	14.92	4.52	
17	UNITED KINGDOM FUND	UKM	429	-50.18 ***	0.023	0.018	17.13 *	7.36 *	

*, (**), (***) Implies significance at 10%, (5%), [1%].

TABLE A3: LATIN AMERICA
COINTEGRATION TESTS
4 LAGS - SAMPLE 1/4/85-3/8/96

	LATIN AMERICAN FUNDS:	ID	No. OBS.	UNIT ROOT TESTS IN DISCOUNTS		JOHANSEN ESTIMATION (Full-Information Maximum Likelihood)			
				Test Statistic		Eigval1	Eigval2	H0:r=0	H0:r<=1
				Phillips-Perron					
1	ARGENTINA FUND	AF	224	-30.21 ***	0.060	0.018	16.85 *	3.85	
2	BRAZIL EQUITY	BZL	185	-31.99 ***	0.050	0.016	11.44	2.67	
3	BRAZIL FUND	BZF	393	-12.72 *	0.014	0.004	6.85	1.56	
4	CHILE FUND	CH	332	-26.80 ***	0.029	0.012	13.39	3.98	
5	EMERGING MEXICO FUND	MEF	237	-21.78 ***	0.024	0.008	7.11	1.73	
6	HERZFELD CARIBBEAN BASIN F	CUBA	96	-17.57 **	0.084	0.031	9.67	2.55	
7	LATIN AMERICA DLR INC FUND	LBF	190	-43.39 ***	0.075	0.010	15.45	1.82	
8	LATIN AMERICA EQUITY FD	LAQ	229	-32.28 ***	0.057	0.019	18.72 *	4.12	
9	LATIN AMERICA INVESTMENT	LAM	294	-25.57 ***	0.041	0.022	18.13 **	6.33	
10	LATIN AMERICAN DISCOVERYFL	LDF	195	-27.14 ***	0.055	0.007	11.56	1.34	
11	MEXICO EQUITY AND INCOME F	MXE	234	-15.16 **	0.039	0.011	11.08	2.36	
12	MEXICO FUND	MXF	555	-26.12 ***	0.035	0.006	22.53 **	3.45	

*, (**), (***) Implies significance at 10%, (5%), [1%].

TABLE A3: PACIFIC RIM
COINTEGRATION TESTS
4 LAGS - SAMPLE 1/4/85-3/8/96

PACIFIC RIM FUNDS:	ID	No. OBS.	UNIT ROOT TESTS IN DISCOUNTS		JOHANSEN ESTIMATION (Full-Information Maximum Likelihood)			
			Test Statistic		Eigval1	Eigval2	H0:r=0	H0:r<=1
			Phillips-Perron					
1 ASIA PACIFIC FUND	APB	323	-16.15 **		0.057	0.013	22.27 **	4.19
2 ASIA TIGERS FUND	GRR	121	-11.50 *		0.064	0.043	11.64	4.67
3 CHINA FUND	CHN	192	-17.59 **		0.059	0.022	14.67	3.92
4 EMERGING TIGERS FUND	TGF	106	-13.60 *		0.194	0.048	24.06 ***	4.48
5 FIDELITY ADV EMERG ASIA FUN	FAE	105	-11.98 *		0.188	0.045	22.91 **	4.12
6 FIRST AUSTRALIA FUND	IAF	512	-53.84 ***		0.043	0.024	34.04 ***	12.17 ***
7 FIRST PHILLIPINE FUND	FPF	308	-24.12 ***		0.068	0.002	21.41 **	0.64
8 GREATER CHINA FUND	GCH	191	-22.86 ***		0.045	0.018	11.46	3.28
9 INDIA FUND	IFN	108	-9.95		0.184	0.003	19.22 **	0.27
10 INDIA GROWTH FUND	IGF	386	-18.02 **		0.024	0.018	15.97 *	6.81 *
11 INDONESIA FUND	IF	309	-23.00 ***		0.028	0.021	14.48	6.14
12 JAKARTA GROWTH FUND	JGF	309	-29.30 ***		0.051	0.026	23.05 **	7.62 *
13 JAPAN EQUITY FUND	JEQ	143	-9.21		0.118	0.019	18.51 **	2.48
14 JAPAN FUND (Open-ended 1987)	JAP	131	-4.66		0.022	0.001	2.66	0.12
15 JAPAN OTC EQTY FUND	JOF	291	-21.10 ***		0.076	0.020	27.32 ***	5.52
16 JARDINE FLEMING CHINA FUND	JFC	191	-13.88 *		0.056	0.009	11.60	1.51
17 JARDINE FLEMING INDIA FUND	JFI	106	-12.38 *		0.109	0.005	10.95	0.46
18 KOREA EQUITY FUND	KEF	120	-6.50		0.087	0.026	12.34	2.76
19 KOREA FUND	KF	584	-12.89 *		0.012	0.007	11.00	4.20
20 KOREAN INVESTMENT FUND	KIF	213	-11.22 *		0.047	0.015	12.49	3.03
21 MALAYSIA FUND	MF	453	-33.00 ***		0.036	0.003	17.23 *	1.25
22 PAKISTAN INVESTMENT FUND	PKF	117	-11.04		0.149	0.011	17.50 *	1.09
23 ROC TAIWAN FUND	ROC	336	-30.97 ***		0.054	0.016	22.96 **	5.25
24 SCHRODER ASIAN GROWTH FU	SHF	116	-9.60		0.105	0.047	16.04 *	4.84
25 SCUDDER NEW ASIA FUND	SAF	323	-17.77 **		0.029	0.012	12.57	3.64
26 SINGAPORE FUND	SGF	294	-16.83 **		0.058	0.007	18.68 **	1.92
27 TAIWAN EQUITY FUND	TYW	86	-4.66		0.106	0.002	8.10	0.16
28 TAIWAN FUND	TWN	322	-33.71 ***		0.060	0.019	24.76 ***	5.87
29 TEMPLETON CHINA WORLD FUND	TCH	131	-9.26		0.080	0.015	11.43	1.80
30 TEMPLETON VIETNAM OPPTY F	TVF	78	-12.80 *		0.142	0.022	11.05	1.40
31 THAI CAPITAL FUND	TC	294	-53.88 ***		0.058	0.004	17.81 *	1.11
32 THAI FUND	TTF	400	-16.14 **		0.031	0.006	14.56	2.50

*, (**), (***) Implies significance at 10%, (5%), [1%].

TABLE A4: EUROPE
COINTEGRATING VECTOR: (1, -LAMBDA)
4 LAGS - SAMPLE 1/4/85-3/8/96

				Full-Information Maximum Likelihood Estimation			
				Fitted	Standard	H0:	H0:
				Lambda	Error	Lambda=0	Lambda=1
EUROPEAN FUNDS:	ID	No. OBS.					
1 AUSTRIA FUND	OST	316		1.04	0.12	8.43 ***	0.33
2 EMERGING GERMANY FUND	FRG	288		0.39	0.23	1.74 *	-2.69 ***
3 FIRST IBERIAN FUND	IBF	392		1.75	0.51	3.41 ***	1.46
4 FIRST ISRAEL FUND	ISL	157		0.33	0.47	0.70	-1.44
5 FRANCE FUND	FR	179		0.98	0.34	2.93 ***	-0.05
6 FRANCE GROWTH FUND	FRF	274		4.43	3.38	1.31	1.01
7 FUT. GERMANY FUND	FGF	294		0.67	0.09	7.26 ***	-3.62 ***
8 GERMANY FUND	GER	498		0.92	0.12	7.71 ***	-0.63
9 GROWTH SPAIN	GSP	294		0.59	0.21	2.84 ***	-1.94 *
10 IRISH INVESTMENT FUND	IRL	289		0.77	0.23	3.35 ***	-1.00
11 ITALY FUND	ITA	499		0.87	0.17	5.27 ***	-0.78
12 NEW GERMANY FUND	GF	298		0.59	0.21	2.84 ***	-1.94 *
13 PORTUGAL FUND	PGF	310		0.97	0.17	5.55 ***	-0.19
14 SPAIN FUND	SNF	380		2.03	0.50	4.08 ***	2.07 **
15 SWISS HELVETIA FUND	SWZ	443		0.97	0.08	11.91 ***	-0.33
16 TURKISH INVEST FUND	TKF	306		0.48	0.10	4.87 ***	-5.18 ***
17 UNITED KINGDOM FUND	UKM	429		0.59	0.40	1.46	-1.04

* (**) (***) Implies significance at 10% (5%), [1%]

TABLE A4: LATIN AMERICA
COINTEGRATING VECTOR: (1, -LAMBDA)
4 LAGS - SAMPLE 1/4/85-3/8/96

				Full-Information Maximum Likelihood Estimation			
				Fitted	Standard	H0:	H0:
				Lambda	Error	Lambda=0	Lambda=1
LATIN AMERICAN FUNDS:	ID	No. OBS.					
1 ARGENTINA FUND	AF	224		0.86	0.20	4.22 ***	-0.67
2 BRAZIL EQUITY	BZL	185		1.05	0.09	11.39 ***	0.58
3 BRAZIL FUND	BZF	393		1.85	1.11	1.67 *	0.77
4 CHILE FUND	CH	332		0.93	0.08	11.29 ***	-0.90
5 EMERGING MEXICO FUND	MEF	237		0.98	0.12	8.40 ***	-0.15
6 HERZFELD CARIBBEAN BASIN I	CUBA	96		1.64	1.29	1.27	0.49
7 LATIN AMERICA DLR INC FUND	LBF	190		0.87	0.08	10.99 ***	-1.65
8 LATIN AMERICA EQUITY FD	LAQ	229		1.36	0.14	9.61 ***	2.53 **
9 LATIN AMERICA INVESTMENT	LAM	294		1.34	0.14	9.70 ***	2.48 **
10 LATIN AMERICAN DISCOVERYF	LDF	195		1.18	0.09	13.17 ***	1.98 **
11 MEXICO EQUITY AND INCOME F	MXE	234		1.19	0.28	4.19 ***	0.68
12 MEXICO FUND	MXF	555		1.18	0.05	25.47 ***	3.84 ***

* (**) (***) Implies significance at 10% (5%), [1%]

TABLE A4: PACIFIC RIM
COINTEGRATING VECTOR: (1, -LAMBDA)
4 LAGS - SAMPLE 1/4/85-3/8/96

			Full-Information Maximum Likelihood Estimation			
			Fitted	Standard	H0:	H0:
			Lambda	Error	Lambda=0	Lambda=1
<u>PACIFIC RIM FUNDS:</u>	<u>ID</u>	<u>No. OBS.</u>				
1 ASIA PACIFIC FUND	APB	323	2.26	0.37	6.05 ***	3.37 ***
2 ASIA TIGERS FUND	GRR	121	0.26	1.55	0.17	-0.48
3 CHINA FUND	CHN	192	1.33	0.23	5.74 ***	1.43
4 EMERGING TIGERS FUND	TGF	106	0.66	0.13	5.23 ***	-2.74 ***
5 FIDELITY ADV EMERG ASIA FUNI	FAE	105	1.15	0.23	5.07 ***	0.68
6 FIRST AUSTRALIA FUND	IAF	512	0.74	0.13	5.63 ***	-1.99 **
7 FIRST PHILLIPINE FUND	FPF	308	1.06	0.07	15.97 ***	0.93
8 GREATER CHINA FUND	GCH	191	1.38	0.15	9.43 ***	2.62 ***
9 INDIA FUND	IFN	108	0.57	0.09	6.23 ***	-4.67 ***
10 INDIA GROWTH FUND	IGF	386	1.05	0.31	3.42 ***	0.15
11 INDONESIA FUND	IF	309	0.21	0.41	0.50	-1.93 *
12 JAKARTA GROWTH FUND	JGF	309	0.85	0.15	5.64 ***	-1.02
13 JAPAN EQUITY FUND	JEQ	143	-0.39	0.69	-0.57	-2.03 **
14 JAPAN FUND (Open-ended 1987)	JAP	131	1.00	0.38	2.65 ***	-0.01
15 JAPAN OTC EQTY FUND	JOF	291	0.52	0.16	3.29 ***	-3.09 ***
16 JARDINE FLEMING CHINA FUND	JFC	191	1.41	0.13	10.54 ***	3.08 ***
17 JARDINE FLEMING INDIA FUND	JFI	106	0.75	0.08	9.67 ***	-3.24 ***
18 KOREA EQUITY FUND	KEF	120	2.58	0.48	5.40 ***	3.31 ***
19 KOREA FUND	KF	584	0.69	0.31	2.25 **	-1.02
20 KOREAN INVESTMENT FUND	KIF	213	0.63	0.20	3.09 ***	-1.81 *
21 MALAYSIA FUND	MF	453	1.09	0.12	9.40 ***	0.80
22 PAKISTAN INVESTMENT FUND	PKF	117	0.89	0.09	10.21 ***	-1.25
23 ROC TAIWAN FUND	ROC	336	0.72	0.11	6.32 ***	-2.49 **
24 SCHRODER ASIAN GROWTH FU	SHF	116	0.62	0.70	0.88	-0.55
25 SCUDDER NEW ASIA FUND	SAF	323	1.34	0.27	4.89 ***	1.23
26 SINGAPORE FUND	SGF	294	1.56	0.12	12.67 ***	4.53 ***
27 TAIWAN EQUITY FUND	TYW	86	0.40	0.18	2.28 **	-3.36 ***
28 TAIWAN FUND	TWN	322	0.39	0.19	2.07 **	-3.22 ***
29 TEMPLETON CHINA WORLD FUN	TCH	131	1.54	0.15	10.16 ***	3.56 ***
30 TEMPLETON VIETNAM OPPTY FI	TVF	78	1.21	0.17	6.99 ***	1.20
31 THAI CAPITAL FUND	TC	294	1.06	0.06	18.02 ***	0.98
32 THAI FUND	TTF	400	1.53	1.01	1.52	0.52

*, (**), (***) Implies significance at 10%, (5%), (1%)

TABLE A5: EUROPE
EXOGENEITY TESTS (ASSUMING COINTEGRATION):
FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION
WALD STATISTICS
4 LAGS - SAMPLE 1/4/85-3/8/96

EUROPEAN FUNDS:	ID	No. OBS.	LONG-RUN ADJUSTMENT (Weak Exogeneity)				SHORT-RUN ADJUSTMENT		GRANGER-NONCAUSALITY(Strong Exogeneity)	
			Chi-Square (1)				Chi-Square (4)		Chi-Square (5)	
			H0:alpha1=0	alpha1	H0: alpha2=0	alpha2	H0:gamma1'=0	H0: gamma2'=0	H0:alpha1 & gamma1'=0	H0: alpha2 & gamma2'=0
1 AUSTRIA FUND	OST	316	0.52	-0.018	17.87 ***	0.066	10.85 **	8.07 *	10.86 *	31.11 ***
2 EMERGING GERMANY FUND	FRG	288	6.60 ***	-0.134	0.31	-0.019	9.78 **	5.22	26.64 ***	5.22
3 FIRST IBERIAN FUND	IBF	392	2.57	-0.031	1.69	0.014	16.81 ***	1.86	24.21 ***	5.43
4 FIRST ISRAEL FUND	ISL	157	1.08	-0.035	3.33 *	-0.039	5.26	9.38 *	12.32 **	11.03 **
5 FRANCE FUND	FR	179	0.35	-0.031	0.76	0.030	17.87 ***	4.84	19.19 ***	7.29
6 FRANCE GROWTH FUND	FRF	274	0.81	0.026	0.86	0.017	51.97 ***	3.78	53.45 ***	4.46
7 FUT. GERMANY FUND	FGF	294	12.25 ***	-0.191	0.00	0.000	13.10 ***	14.65 ***	32.35 ***	14.70 **
8 GERMANY FUND	GER	498	20.70 ***	-0.178	0.70	0.021	9.62 **	12.23 **	32.29 ***	15.21 ***
9 GROWTH SPAIN	GSP	294	6.72 ***	-0.103	0.47	-0.017	29.48 ***	7.71	44.17 ***	8.62
10 IRISH INVESTMENT FUND	IRL	289	5.60 **	-0.067	0.44	0.014	41.60 ***	1.41	55.46 ***	2.01
11 ITALY FUND	ITA	499	6.32 **	-0.050	2.56	0.021	11.10 **	1.60	19.08 ***	5.46
12 NEW GERMANY FUND	GF	298	6.72 ***	-0.103	0.47	-0.017	29.48 ***	7.71	44.17 ***	8.62
13 PORTUGAL FUND	PGF	310	8.89 ***	-0.092	1.17	0.020	6.51	2.96	17.50 ***	6.43
14 SPAIN FUND	SNF	380	2.75 *	-0.025	2.32	0.013	1.30	6.35	5.40	10.83 *
15 SWISS HELVETIA FUND	SWZ	443	5.49 **	-0.076	1.07	0.019	31.81 ***	1.41	48.11 ***	2.87
16 TURKISH INVEST FUND	TKF	306	9.96 ***	-0.095	3.19 *	-0.065	22.01 ***	7.07	43.95 ***	10.69 *
17 UNITED KINGDOM FUND	UKM	429	4.83 **	-0.077	0.24	-0.009	25.92 ***	3.37	47.10 ***	3.40

* (**), (***) implies significance at 10% (5%) (1%)

TABLE A5: LATIN AMERICA
EXOGENEITY TESTS (ASSUMING COINTEGRATION):
FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION
WALD STATISTICS
4 LAGS - SAMPLE 1/4/85-3/8/96

LATIN AMERICAN FUNDS:	ID	No. OBS.	LONG-RUN ADJUSTMENT (Weak Exogeneity)				SHORT-RUN ADJUSTMENT		GRANGER-NONCAUSALITY(Strong Exogeneity)	
			Chi-Square (1)				Chi-Square (4)		Chi-Square (5)	
			H0:alpha1=0	alpha1	H0: alpha2=0	alpha2	H0:gamma1'=0	H0: gamma2'=0	H0:alpha1 & gamma1'=0	H0: alpha2 & gamma2'=0
1 ARGENTINA FUND	AF	224	2.64	-0.113	0.01	-0.005	1.66	5.73	4.80	5.92
2 BRAZIL EQUITY	BZL	185	1.89	-0.112	0.22	0.036	2.80	2.73	8.47	4.16
3 BRAZIL FUND	BZF	393	0.54	0.008	1.14	0.021	23.28 ***	17.51 ***	23.33 ***	21.34 ***
4 CHILE FUND	CH	332	9.35 ***	-0.083	2.46	-0.027	22.78 ***	5.20	37.94 ***	6.75
5 EMERGING MEXICO FUND	MEF	237	2.88 *	-0.087	0.45	-0.029	5.71	7.39	12.87 **	7.93
6 HERZFELD CARIBBEAN BASIN FI	CUBA	96	6.32 **	-0.191	0.26	-0.006	6.29	2.64	15.68 ***	2.82
7 LATIN AMERICA DLR INC FUND	LBF	190	4.16 **	-0.145	3.00 *	0.097	18.08 ***	1.86	26.04 ***	5.92
8 LATIN AMERICA EQUITY FD	LAQ	229	1.13	0.055	7.60 ***	0.112	17.99 ***	1.56	18.01 ***	9.54 *
9 LATIN AMERICA INVESTMENT	LAM	294	0.20	-0.018	3.80 *	0.066	11.29 **	0.13	13.29 **	4.39
10 LATIN AMERICAN DISCOVERYFL	LDF	195	0.21	-0.027	3.32 *	0.104	13.57 ***	11.47 **	14.83 ***	18.43 ***
11 MEXICO EQUITY AND INCOME FI	MXE	234	2.29	-0.058	0.29	0.013	24.38 ***	2.96	30.10 ***	3.33
12 MEXICO FUND	MXF	555	1.12	-0.027	7.38 ***	0.051	18.74 ***	8.03 *	25.41 ***	26.89 ***

* (**), (***) implies significance at 10% (5%) (1%)

TABLE A6: PACIFIC RIM
 EXOGENEITY TESTS (ASSUMING COINTEGRATION):
 FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION
 WALD STATISTICS
 4 LAGS - SAMPLE 1/4/85-3/8/96

PACIFIC RIM FUNDS:	ID	No. OBS.	LONG-RUN ADJUSTMENT (Weak Exogeneity)				SHORT-RUN ADJUSTMENT		GRANGER-NONCAUSALITY(Strong Exogeneity)	
			Chi-Square (1)				Chi-Square (4)		Chi-Square (5)	
			H0:alpha1=0	alpha1	H0: alpha2=0	alpha2	H0:gamma1=0	H0: gamma2=0	H0:alpha1 & gamma1=0	H0: alpha2 & gamma2=0
1 ASIA PACIFIC FUND	APB	323	1.65	0.029	13.12 ***	0.047	15.10 ***	3.79	16.42 ***	13.97 **
2 ASIA TIGERS FUND	GRR	121	0.99	-0.088	0.53	-0.017	5.40	9.16 *	9.52 *	9.28 *
3 CHINA FUND	CHN	192	7.18 ***	-0.138	0.31	-0.016	2.80	8.86 *	9.43 *	9.03
4 EMERGING TIGERS FUND	TGF	106	0.63	-0.079	4.25 **	0.186	10.43 **	10.37 **	14.66 **	20.93 ***
5 FIDELITY ADV EMERG ASIA FUNI	FAE	105	4.33 **	-0.205	0.95	0.051	2.48	1.15	6.90	1.89
6 FIRST AUSTRALIA FUND	IAF	512	14.43 ***	-0.101	0.08	0.005	25.60 ***	23.57 ***	61.94 ***	31.35 ***
7 FIRST PHILLIPINE FUND	PPF	308	4.98 **	-0.087	0.25	0.014	10.27 **	9.36 *	17.25 ***	10.70 *
8 GREATER CHINA FUND	GCH	191	2.68	-0.115	0.45	0.029	5.58	2.22	9.24 *	3.69
9 INDIA FUND	IFN	108	3.56 *	-0.171	5.28 **	0.082	1.84	3.12	6.75	12.93 **
10 INDIA GROWTH FUND	IGF	386	0.83	-0.018	4.32 **	0.031	11.51 **	3.33	14.74 **	10.22 *
11 INDONESIA FUND	IF	309	3.57 *	-0.060	0.90	-0.011	13.18 ***	11.11 **	18.32 ***	11.11 **
12 JAKARTA GROWTH FUND	JGF	309	5.14 **	-0.080	2.71 *	0.027	6.26	6.96	11.09 **	10.97 *
13 JAPAN EQUITY FUND	JEQ	143	4.24 **	-0.102	2.20	-0.034	3.23	9.10 *	11.01 *	10.12 *
14 JAPAN FUND (Open-ended 1987)	JAP	131	0.44	-0.050	0.14	0.014	6.03	6.21	6.10	6.27
15 JAPAN OTC EQTY FUND	JOF	291	7.07 ***	-0.087	2.94 *	0.043	0.91	6.32	9.34 *	14.28 **
16 JARDINE FLEMING CHINA FUND	JFC	191	3.83 **	-0.136	0.00	-0.001	5.43	1.19	15.31 ***	1.25
17 JARDINE FLEMING INDIA FUND	JFI	106	0.54	-0.082	4.93 **	0.139	1.36	2.29	1.53	6.37
18 KOREA EQUITY FUND	KEF	120	0.48	0.032	4.71 **	0.073	2.79	3.85	2.83	6.64
19 KOREA FUND	KF	584	4.37 **	-0.023	0.16	-0.002	19.13 ***	8.74 *	24.17 ***	8.74
20 KOREAN INVESTMENT FUND	KIF	213	1.52	-0.040	4.45 **	0.055	7.77	1.39	8.40	6.78
21 MALAYSIA FUND	MF	453	13.04 ***	-0.085	0.19	-0.007	6.73	40.34 ***	26.42 ***	41.24 ***
22 PAKISTAN INVESTMENT FUND	PKF	117	1.20	-0.079	2.99 *	0.095	13.79 ***	8.35 *	16.69 ***	21.47 ***
23 ROC TAIWAN FUND	ROC	336	6.93 ***	-0.086	1.71	0.025	9.44 **	6.85	20.82 ***	9.61
24 SCHRODER ASIAN GROWTH FU	SHF	116	4.82 **	-0.125	0.10	0.007	10.43 **	6.15	21.73 ***	6.15
25 SCUDDER NEW ASIA FUND	SAF	323	0.65	0.022	5.65 **	0.046	16.45 ***	1.60	16.46 ***	10.22 *
26 SINGAPORE FUND	SGF	294	1.11	-0.036	8.32 ***	0.062	4.61	9.55 **	7.40	24.16 ***
27 TAIWAN EQUITY FUND	TYW	86	4.34 **	-0.171	0.01	-0.007	2.15	0.86	6.87	1.04
28 TAIWAN FUND	TWN	322	17.03 ***	-0.120	0.07	-0.005	8.62 *	3.61	28.40 **	3.82
29 TEMPLETON CHINA WORLD FUI	TCH	131	1.76	-0.117	0.93	0.048	5.45	1.67	11.46 **	3.99
30 TEMPLETON VIETNAM OPPTY FI	TVF	78	6.66 ***	-0.284	1.19	-0.032	0.71	2.96	7.78	3.44
31 THAI CAPITAL FUND	TC	294	1.62	-0.064	2.31	0.066	10.60 **	11.07 **	11.72 **	18.13 ***
32 THAI FUND	TTF	400	5.66 **	-0.069	0.01	0.003	10.49 **	11.87 **	25.51 ***	13.73 **

*, (**), (***) Imples significance at 10%, (5%) [1%]

TABLE A6: EUROPE
EXOGENEITY TESTS (NOT ASSUMING COINTEGRATION):
FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION
WALD STATISTICS
4 LAGS - SAMPLE 1/4/85-3/8/96

EUROPEAN FUNDS:	ID	No. OBS.	LONG-RUN ADJUSTMENT (Weak Exogeneity)				SHORT-RUN ADJUSTMENT		GRANGER-NONCAUSALITY (Strong Exogeneity)	
			Chi-Square (1)				Chi-Square (4)		Chi-Square (5)	
			H0: alpha1=0	alpha1	H0: alpha2=0	alpha2	H0: gamma1=0	H0: gamma2=0	H0: alpha1 & gamma1=0	H0: alpha2 & gamma2=0
1 AUSTRIA FUND	OST	316	0.52	-0.018	17.87 ***	0.066	10.85 **	8.07 *	10.86 *	31.11 ***
2 EMERGING GERMANY FUND	FRG	288	6.60 ***	-0.134	0.31	-0.019	9.78 **	5.22	26.64 ***	5.22
3 FIRST IBERIAN FUND	IBF	392					18.81 ***	1.95		
4 FIRST ISRAEL FUND	ISL	157	1.08	-0.035	3.33 *	-0.039	5.26	9.38 *	12.32 **	11.03 **
5 FRANCE FUND	FR	179					33.50 ***	7.86 *		
6 FRANCE GROWTH FUND	FRF	274					41.92 ***	4.32		
7 FUT GERMANY FUND	FGF	294	12.25 ***	-0.191	0.00	0.000	13.10 ***	14.65 ***	32.35 ***	14.70 **
8 GERMANY FUND	GER	498	20.70 ***	-0.178	0.70	0.021	9.62 **	12.23 **	32.29 ***	15.21 ***
9 GROWTH SPAIN	GSP	294	6.72 ***	-0.103	0.47	-0.017	29.48 ***	7.71	44.17 ***	8.62
10 IRISH INVESTMENT FUND	IRL	289	5.60 **	-0.067	0.44	0.014	41.60 ***	1.41	55.46 ***	2.01
11 ITALY FUND	ITA	499	6.32 **	-0.050	2.56	0.021	11.10 **	1.60	19.08 ***	5.46
12 NEW GERMANY FUND	GF	298	6.72 ***	-0.103	0.47	-0.017	29.48 ***	7.71	44.17 ***	8.62
13 PORTUGAL FUND	PGF	310	8.89 ***	-0.092	1.17	0.020	6.51	2.96	17.50 ***	6.43
14 SPAIN FUND	SNF	380	2.75 *	-0.025	2.32	0.013	1.30	6.35	5.40	10.83 *
15 SWISS HELVETIA FUND	SWZ	443	5.49 **	-0.076	1.07	0.019	31.81 ***	1.41	48.11 ***	2.87
16 TURKISH INVEST FUND	TKF	306	9.96 ***	-0.095	3.19 *	-0.065	22.01 ***	7.07	43.95 ***	10.69 *
17 UNITED KINGDOM FUND	UKM	429	4.83 **	-0.077	0.24	-0.009	25.92 ***	3.37	47.10 ***	3.40

*, (**), (***) Implies significance at 10%, (5%), (1%).

TABLE A6: LATIN AMERICA
EXOGENEITY TESTS (NOT ASSUMING COINTEGRATION):
FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION
WALD STATISTICS
4 LAGS - SAMPLE 1/4/85-3/8/96

LATIN AMERICAN FUNDS:	ID	No. OBS.	LONG-RUN ADJUSTMENT (Weak Exogeneity)				SHORT-RUN ADJUSTMENT		GRANGER-NONCAUSALITY (Strong Exogeneity)	
			Chi-Square (1)				Chi-Square (4)		Chi-Square (5)	
			H0: alpha1=0	alpha1	H0: alpha2=0	alpha2	H0: gamma1=0	H0: gamma2=0	H0: alpha1 & gamma1=0	H0: alpha2 & gamma2=0
1 ARGENTINA FUND	AF	224					3.11	7.30		
2 BRAZIL EQUITY	BZL	185					6.69	4.05		
3 BRAZIL FUND	BZF	393					24.85 ***	25.59 ***		
4 CHILE FUND	CH	332	9.35 ***	-0.083	2.46	-0.027	22.78 ***	5.20	37.94 ***	6.75
5 EMERGING MEXICO FUND	MEF	237	2.88 *	-0.087	0.45	-0.029	5.71	7.39	12.87 **	7.93
6 HERZFELD CARIBBEAN BASIN FI	CUBA	96	6.32 **	-0.191	0.26	-0.006	6.29	2.64	15.68 ***	2.82
7 LATIN AMERICA DLR INC FUND	LBF	190	4.16 **	-0.145	3.00 *	0.097	18.08 ***	1.86	26.04 ***	5.92
8 LATIN AMERICA EQUITY FD	LAQ	229	1.13	0.055	7.60 ***	0.112	17.99 ***	1.56	18.01 ***	9.54 *
9 LATIN AMERICA INVESTMENT	LAM	294	0.20	-0.018	3.80 *	0.066	11.29 **	0.13	13.29 **	4.39
10 LATIN AMERICAN DISCOVERYFL	LDF	195	0.21	-0.027	3.32 *	0.104	13.57 ***	11.47 **	14.83 **	18.43 ***
11 MEXICO EQUITY AND INCOME FI	MXE	234					28.03 ***	4.09		
12 MEXICO FUND	MXF	555	1.12	-0.027	7.38 ***	0.051	18.74 ***	8.03 *	25.41 ***	26.89 ***

*, (**), (***) Implies significance at 10%, (5%), (1%).

TABLE A8: PACIFIC RIM
 EXOGENEITY TESTS (NOT ASSUMING COINTEGRATION):
 FULL-INFORMATION MAXIMUM LIKELIHOOD ESTIMATION
 WALD STATISTICS
 4 LAGS - SAMPLE 1/4/85-3/8/96

PACIFIC RIM FUNDS:	ID	No. OBS.	LONG-RUN ADJUSTMENT (Weak Exogeneity)				SHORT-RUN ADJUSTMENT		GRANGER-NONCAUSALITY(Strong Exogeneity)	
			Chi-Square (1)				Chi-Square (4)		Chi-Square (5)	
			H0:alpha1=0	alpha1	H0: alpha2=0	alpha2	H0:gamma1=0	H0: gamma2=0	H0:alpha1 & gamma1=0	H0: alpha2 & gamma2=0
1 ASIA PACIFIC FUND	APB	323	1.65	0.029	13.12 ***	0.047	15.10 ***	3.79	16.42 ***	13.97 **
2 ASIA TIGERS FUND	GRR	121					8.84 *	13.00 *		
3 CHINA FUND	CHN	192	7.18 ***	-0.138	0.31	-0.016	2.80	8.86 *	9.43 *	9.03
4 EMERGING TIGERS FUND	TGF	106	0.63	-0.079	4.25 **	0.186	10.43 **	10.37 **	14.66 **	20.93 ***
5 FIDELITY ADV EMERG ASIA FUNI	FAE	105	4.33 **	-0.205	0.95	0.051	2.48	1.15	6.90	1.89
6 FIRST AUSTRALIA FUND	IAF	512	14.43 ***	-0.101	0.08	0.005	25.60 ***	23.57 ***	61.94 ***	31.35 ***
7 FIRST PHILLIPINE FUND	FPF	308	4.98 **	-0.087	0.25	0.014	10.27 **	9.36 *	17.25 ***	10.70 *
8 GREATER CHINA FUND	GCH	191					7.52	5.56		
9 INDIA FUND	IFN	108	3.56 *	-0.171	5.28 **	0.082	1.84	3.12	6.75	12.93 **
10 INDIA GROWTH FUND	IGF	386	0.83	-0.018	4.32 **	0.031	11.51 **	3.33	14.74 **	10.22 *
11 INDONESIA FUND	IF	309	3.57 *	-0.060	0.90	-0.011	13.18 ***	11.11 **	18.32 ***	11.11 **
12 JAKARTA GROWTH FUND	JGF	309	5.14 **	-0.080	2.71 *	0.027	6.26	8.96	11.09 **	10.97 *
13 JAPAN EQUITY FUND	JEQ	143	4.24 **	-0.102	2.20	-0.034	3.23	9.10 *	11.01 *	10.12 *
14 JAPAN FUND (Open-ended 1987)	JAP	131					5.52	7.61		
15 JAPAN OTC EQTY FUND	JOF	291	7.07 ***	-0.087	2.94 *	0.043	0.91	6.32	9.34 *	14.28 **
16 JARDINE FLEMING CHINA FUND	JFC	191	3.83 **	-0.136	0.00	-0.001	5.43	1.19	15.31 ***	1.25
17 JARDINE FLEMING INDIA FUND	JFI	106	0.54	-0.082	4.93 **	0.139	1.36	2.29	1.53	6.37
18 KOREA EQUITY FUND	KEF	120	0.48	0.032	4.71 **	0.073	2.79	3.85	2.83	6.64
19 KOREA FUND	KF	584	4.37 **	-0.023	0.16	-0.002	19.13 ***	8.74 *	24.17 ***	8.74
20 KOREAN INVESTMENT FUND	KIF	213	1.52	-0.040	4.45 **	0.055	7.77	1.39	8.40	6.78
21 MALAYSIA FUND	MF	453	13.04 ***	-0.085	0.19	-0.007	6.73	40.34 ***	26.42 ***	41.24 ***
22 PAKISTAN INVESTMENT FUND	PKF	117	1.20	-0.079	2.99 *	0.095	13.79 ***	8.35 *	16.69 ***	21.47 ***
23 ROC TAIWAN FUND	ROC	336	6.93 ***	-0.086	1.71	0.025	9.44 **	6.85	20.82 ***	9.61 *
24 SCHRODER ASIAN GROWTH FU	SHF	116	4.82 **	-0.125	0.10	0.007	10.43 **	6.15	21.73 ***	6.15
25 SCUDDER NEW ASIA FUND	SAF	323	0.65	0.022	5.65 **	0.046	16.45 ***	1.60	16.46 ***	10.22 *
26 SINGAPORE FUND	SGF	294	1.11	-0.036	8.32 ***	0.062	4.61	9.55 **	7.40	24.16 ***
27 TAIWAN EQUITY FUND	TYW	86	4.34 **	-0.171	0.01	-0.007	2.15	0.86	6.87	1.04
28 TAIWAN FUND	TWN	322	17.03 ***	-0.120	0.07	-0.005	8.62 *	3.61	28.40 ***	3.82
29 TEMPLETON CHINA WORLD FUI	TCH	131					9.93 **	3.40		
30 TEMPLETON VIETNAM OPPTY FI	TVF	78	6.66 ***	-0.284	1.19	-0.032	0.71	2.96	7.78	3.44
31 THAI CAPITAL FUND	TC	294					10.89 **	17.59 ***		
32 THAI FUND	TTF	400	5.66 **	-0.069	0.01	0.003	10.49 **	11.87 **	25.51 ***	13.73 **

*, (**), (***) implies significance at 10%, (5%), (1%)

TABLE A7: EUROPE
EXOGENEITY TESTS (ASSUMING NO COINTEGRATION):
ORDINARY LEAST SQUARES ESTIMATION
WALD STATISTICS
4 LAGS - SAMPLE 1/4/85-3/8/96

<u>EUROPEAN FUNDS:</u>	<u>ID</u>	<u>No. OBS.</u>	SHORT-RUN ADJUSTMENT	
			Chi-Square (4)	
			H0:gamma1'=0	H0: gamma2'=0
1 AUSTRIA FUND	OST	316	6.21	12.22 **
2 EMERGING GERMANY FUND	FRG	288	10.62 **	4.59
3 FIRST IBERIAN FUND	IBF	392	18.81 ***	1.95
4 FIRST ISRAEL FUND	ISL	157	8.92 *	10.36 **
5 FRANCE FUND	FR	179	33.50 ***	7.86 *
6 FRANCE GROWTH FUND	FRF	274	41.92 ***	4.32
7 FUT. GERMANY FUND	FGF	294	18.84 ***	8.85 *
8 GERMANY FUND	GER	498	5.51	7.02
9 GROWTH SPAIN	GSP	294	45.00 ***	7.11
10 IRISH INVESTMENT FUND	IRL	289	45.79 ***	1.62
11 ITALY FUND	ITA	499	14.58 ***	1.74
12 NEW GERMANY FUND	GF	298	9.13 *	16.54 ***
13 PORTUGAL FUND	PGF	310	11.63 **	6.25
14 SPAIN FUND	SNF	380	2.63	8.49 *
15 SWISS HELVETIA FUND	SWZ	443	45.44 ***	2.31
16 TURKISH INVEST FUND	TKF	306	36.46 ***	4.35
17 UNITED KINGDOM FUND	UKM	429	37.31 ***	3.68

*, (**), (***) Implies significance at 10%, (5%), [1%].

TABLE A7: LATIN AMERICA
EXOGENEITY TESTS (ASSUMING NO COINTEGRATION):
ORDINARY LEAST SQUARES ESTIMATION
WALD STATISTICS
4 LAGS - SAMPLE 1/4/85-3/8/96

<u>LATIN AMERICAN FUNDS:</u>	<u>ID</u>	<u>No. OBS.</u>	SHORT-RUN ADJUSTMENT	
			Chi-Square (4)	
			H0:gamma1'=0	H0: gamma2'=0
1 ARGENTINA FUND	AF	224	3.11	7.30
2 BRAZIL EQUITY	BZL	185	6.69	4.05
3 BRAZIL FUND	BZF	393	24.85 ***	25.59 ***
4 CHILE FUND	CH	332	30.06 ***	5.40
5 EMERGING MEXICO FUND	MEF	237	12.38 **	9.04 *
6 HERZFELD CARIBBEAN BASIN F	CUBA	96	6.49	3.33
7 LATIN AMERICA DLR INC FUND	LBF	190	18.74 ***	3.01
8 LATIN AMERICA EQUITY FD	LAQ	229	21.01 ***	1.84
9 LATIN AMERICA INVESTMENT	LAM	294	19.39 ***	1.31
10 LATIN AMERICAN DISCOVERYFI	LDF	195	24.40 ***	12.41 **
11 MEXICO EQUITY AND INCOME F	MXE	234	28.03 ***	4.09
12 MEXICO FUND	MXF	555	24.25 ***	19.71 ***

*, (**), (***) Implies significance at 10%, (5%), [1%].

**TABLE A7: PACIFIC RIM
EXOGENEITY TESTS (ASSUMING NO COINTEGRATION):
ORDINARY LEAST SQUARES ESTIMATION
WALD STATISTICS
4 LAGS - SAMPLE 1/4/85-3/8/96**

PACIFIC RIM FUNDS:	ID	No. OBS.	SHORT-RUN ADJUSTMENT	
			Chi-Square (4)	
			H0:gamma1'=0	H0: gamma2'=0
1 ASIA PACIFIC FUND	APB	323	11.39 **	1.37
2 ASIA TIGERS FUND	GRR	121	8.84 *	13.00 **
3 CHINA FUND	CHN	192	4.68	10.93 **
4 EMERGING TIGERS FUND	TGF	106	20.48 ***	12.79 **
5 FIDELITY ADV EMERG ASIA FUN	FAE	105	4.23	1.94
6 FIRST AUSTRALIA FUND	IAF	512	43.77 ***	21.34 ***
7 FIRST PHILLIPINE FUND	FPF	308	10.89 **	13.20 ***
8 GREATER CHINA FUND	GCH	191	7.52	5.56
9 INDIA FUND	IFN	108	2.53	4.90
10 INDIA GROWTH FUND	IGF	386	10.56 **	7.71
11 INDONESIA FUND	IF	309	13.30 ***	9.74 **
12 JAKARTA GROWTH FUND	JGF	309	7.03	10.59 **
13 JAPAN EQUITY FUND	JEQ	143	3.53	11.62 **
14 JAPAN FUND (Open-ended 1987)	JAP	131	5.52	7.61
15 JAPAN OTC EQTY FUND	JOF	291	0.96	10.87 **
16 JARDINE FLEMING CHINA FUND	JFC	191	11.56 **	1.90
17 JARDINE FLEMING INDIA FUND	JFI	106	2.69	2.31
18 KOREA EQUITY FUND	KEF	120	2.60	1.86
19 KOREA FUND	KF	584	17.45 ***	8.73 *
20 KOREAN INVESTMENT FUND	KIF	213	7.29	3.53
21 MALAYSIA FUND	MF	453	9.82 **	25.21 ***
22 PAKISTAN INVESTMENT FUND	PKF	117	17.93 ***	14.26 ***
23 ROC TAIWAN FUND	ROC	336	10.52 **	7.77
24 SCHRODER ASIAN GROWTH FU	SHF	116	11.29 **	7.86 *
25 SCUDDER NEW ASIA FUND	SAF	323	17.30 ***	4.60
26 SINGAPORE FUND	SGF	294	7.81 *	17.31 ***
27 TAIWAN EQUITY FUND	TYW	86	2.81	1.44
28 TAIWAN FUND	TWN	322	7.07	2.46
29 TEMPLETON CHINA WORLD FUI	TCH	131	9.93 **	3.40
30 TEMPLETON VIETNAM OPPTY FI	TVF	78	0.66	2.46
31 THAI CAPITAL FUND	TC	294	10.89 **	17.59 ***
32 THAI FUND	TTF	400	11.10 **	12.40 **

*, (**), (***) Implies significance at 10%, (5%), [1%].